VICTORIA GOLD CORP

EAGLE GOLD PROJECT

WATER LICENCE QZ14-041-01

QUARTZ MINING LICENSE QML-0011

2022 ANNUAL REPORT

MARCH 2023

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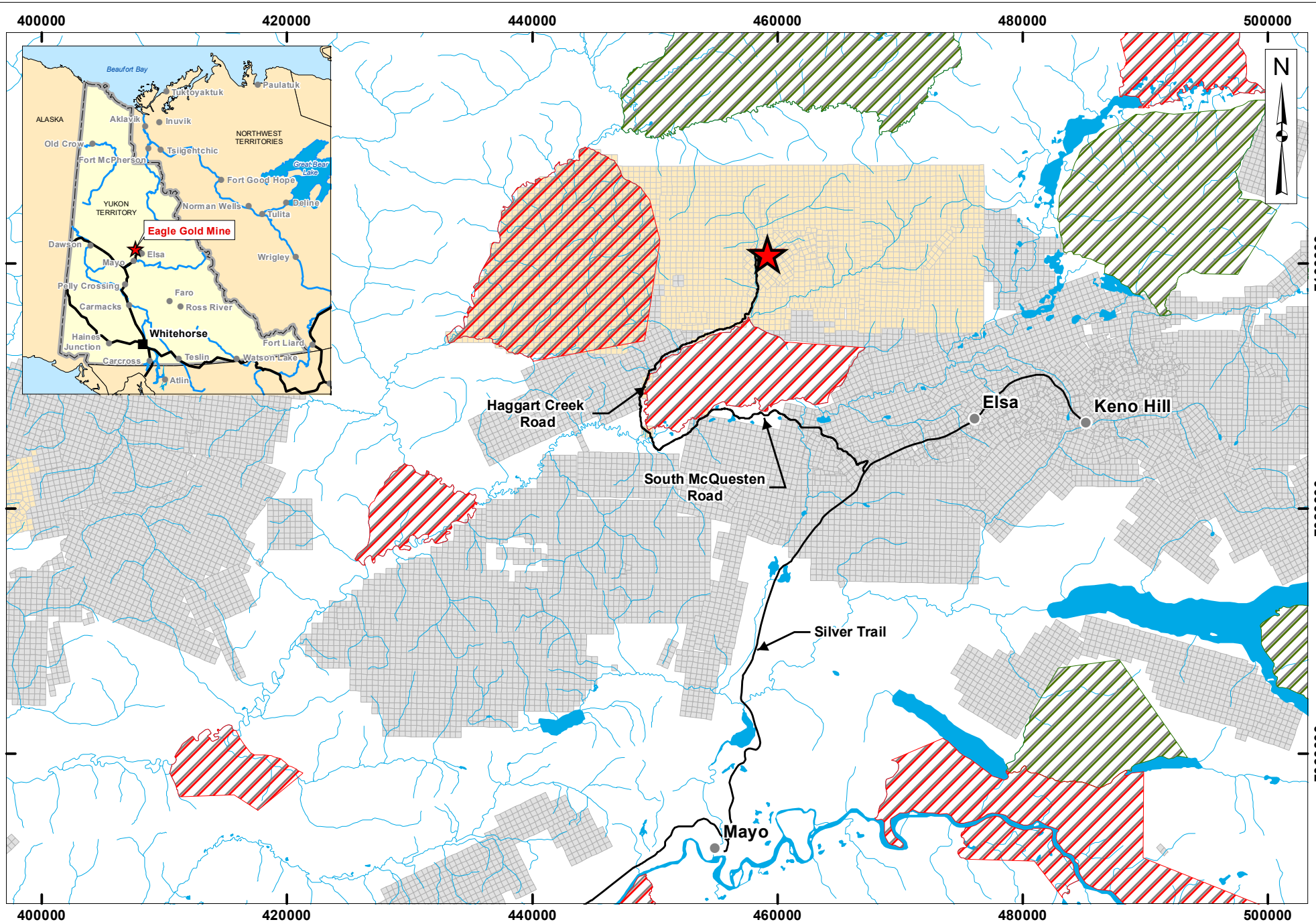
1 INTRODUCTION

Victoria Gold Corp. (VGC) currently operates the Eagle Gold Mine in central Yukon. The Eagle Gold Mine ('the Project') is located 85 km from Mayo Yukon using existing highway and access roads (Figure 1.1-1). The Project involves open pit mining and gold extraction using a three-stage crushing process, heap leaching, and a carbon adsorption, desorption, and recovery system over the mine life (Figure 1.1-2).

The Project is being operated in accordance with the terms of the Type A Water Use Licence (WUL) QZ14-041-01 and the Quartz Mining License (QML) QML-0011. The reporting period for this Annual Report is from January 1 to December 31, 2022 and serves to report on both WUL and QML conditions and associated management plans.

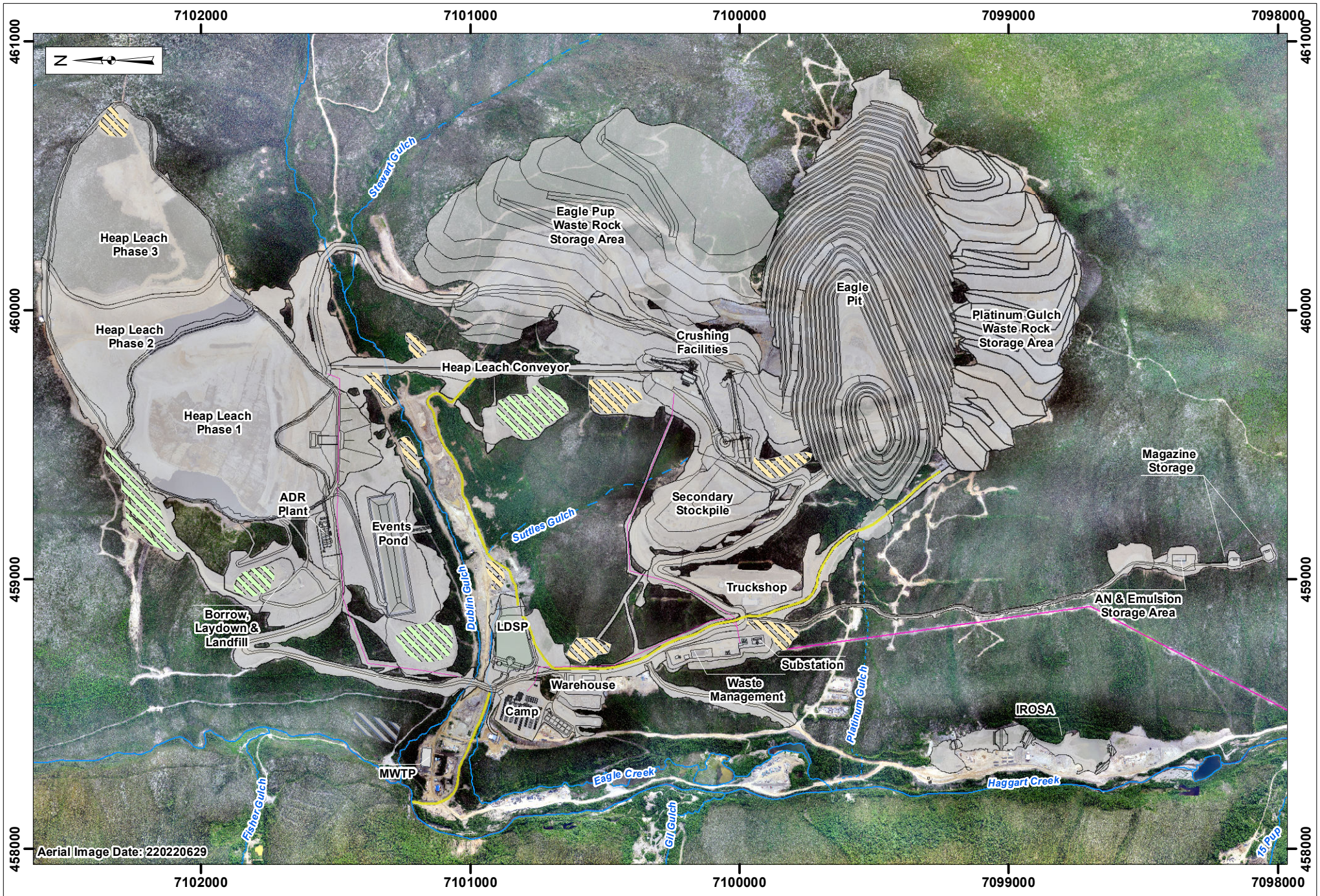


Legend:

- Eagle Gold Mine
- Town / Village
- Category A Settlement Land
- Victoria Gold Claims
- Road
- Category B Settlement Land
- Other Claims
- Watercourse

0 3 6 12
Kilometres

Projection: NAD 83 Zone 8N	Drawn By: HC	**EAGLE GOLD MINE YUKON TERRITORY**	
Date: 2023/03/17	Figure: 1.1-1	**Project Location**	



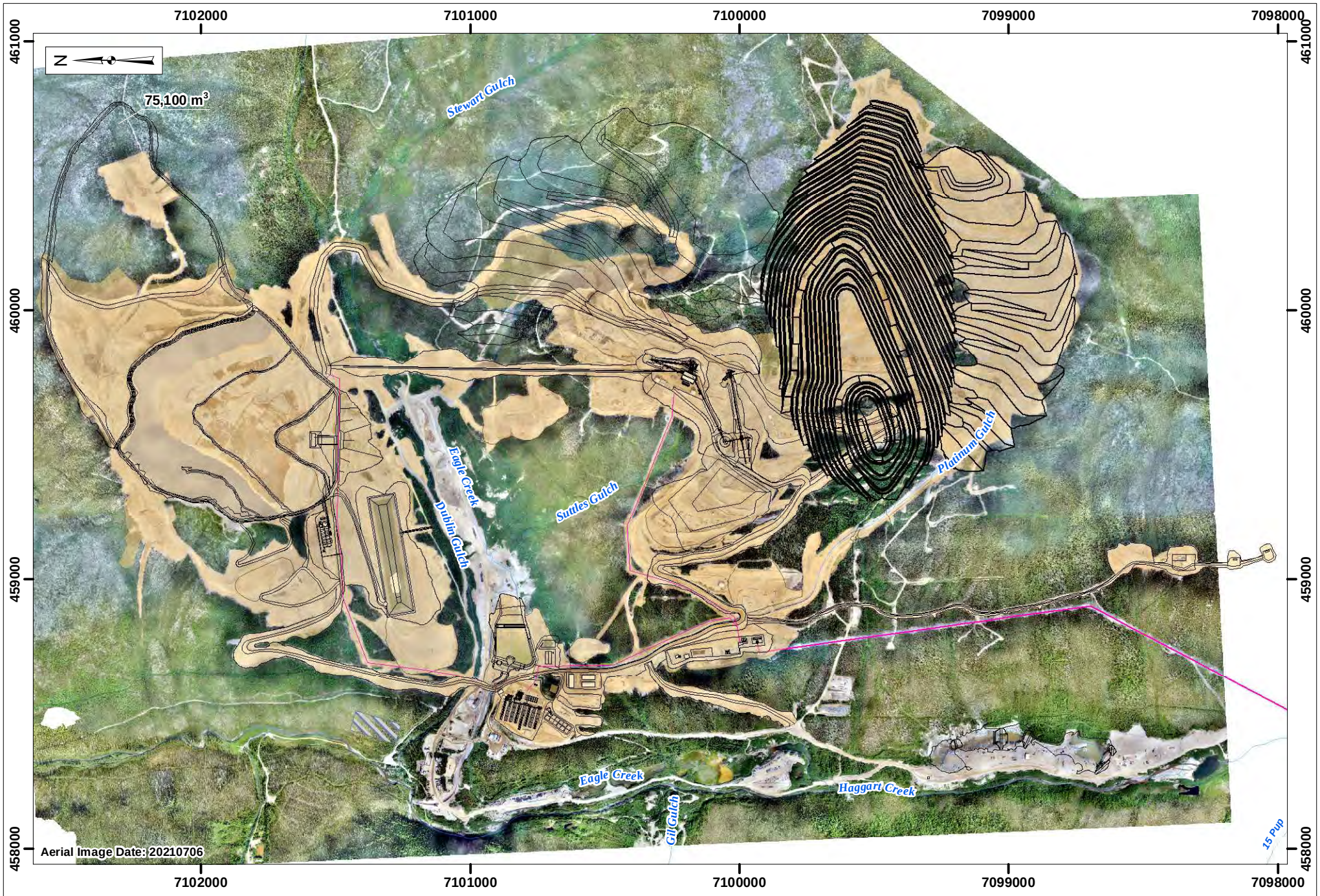
Legend:

- Facility
- Site Power
- Major Ditch
- Reserved Area
- Local Storage Reclamation Stockpile
- Major Reclamation Stockpile
- Watercourse - Perennial
- Watercourse - Ephemeral
- Watercouse - Intermittent

VICTORIA GOLD CORP

0 125 250 500
Metres

Projection:	Drawn By:	EAGLE GOLD MINE YUKON TERRITORY
NAD 83 UTM Zone 8N	HC	
Date:	Figure:	General Arrangement
2023/03/17	1.1-2	



Legend:

- Current Construction and Mining Impacted Areas
- Facility Footprint
- Reserved
- Watercourse - Perennial
- Watercourse - Ephemeral
- Watercourse - Intermittent

VICTORIA GOLD CORP

0 125 250 500
Metres

Projection:	Drawn By:	EAGLE GOLD MINE YUKON TERRITORY
NAD 83 UTM Zone 8N	HC	
Date:	Figure:	Status of Undertaking
2022/03/30	1.1-3	

2 SITE ACTIVITIES

2.1 Overview of Construction and Maintenance

2.1.1 Summary of Construction Activities

During 2022, the primary construction activities that occurred on pre-existing facilities included the ongoing clearing and development of the HLF (additional overliner drain fill and PLS pipe installations in Phase 1B, and surface preparation and liner installations in Phase 2), the Eagle Pup (EP) WRSA rock drain, the maintenance truck shop, and demucking of the LDSP forebay

In addition to work on pre-existing facilities, construction also commenced on new facilities including a supplemental water storage pond (which to date, has not been used) and the Mine Water Treatment Plant (MWTP).

Table 2.1-1 depicts specific construction activities conducted during each month of 2022.

Table 2.1-1: 2022 Construction Schedule

Activity	2022											
	J	F	M	A	M	J	J	A	S	O	N	D
LDSP forebay maintenance												
CV-027												
Heap Leach Facility Phase 1 ODF and PLS Pipe Placement and Phase 2 clearing and contouring												
EP WRSA Rock Drain												
Maintenance Truck Shop												
Mine Water Treatment Plant												
Construction of a Supplemental Water Storage Pond												

2.1.1.1 Lower Dublin South Pond

As a condition of QZ14-041-1, VGC installed a liner system in Q4 2020 (rather than rely on the findings of a hydrogeological assessment) to proactively demonstrate the forebay base has low permeability. No changes to the alignment, berms, or functionality of the forebay was made and whilst the liner installation was completed in 2020 construction was not considered fully finalized as ballast (sand bags) placement on the liner was completed in 2021. During the summer months of 2021 sediment was removed from the ditch outlets and a sediment trap was constructed around the outlets to help mitigate sediment build up in the forebay. Prior to Freshet in 2022, the forebay was stripped of liner and re-excavated of deposited materials. The forebay was then recontoured and lined following the excavation work. The forebay liner was keyed in and packed down on the East slope in September after it was evaluated this would benefit its functionality.

Photo 2.1-1: Cleanout of Sediment in the Forebay of the LDSP - March 12 2022

Photo 2.1-2: Liner Installation in LDSP Forebay - March 22, 2022

Photo 2.1-3: Forebay Liner Keyed In - September 2022

2.1.1.2 CV-027

In September of 2021 the pre-assembly of CV-27 (the continuation of the overland conveyor along the eastern perimeter of the HLF) commenced so that construction of the infrastructure could commence in January 2022. The construction was completed in February allowing commissioning to be finalized by the end of the month.

2.1.1.3 Heap Leach Facility

During 2020, the installation of the liner system in the HLF Phase 1B area was completed and deemed acceptable by the EOR. In 2021, installation of pregnant leach solution (PLS) collection piping and ODF placement continued in advance of stacking activities in Phase 1B. The Phase 1B Heap Pad consists of the lined area of the HLF between elevations 990 masl and 1050 masl and includes the perimeter berms along the eastern and western edges of the Phase 1B Heap Pad.

During 2021, grubbing and stripping for organics of the HLF Phase 2A area was initiated with additional fine grading still to be completed. Trees were removed from the construction zone prior to mid-May to adhere to

clearing outside of the nesting bird window. Overburden was then removed during Q3 and Q4 of 2021 in preparations for liner placement in 2022.

In addition to the clearing and grubbing that occurred throughout 2021 and early 2022, the Phase 2A main header underdrain and underdrain lateral connections were excavated and prepared for completion in March 2022.. Liner and protective aggregate was installed within the underdrains to support the foundation improvement works. In June 2022 Phase 2a liner deployment commenced on the pre-cleared and graded surfaces. The work was conducted by Layfield. The liner was installed and completed by July 2022. In the fourth quarter, work resumed on the HLF area and by October 2022 the Phase 2b bulking and shaping work had been completed. The underdrains were not able to be finalized in 2022 and are scheduled for completion in spring 2023. Appendix A provides the yearly records of construction for the HLF.

Photo 2.1-4: Phase 2a Liner Deployment - July 15 ,2022

Photo 2.1-5: Phase 2a Liner Deployment - July 15 ,2022

Photo 2.1-6: QA/QC Testing on HLF Phase 2a liner - July 16, 2022

Photo 2.1-7: Completed Phase 2b Bulking and Shaping - September 28, 2022

2.1.1.4 PG WRSA Rock Drain

Construction of the PG WRSA Rock drain was on hold throughout the reporting period, as the focus was switched to the EP WRSA Rock Drain. Approximately 100 m of rock drain development remains outstanding (from 0+500 to 0+600 m - Figure 2.1-1) which would finalize the construction

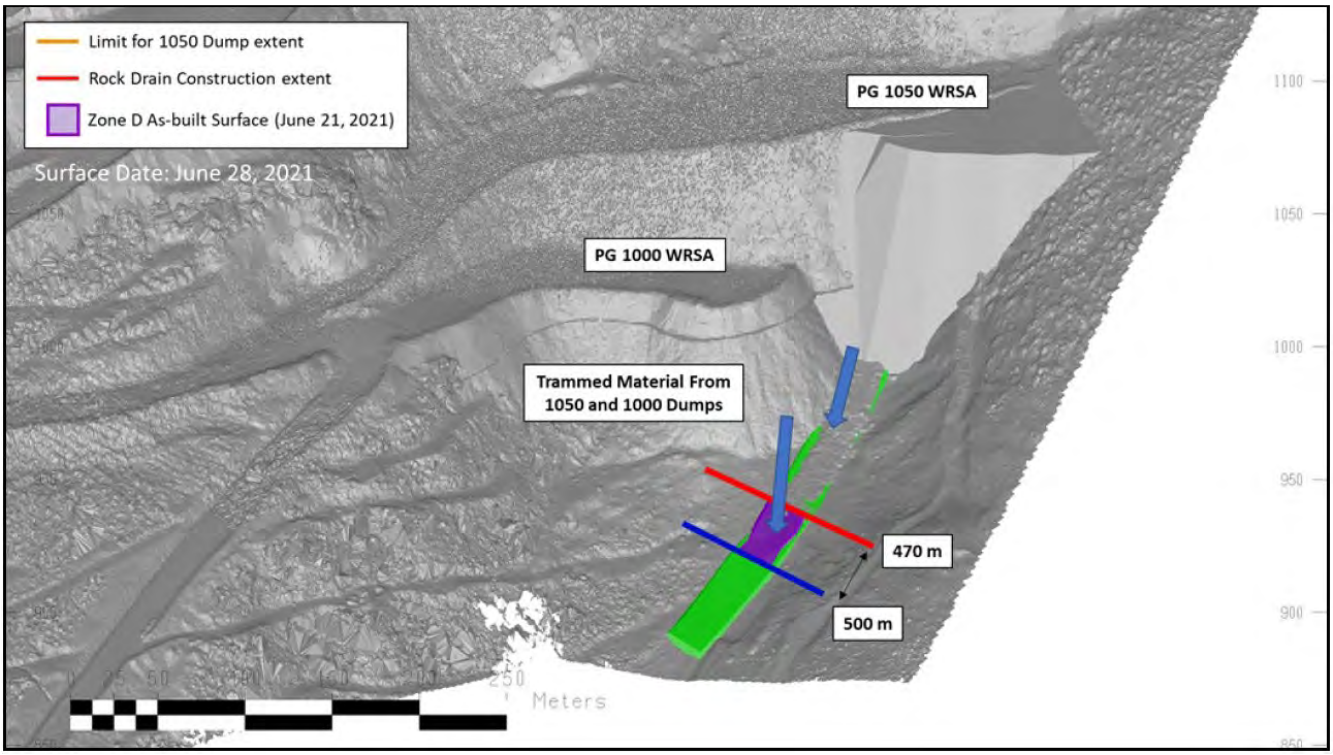


Figure 2.1-1: PG WRSA Rock Drain Development Status – June 21, 2021 (No Change in 2022)

2.1.1.5 EP WRSA Rock Drain

Construction of the EP WRSA rock drain began in March of 2021. In accordance with the issued for construction design, a dominant (D10) particle size of 0.1 m was placed through selective use of waste rock end dumping. The drain is being constructed out of non-metal leaching, non-acid generating, clean, durable rock resistant to weathering; free from organic matter, frozen soil, snow, ice and overburden soil materials. The design of the EP WRSA follows the minor modification design criteria (Knight Piesold, 2020b) The progress of the rock drain at the end of 2021 is shown below in Figure 2.1-2.

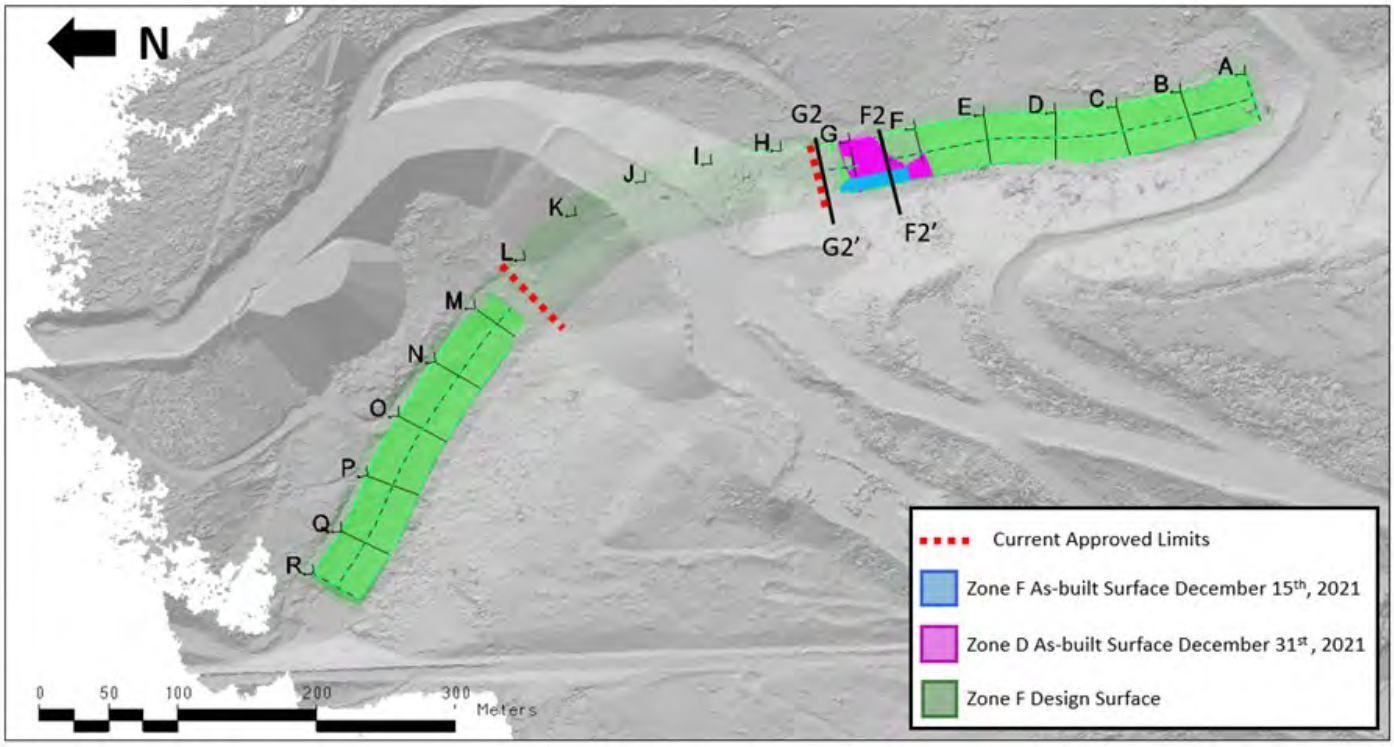


Figure 2.1-2: EP WRSA Rock Drain Development Status – January 7, 2022

In 2022, specific sections of the rock drain were placed in advance of waste rock dumping as access was developed from open pit ramp outs. Approximately 260 m of the EP WRSA rock drain was built in 2021 requiring the placement of approximately 57,000 m^3 of construction material deemed appropriate for the use based on the design criteria and material testing. Progression on the EP WRSA rock drain is part of weekly mine planning and as sections are constructed approval for use and waste rock deposition is sought from the EOR. Rock drain construction in the reporting period was conducted from January to August 2022 of zones F to A completing the upstream construction. In 2022, approximately 250 m of EP rock drain was built requiring the placement of approximately 37,000 m^3 of construction material.

In December construction began on an access ramp to deliver construction material for the downstream construction, but no other activity on the EP WRSA rock drain was conducted after August 17, 2022. The approved construction progress of the EP rock drain construction as of the end of the reporting period is shown Figure 2.1-3.

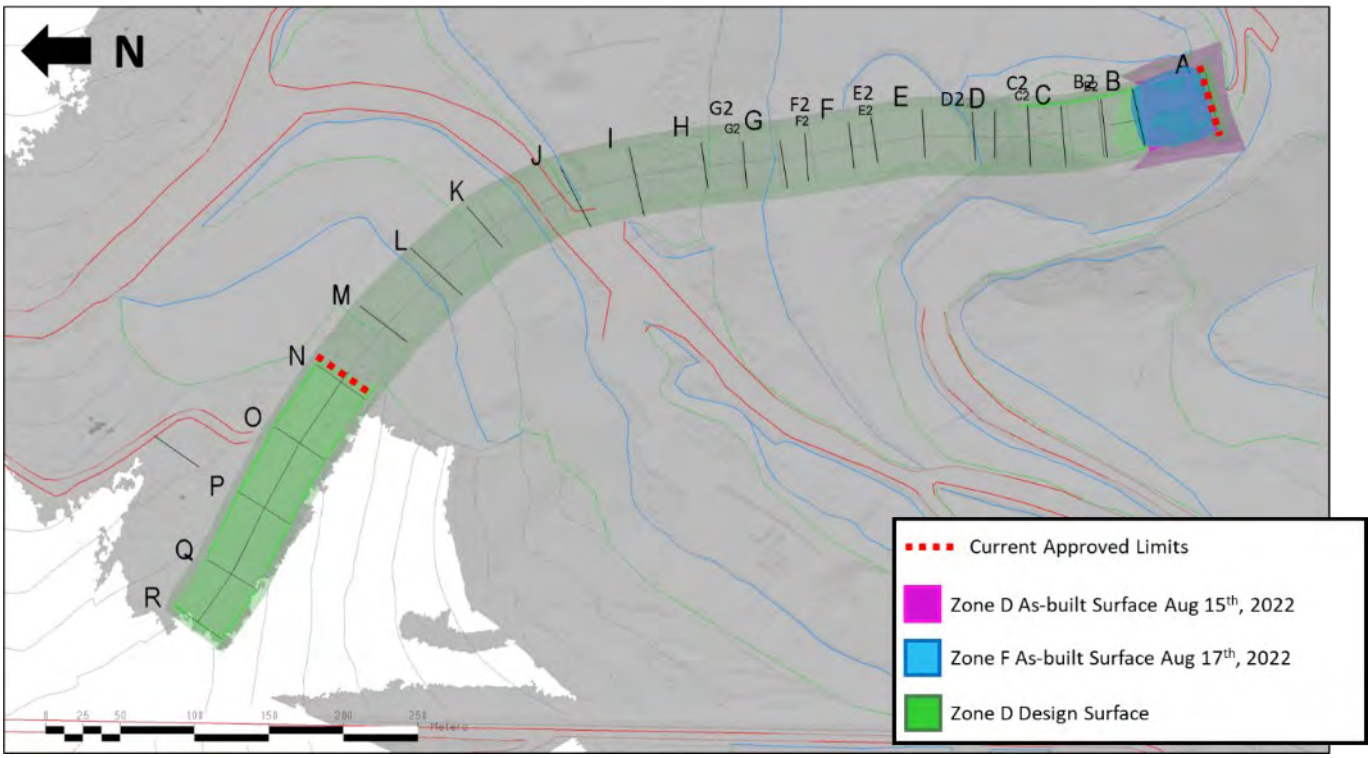


Figure 2.1-3: EP WRSA Rock Drain Development Status – January 1, 2023

Photo 2.1-8: EP WRSA Rock Drain Construction – February 10, 2022

Photo 2.1-9: EP WRSA Rock Drain Zone D Construction – April 28, 2022

Photo 2.1-10: EP WRSA Rock Drain Construction – August 1, 2022

Photo 2.1-11: EP WRSA Rock Drain Construction Completed Upstream – August 17, 2022

2.1.1.6 Maintenance Truck Shop

Construction on the maintenance truck shop started in May 2021. A pad for the building was cleared, east of the incinerator beside the entrance to the Mine. The 56m x 26m pre-engineered building contains an inbuilt crane system, and 5 bays including a wash bay and tracked vehicle bay. The external structure of the building was completed in 2021 along with the major infrastructure including the crane, and maintenance bays inside the facility. Power generation for the facility is still being finalized with current power supply sourcing from temporary generators. Permanent power hookup and completion of the facility was completed in January 2022.

Photo 2.1-12: Maintenance Truck Shop – May, 2022

2.1.1.7 Mine Water Treatment Plant

Preparations to construct the Mine Water Treatment Plant (MWTP) began in December 2021. Clearing and leveling of the MWTP pad also began in December 2021. Construction began in earnest in January 2022 as infrastructure began to arrive on site. The concrete floor and sumps were completed in Q1 of 2022. Following the ground work being completed, tank and infrastructure began to be installed throughout Q2. By the end of Q3 the tent had been erected to protect the infrastructure from winter weather. In December of 2022 all infrastructure had been erected and installed so that electrical and computer logic systems could be tested. The filter press of the MWTP was delayed and did not arrive for installation until March 2023.

Photo 2.1-13: Status of MWTP Pad and Foundation Development - March 22, 2022

Photo 2.1-14: MWTP Foundation, Chemical Precipitation and Filter Press Tank - May 12, 2022

Photo 2.1-15: Completion of MWTP Tent Frame Enclosure - August 2022

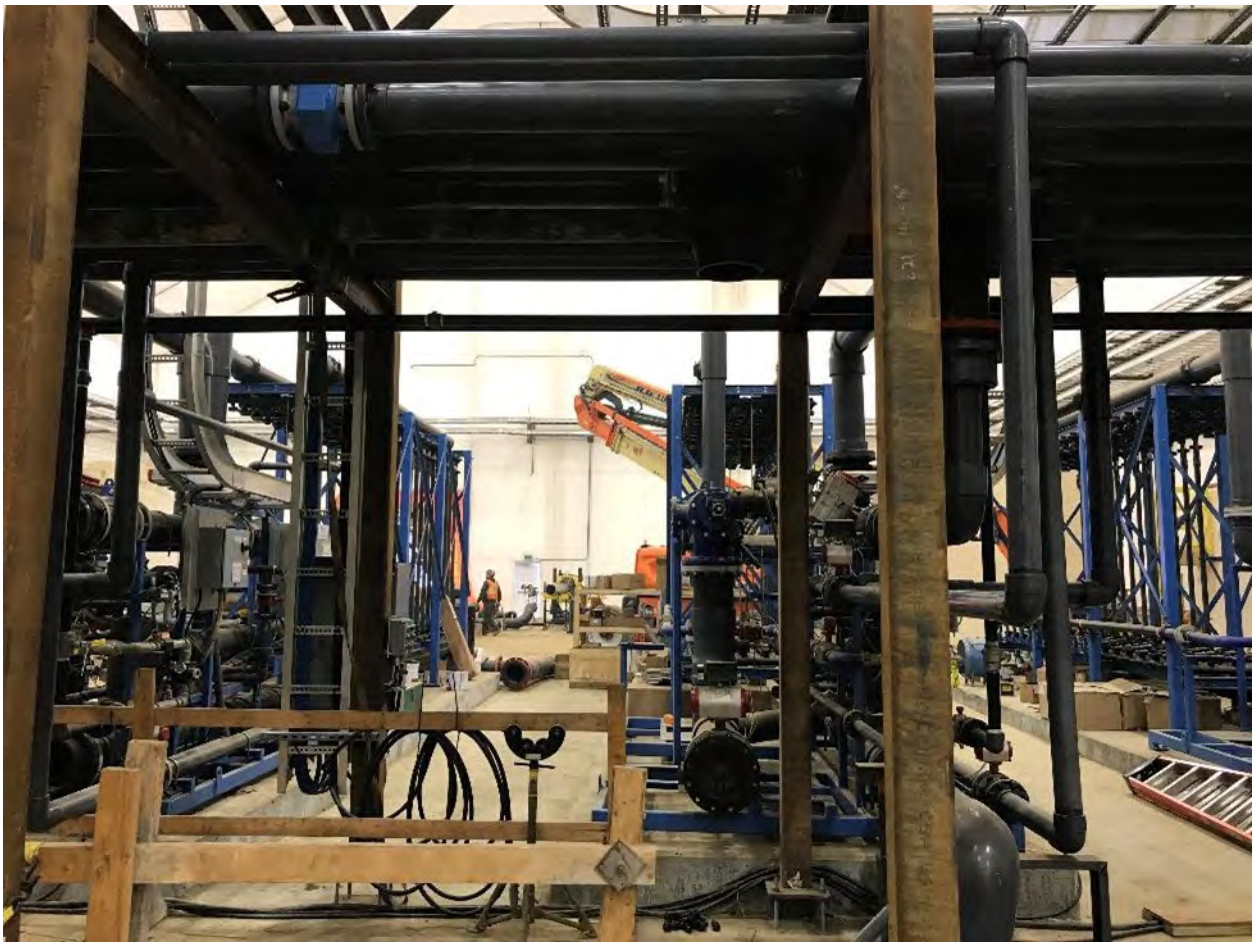


Photo 2.1-16: Microfiltration Skids Installation - October 12, 2022

2.1.1.8 Supplemental Water Storage Pond

During 2022, Desired Available Storage concerns warranted the construction of an additional storage pond for potential emergency storage capacity on the Project. The non-lined containment pond was constructed within the Dublin Gulch valley however due to diligent water management actions was never utilized. The containment pond construction was finalized by the end of May 2022.

Photo 2.1-17: Supplemental Pond Construction - May 19, 2022

2.2 Overview of Mining

2.2.1 Ore, Waste and Gold Production

For 2022, the total amount of ore and waste mined in the reporting period was 17.5 Mt, of which 7.1 Mt was ore and 10.4 Mt was classified as waste (representing a strip ratio of 1.46:1 waste to ore). Of the mined ore, approximately 6.6 Mt was stacked on the HLF with an average gold grade of 0.85 g/t. 150,183 ounces of gold was produced and 139,598 ounces were sold. Based on analysis of the mined ore and the HLF metallurgical model, there was an estimated 90,692 recoverable ounces within the mineral inventory (i.e., in solution/stacked ore on the heap, or in broken inventory). The production rates realized in 2022 were below the planned rates provided in the 2021 annual reports for QML-0011 and QZ14-041-1.

Material was removed from Phases 2 and 3 of the pit area during the reporting period. Ore removed from the pit was delivered to the primary crusher and waste rock was primarily sent to the EP WRSA with a very small volume also directed to the PG WRSA. Waste rock material deposited into the WRSAs was classified by the following six different lithologies:

- Oxidized granodiorite: Pervasive oxidation, relatively continuous throughout the whole rock. Granodiorite may also be altered by sericite/clay but is within the oxide zone. Rock may be friable.
- Altered granodiorite: Dominantly sericite/clay altered granodiorite. Original texture may be obliterated. May see zones of sheared or faulted granodiorite with intense sericitization and few remnant granodiorite particles.
- Unaltered fresh granodiorite: Oxidation weak and restricted to fractures or weakly in vein selvages. Rock is competent and not wholly altered.
- Oxidized metasediments: Hornfels Hyland Group metasediments with whole rock oxidation.
- Fresh metasediments: Hornfels Hyland Group metasediments with no oxidation, may be altered (likely silicified).
- Overburden: Generally, colluvium.

The mass and volume of waste rock by lithology delivered to the EP and PG WRSAs in 2022 is depicted in Figure 2.2-1 and Figure 2.2-2, respectively. The configuration of the Eagle Pit and the PG and EP WRSAs at the end of 2022 is shown in Figure 2.2-3 and Figure 2.2-4, respectively.

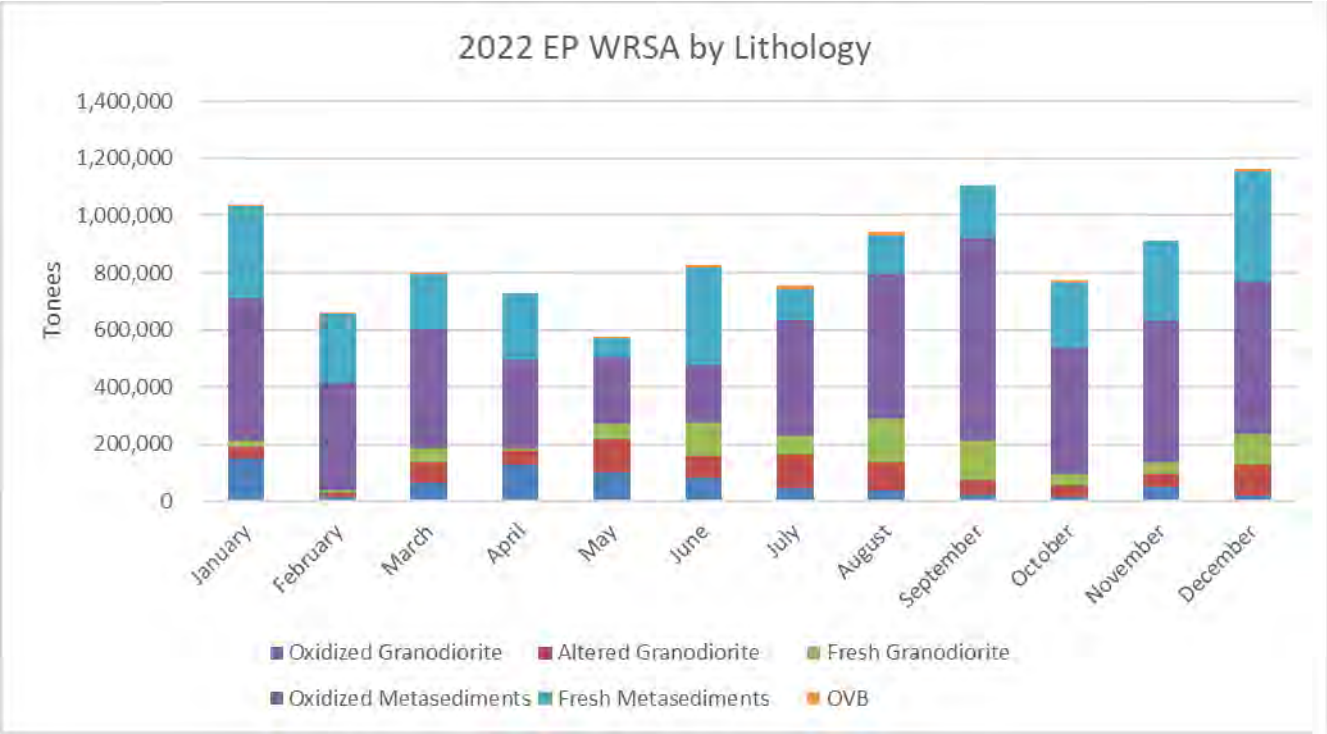


Figure 2.2-1: Waste Rock Deposited in the EP WRSA by Lithology in 2022

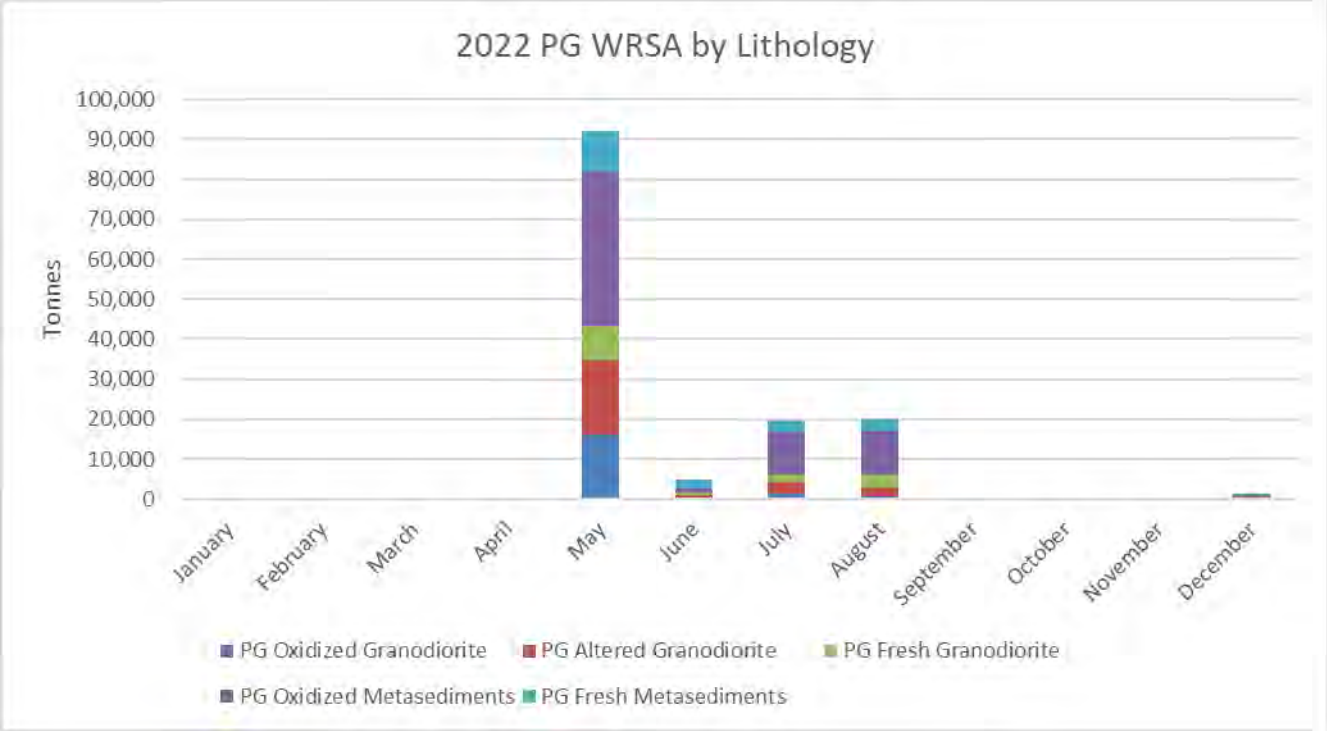


Figure 2.2-2: Waste Rock Deposited in the PG WRSA by Lithology in 2022

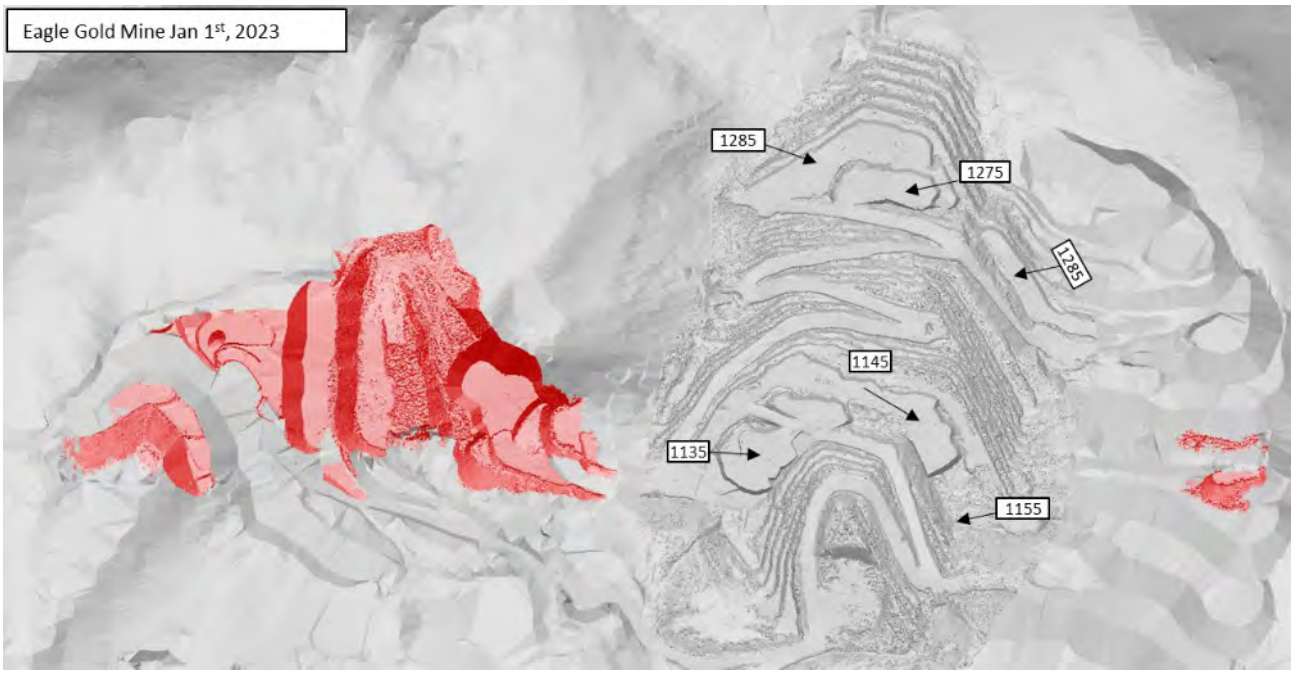


Figure 2.2-3: Eagle Pit Configuration at End of 2022

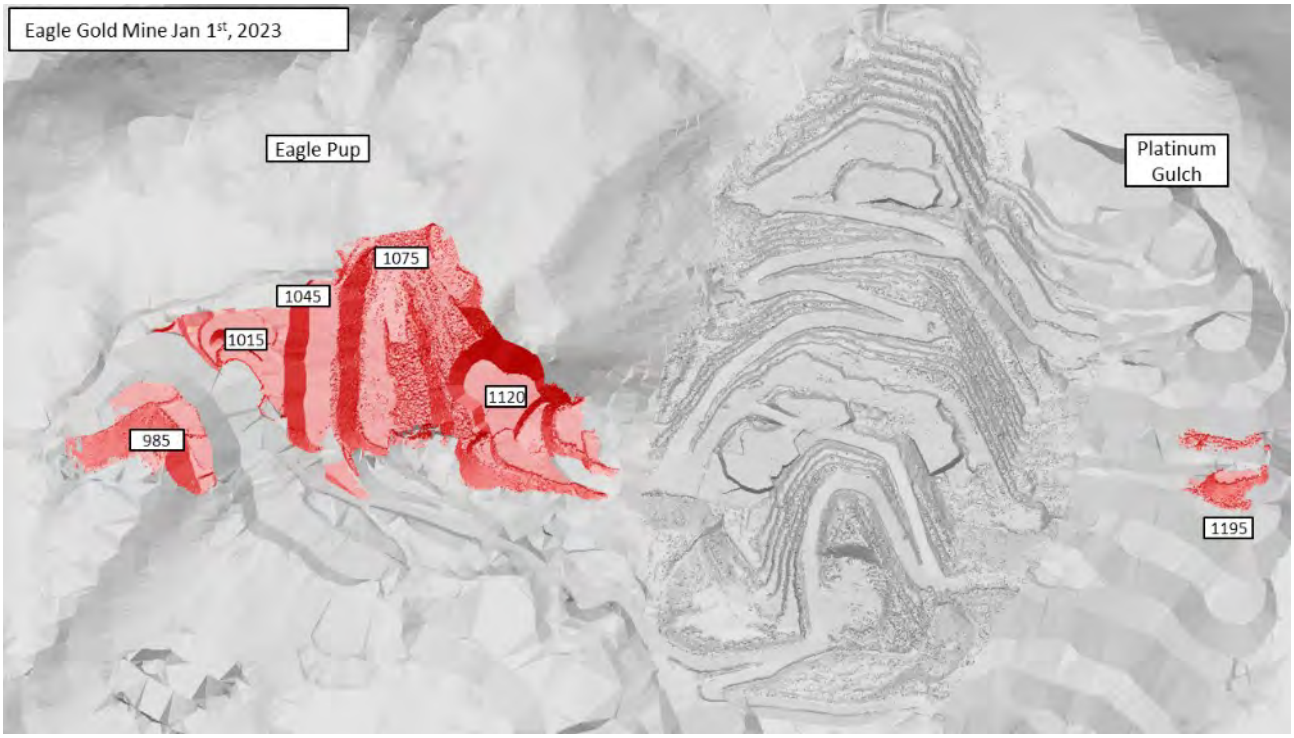


Figure 2.2-4: PG and EP WRSAs Configuration at End of 2022

The mass and volume of ore by lithology delivered to the HLF in 2022 is depicted in Figure 2.2-5.

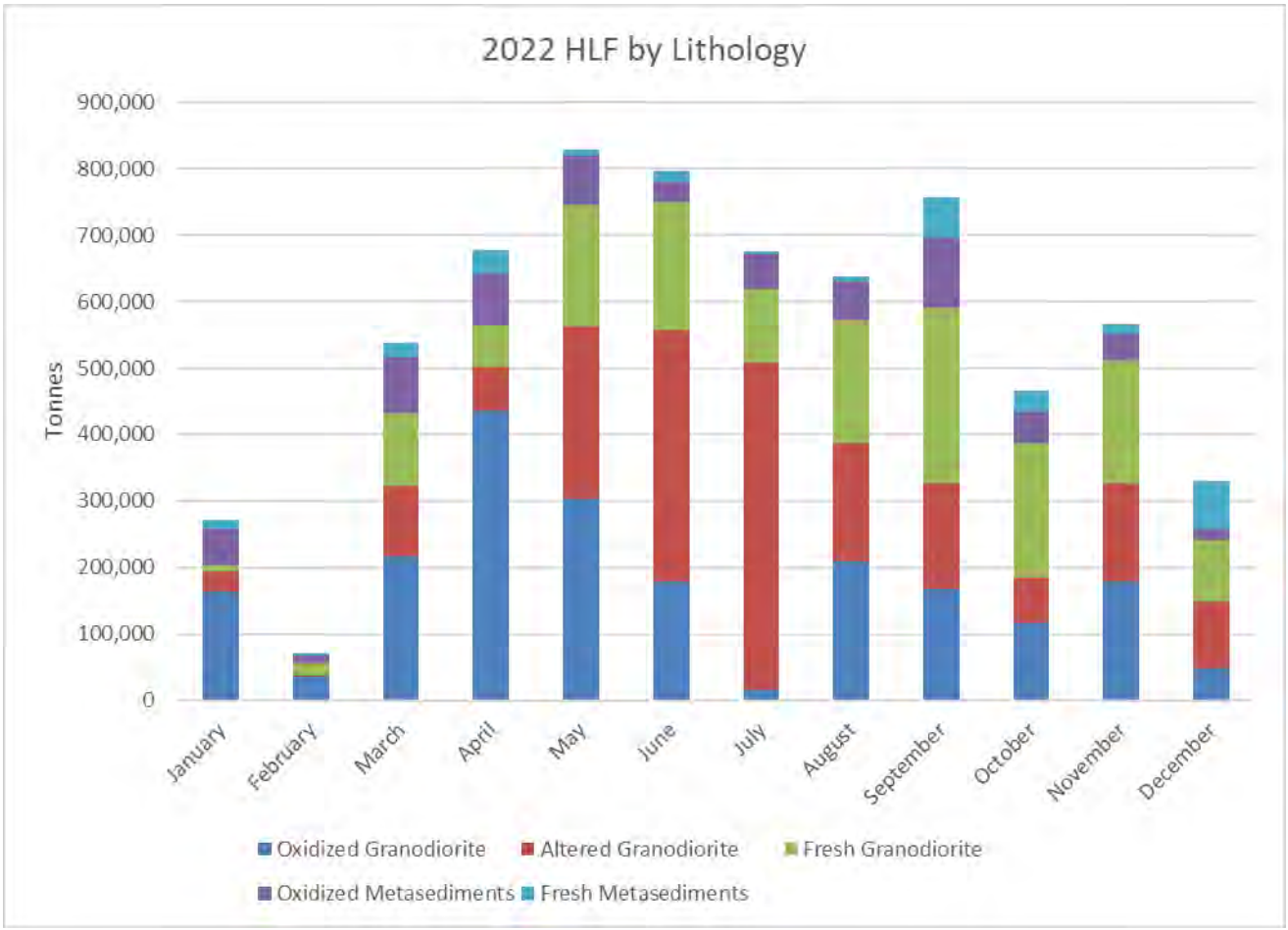


Figure 2.2-5: Ore Deposited in the HLF by Lithology in 2022

Ore stacking and leaching during the 2022 reporting period was contained within the Phase 1 HLF area. Overliner Drain Fill (ODF), which consisted of mineralized material, was placed on the Phase 2A for the protection of the liner. The leaching area within Phase 1 fluctuated over the year based on operational considerations (new areas under leach, areas for equipment, movement of distribution systems, etc.). At the end of the 2022 reporting period, approximately 168,000 m^2 was under leach.

The mass and volume of ore stacked within the HLF is provided in the Table 2.2-1. Lifts 1-11 are final benches and are sloped within the overall design criteria. The figure below depicts the configuration of the ore lifts at the end of the reporting period. Lift 12 is considered the active stacking lift, while Lifts 13 and 14 depict ODF placement.

Table 2.2-1: Volume and Tonnage of Ore Within HLF

Lift	Volume (m^3)	Tonnage
1	186,513	354,375
2	606,430	1,152,217
3	739,465	1,404,983

Lift	Volume (m^3)	Tonnage
4	890,034	1,691,065
5	1,057,466	2,009,186
6	593,631	1,127,899
7	661,131	1,256,148
8	718,815	1,365,749
9	787,351	1,495,966
10	2,125,321	4,038,110
11	2,380,700	4,523,330
12	1,983,215	3,768,108
13	105,265	200,003
14	42,229	80,236

Figure 2.2-6 provides a graphic depiction of the configuration of the ore lifts at the end of the reporting period.

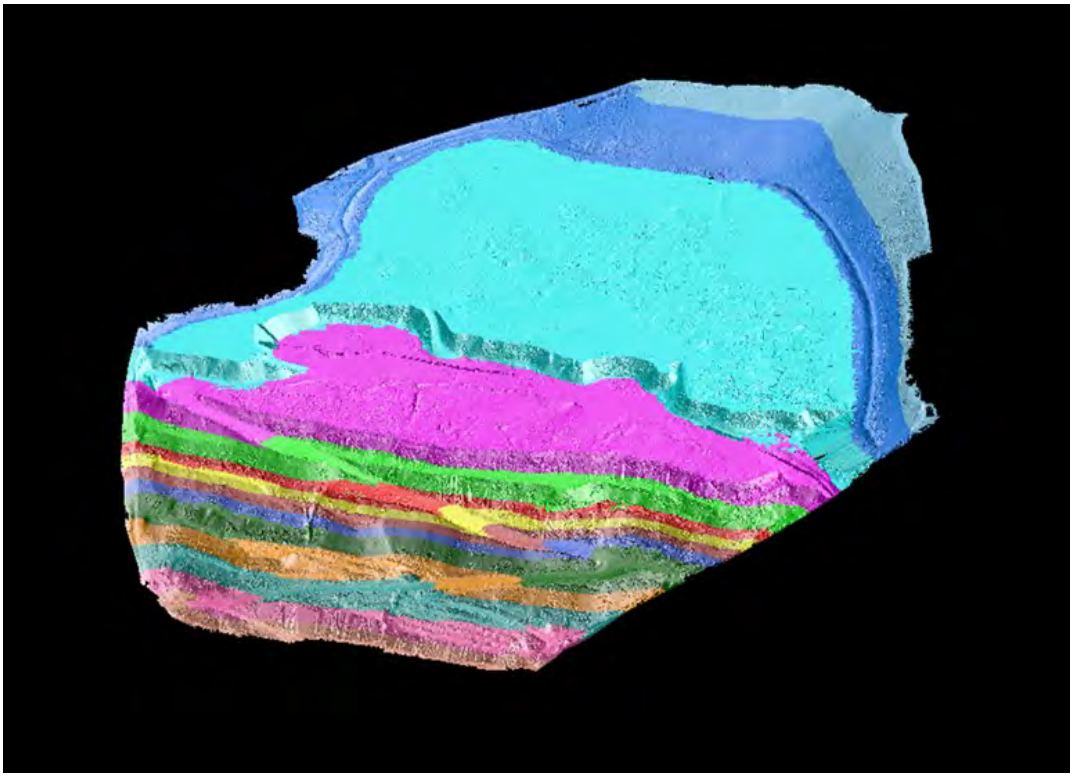


Figure 2.2-6: HLF Ore Stack Configuration at December 31, 2022 (not to scale)

Recovery from the ore stacked within the HLF trended up steadily throughout the year as the HLF and area available for leaching increased in size (Figure 2.2-7).

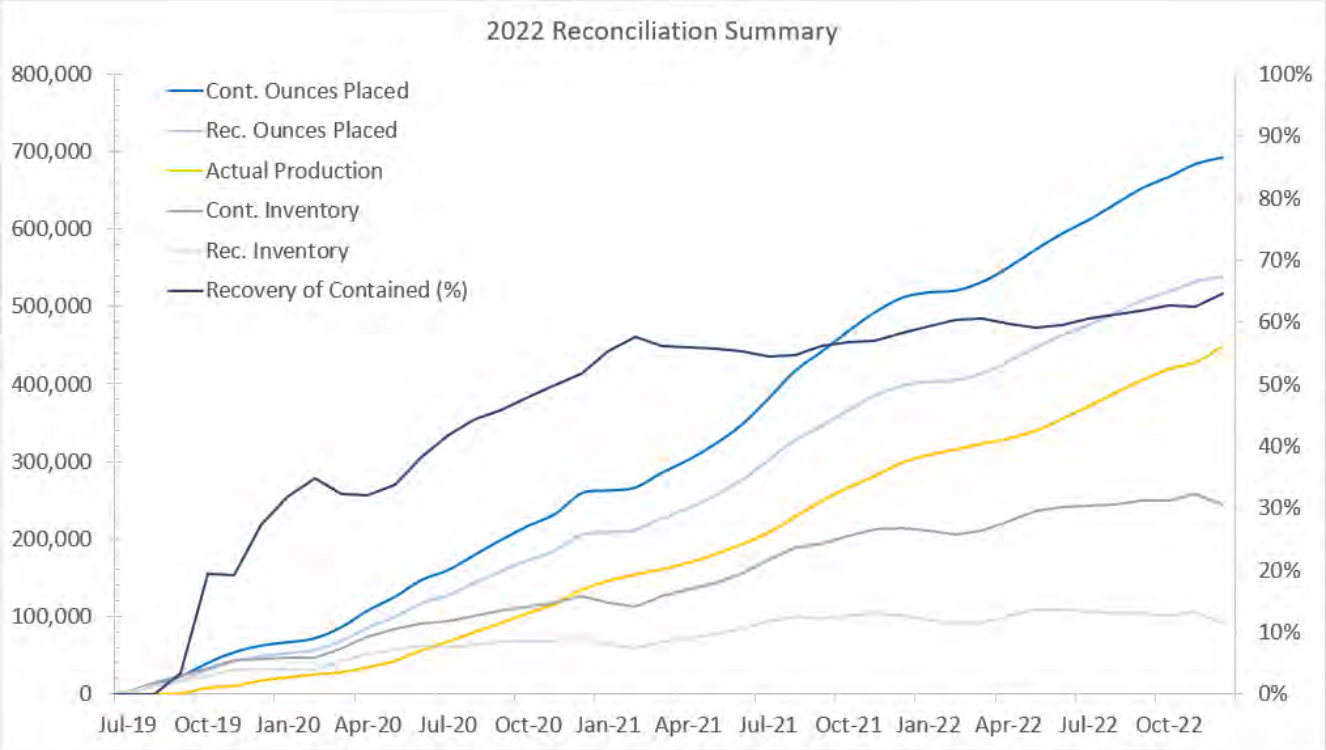


Figure 2.2-7: Gold Recovery Reconciliation 2022

Table 2.2-2 provides the 2022 production schedule on a monthly basis based on year end reconciled values.

Table 2.2-2: 2022 Production Schedule

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2022 Total
Ore													
Ore Mined Directly to Crushing Plant (t)[1]	193,942	108,171	404,649	537,516	648,318	549,489	503,213	508,071	480,471	458,406	379,243	250,331	**5,021,819**
Grade of Ore (incl direct to crushing plant & stockpile) (g/t)	0.74	1.07	0.79	1.00	0.96	0.95	0.84	1.05	0.84	1.16	0.95	0.86	**0.85**
ROM													
ROM To HLP/Overliner Drainage Fill (t)	52,811	-	-	-	-	-	-	-	-	-	-	-	**52,811**
Stockpile													
Ore tonnes mined to Stockpiles (t)[2,3]	277,319	225,485	319,004	246,477	197,367	230,025	402,136	219,292	340,610	327,267	311,919	150,113	**3,247,014**
Ore tonnes Drawn from Stockpiles (t)	53,419	83,752	251,516	223,050	267,113	310,264	339,477	231,103	402,439	198,622	275,759	132,891	**2,769,406**
Ore Tonnes Balance (t)	785,295	927,028	994,516	1,017,943	948,197	867,958	930,616	918,805	856,976	985,621	1,021,781	1,039,003	**N/A**
Total Ore Mined (t)	512,706	215,591	599,725	688,027	764,025	715,198	738,153	626,330	695,580	594,845	609,516	348,393	**7,108,090**
Total Ore Stacked (t)	271,262	71,696	538,457	676,951	830,719	796,105	675,090	638,340	757,410	466,200	566,880	330,760	**6,619,872**
Waste													
Waste Mined (includes ROM sent to Waste) (t)	973,310	525,352	776,232	715,094	737,603	709,475	676,461	1,138,762	1,239,400	849,538	875,956	1,190,983	**10,408,166**
Total Mined (t)	1,486,016	740,942	1,375,957	1,403,121	1,501,628	1,424,673	1,414,615	1,765,092	1,934,980	1,444,383	1,485,473	1,539,376	**17,516,256**
Daily Mining Rate (tpd)	47,936	26,462	44,386	46,771	48,440	47,489	45,633	56,938	64,499	46,593	49,516	49,657	**47,990**

NOTES:
1 - Ore directed to crushing plant either dispatched to sec/ter crushing then HLF or directed to stockpiles
2 - Ore mined to stockpiles includes direct haul from pit and a portion of primary crushed ore
3 - Stockpiles include primary crusher feed pile, 90day/secondary stockpile, temporary mobile crusher pile, and temporary in-pit

Over the life of the Eagle pit, based on the current mine plan and regulatory approvals, 86 Mt of ore will be processed and 116 Mt of waste (which includes a current estimate of ~16Mt of ROM material) will be placed in waste rock storage areas. The mine production to date is provided below in Table 2.2-3.

Table 2.2-3: Mine Production to Date

	2019	2020	2021	2022	Life of Undertaking Total
Total Waste Mined (Mt)	2.2	12.4	14.9	10.4	**39.9**
PG WRSA	2.2	12.4	12.1	0.2	**26.9**
EP WRSA	0	0	2.8	10.2	**13.0**
Total Ore Mined (Mt)	2.5	7.5	9.5	7.1	**26.6**
Total to Heap (Mt)	2.5	7.3	9.2	6.6	**25.6**
Total Material Mined (Mt)	**4.9**	**19.9**	**24.4**	**17.5**	**66.5**

NOTES:
1 - Values may not total due to rounding.

2.2.2 Reserve and Mine Life Update

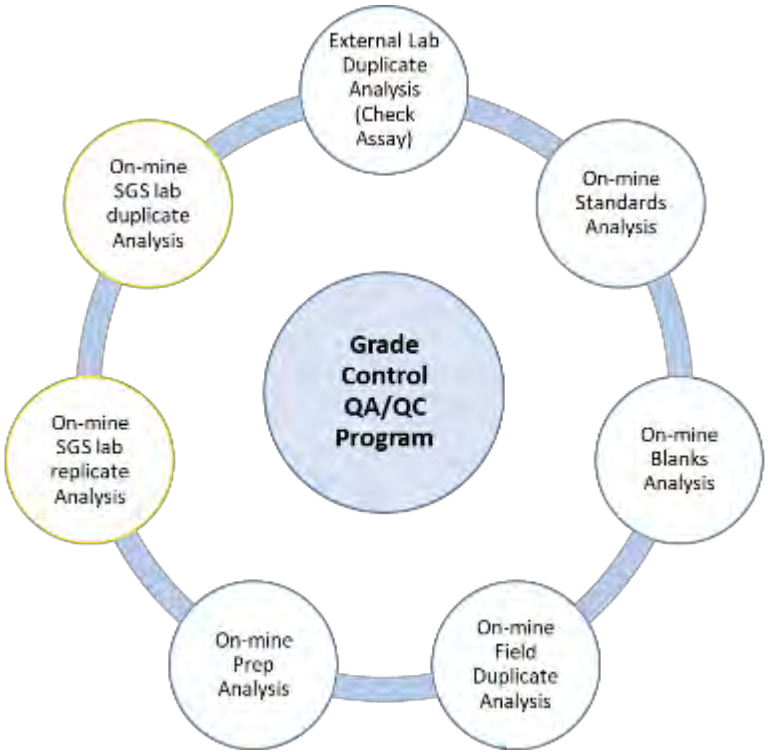
The information below is a summary of the publicly available disclosure made by VGC as part of the required filings as a TSX Listed company. This information is not based on current regulatory approvals granted for the Mine.

The Mineral Reserve for the Mine is based on the Mineral Resource estimate for Eagle and Olive (JDS 2019 - the Technical Report). The Mineral Reserves were developed by examining each deposit to determine the optimal and practical mining method. Cut-off grades were then determined based on appropriate mine design criteria and the adopted mining method. A shovel and truck open pit mining method was selected for the two deposits. The estimated Proven and Probable Mineral Reserves, effective December 4, 2019, total 155M t at 0.65 g/t Au, containing 3,261k oz gold prior to mining activities. Reserve depletion up to November 15, 2019 totaled 2.44M t at 0.82 g/t and 64.5k oz.

Since the date of the Technical Report, VGC has continued to produce gold from its Eagle Mine. The Company had production of 164,222 ounces of gold in 2021 along with production from December 4, 2019 to December 31, 2020 of 123,543 ounces. There are no new material scientific or technical information that would make the disclosure of mineral resources, mineral reserves or results of the Technical Report inaccurate or misleading. The following tables indicate the gold mineral reserves as at December 31, 2022.

2.3 Quality Assurance and Quality Control Program for Mine Operations

For all production blast patterns, with the exception of trim shots (pre-shear), one sample per blast hole is collected from blast hole cutting. The blast holes are spaced according to the Engineer design and range from 6 to 7 meter spacing on average. Samples are collected, described, matched & georeferenced to a blast hole pattern map and subsequently entered into a database which is updated and reviewed on a daily basis to inform material placement decisions (ore waste discrimination).



Note:
Additional QA/QC workd done by onsite assay laboratory circled in yellow

Figure 2.2-8: Design of Grade Control QA/QC Program.

For the purposes of mine operations, the Eagle Gold Quality Assurance/ Quality Control (QA/QC) protocol includes Blanks (3 per 100 samples), Certified Reference Material (standards, 3 per 100 samples), Field Duplicates (2 per 100 samples) and Preparation duplicates (2 per 100 samples) analyzed by the onsite assay laboratory. In total, QA/QC samples represent approximately 10% of the total blast hole sample program.

2.3.1 QA/QC Failure Investigation and Correction Program

QA/QC failures are associated with standards and blanks reporting values outside of the parameters expected for each sample, and in this case, values above or below three standard deviations are investigated on a case-by-case basis. In general, when a standard or blank fail, or the samples before and after (5-10 samples) the failed QC sample is then analyzed. If necessary, the laboratory is requested to re-analyze the whole sample batch and report assay results again. QC failures as well as actions taken for correction are logged into a datasheet for recording assay certificate number, sample number and a brief description of problem and actions.

2.3.2 External QA/QC Program

For 2022, 10% of sample pulps are resubmitted from the onsite laboratory to an external laboratory (Bureau Veritas), where pulps are analyzed for gold with fire assay and ICP-MS analysis for 37 elements. These results are compared with onsite laboratory results to determine linear correlations, variance and the coefficient of determination.

2.4 Proposed Development & Production in 2023

2.4.1 Field Supervisor

In 2023, the field supervisor for the Mine is Victoria's Vice President and General Manager Mr. Timothy Fisch (phone: 867-456-7700 extension 6444).

2.4.2 Additional Construction Activities

2.4.2.1 HLF Fixed Conveyor System

As stacking progresses upslope on the HLF, the fixed conveyor system also advances to support the integrated conveyors system from the crushing facilities up to the mobile conveyor and stacking system. The avance of the conveyor system on the eastern side of the HLF will continue in 2023.

2.4.2.2 Mine Water Treatment Plant

Final construction of the MWTP will continue in 2023 with a target completion date of March. The primary treatment equipment was all successfully installed in 2022 with only filter press and related infrastructure outstanding at year end.

2.4.2.3 HLF Phase 2

In 2023, liner installations and foundation preparations in the area of Phase 2 of the HLF will continue. It is currently anticipated that liner installations will commence in late May/early June concurrent with additional foundation works. The current mine plan contemplates ore placement on Phase 2 of the HLF once the MWTP construction has been completed (Q1 2023)..

2.4.2.4 EP WRSA Rock Drain Progressive Development

As discussed in Section 2.1, construction of the EP WRSA rock drain was initiated in 2021. Construction of the rock drain will continue throughout 2023 in advance of waste rock placement as access is developed to each successive construction zone. The drain will continue to be constructed out of non-metal leaching, non-acid generating, clean, durable rock that is resistant to weathering. The material will also be free from organic matter, frozen soil, snow, ice and overburden soil materials. The construction will continue to follow the EP WRSA minor modification design criteria (Knight Piesold, 2020b).

2.4.3 Production Activities

The production activities planned by VGC for 2023 assume the continued development of the Eagle Pit with waste dispatched primarily to the EP WRSA with small volumes possible strategically placed within the PG WRSA to complete waste deposition within that facility. Table 2.4-1 provides the currently assumed peak mining operations for the year. Figure 2.4-1 to Figure 2.4-8 provides monthly development maps for the pit, WRSAs and the HLF.

Table 2.4-1: 2023 Production Schedule

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2023[1] Total
Ore													
Ore Mined Directly to Crushing Plant (t)[2]	652,800	583,680	637,440	399,360	729,300	761,600	933,000	913,400	903,600	639,000	861,600	885,400	**8,900,179**
Grade of Ore (g/t)	1.13	0.79	1.07	0.65	0.90	0.86	0.77	0.74	0.74	0.79	0.66	0.69	**0.81**
ROM													
ROM To HLP (t)	-	-	-	-	-	-	-	-	-	-	-	-	**-**
Stockpile[3]													
Ore tonnes mined to Stockpiles (t)	100,000	100,000	100,000	100,000	100,000	100,000	-	-	-	-	-	-	**600,000**
Ore tonnes Drawn from Stockpiles (t)	100,000	100,000	100,000	100,000	100,000	100,000	-	-	-	-	-	-	**600,000**
Ore Tonnes Balance (t)	1,004,746	1,004,746	1,004,746	1,004,746	1,004,746	1,004,746	1,004,746	1,004,746	1,004,746	1,004,746	1,004,746	1,004,746	**N/A**
Total Ore Mined (t)[1]	752,800	683,680	737,440	499,360	829,300	861,600	933,000	913,400	903,600	639,000	861,600	885,400	**9,500,179**
Total Ore Stacked (t)	752,800	683,680	737,440	499,360	829,300	861,600	933,000	913,400	903,600	639,000	861,600	885,400	**9,500,179**
Waste													
Waste Mined (t)	1,580,017	1,273,021	1,467,703	1,695,760	1,313,636	1,088,289	1,067,000	1,099,880	1,144,289	1,273,436	1,811,004	1,874,184	**16,688,218**
Total Mined (t)	2,332,817	1,956,701	2,205,143	2,195,120	2,142,936	1,949,889	2,000,000	2,013,280	2,047,888	1,912,435	2,672,604	2,759,584	**26,188,397**
Daily Mining Rate (tpd)	75,252	69,882	71,134	73,171	69,127	64,996	64,516	64,945	68,263	61,691	89,087	89,019	**71,749**

NOTES:
1 - Production targets are based on peak operability assumptions and may exceed permit terms. Values adjusted during operations.
2 - All ore directed to primary crushing assumed to be processed through full crushing circuit and to HLF
3 - Stockpiles include primary crusher feed pile, 90day/secondary stockpile, temporary mobile crusher pile, and temporary in-pit

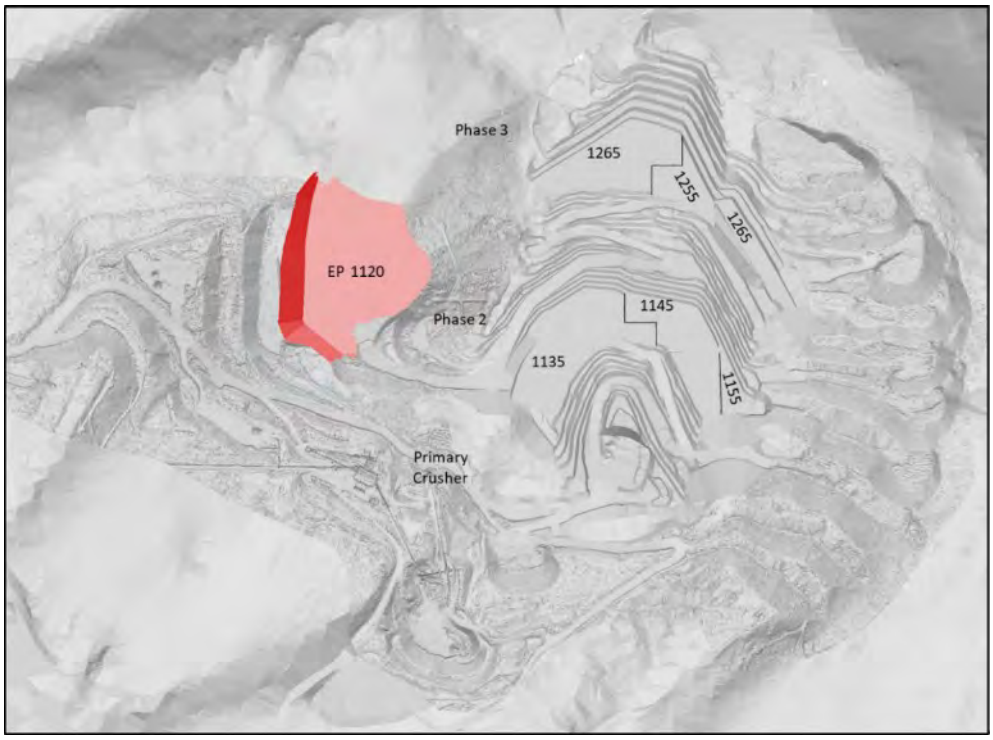


Figure 2.4-1: End March 2023 Planned Eagle Pit and WRSA Development

Figure 2.4-2: End March 2023 Planned HLF Development

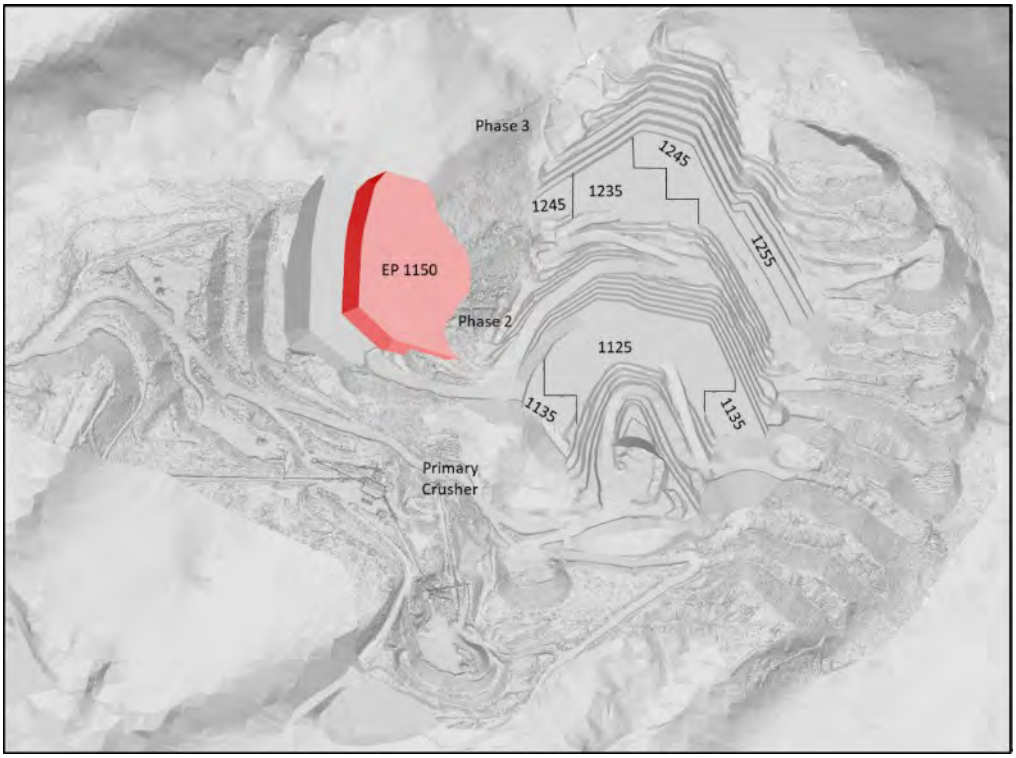


Figure 2.4-3: End June 2023 Planned Eagle Pit and WRSA Development

Figure 2.4-4: End June 2023 Planned HLF Development

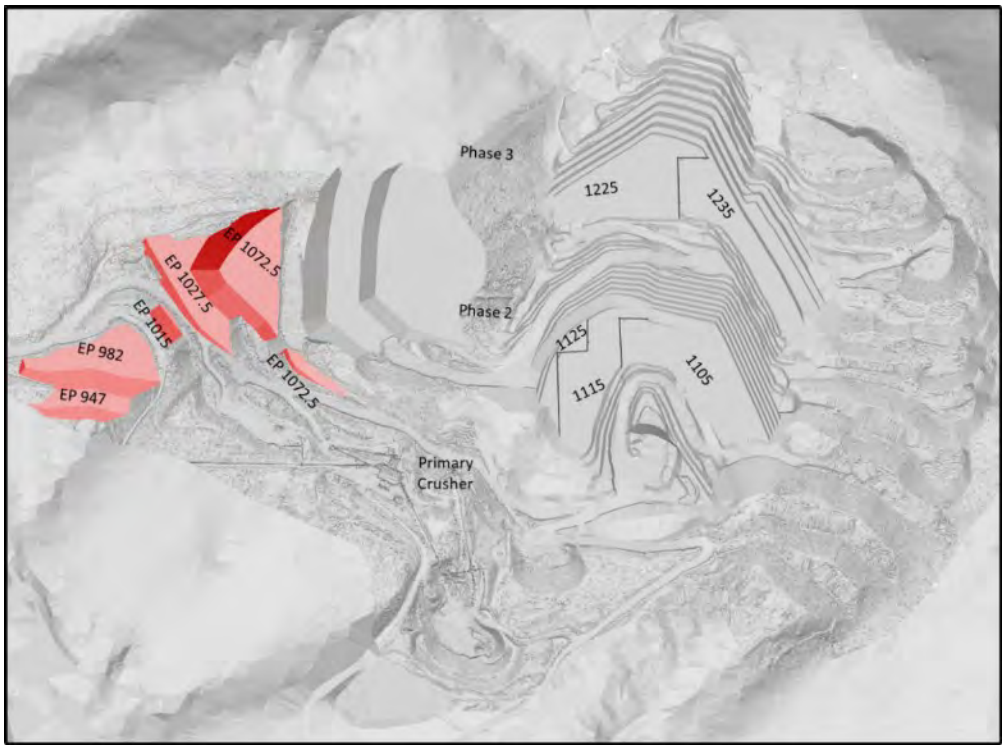


Figure 2.4-5: End September 2023 Planned Eagle Pit and WRSA Development

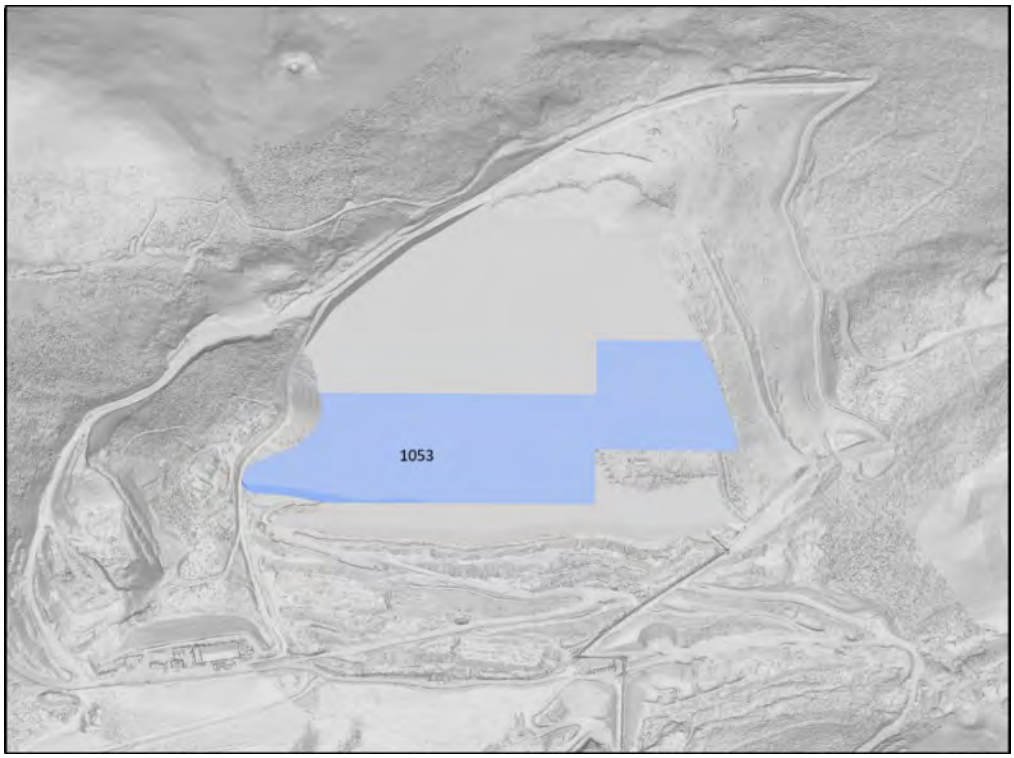


Figure 2.4-6: End September 2023 Planned HLF Development

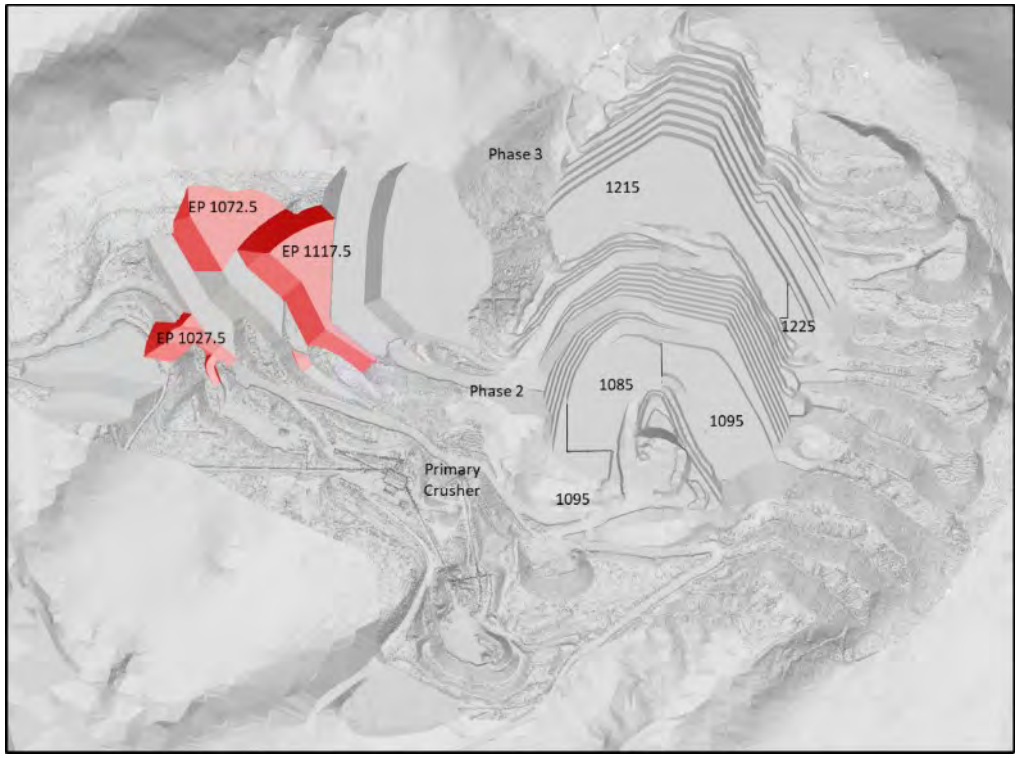


Figure 2.4-7: End December 2023 Planned Eagle Pit and WRSA Development

Figure 2.4-8: End December 2023 Planned HLF Development

2.5 Description of Water Use and Deposit of Waste

2.5.1 Description of Water Use

2.5.1.1 Water Use

Potable water to supply the camp continued to be sourced from the groundwater well (MW10-DG07) located to the north of the main camp. Daily usage remained below the authorized daily limit of 157 m^3/day, averaging approximately 57 m^3/day throughout the year, while ranging between a minimum of 18 m^3/day to 110 m^3/day (Figure 2.5-1). Average monthly water usage rates were greatest in August (69 m^3/day) and the least during January (49 m^3/day). On September 8, 2022 the flow meter utilized for consumption tracking failed and was replaced on November 4, 2022; the average usage rate of 57 m^3/day for the year was assumed for that period to calculate annual and monthly totals.

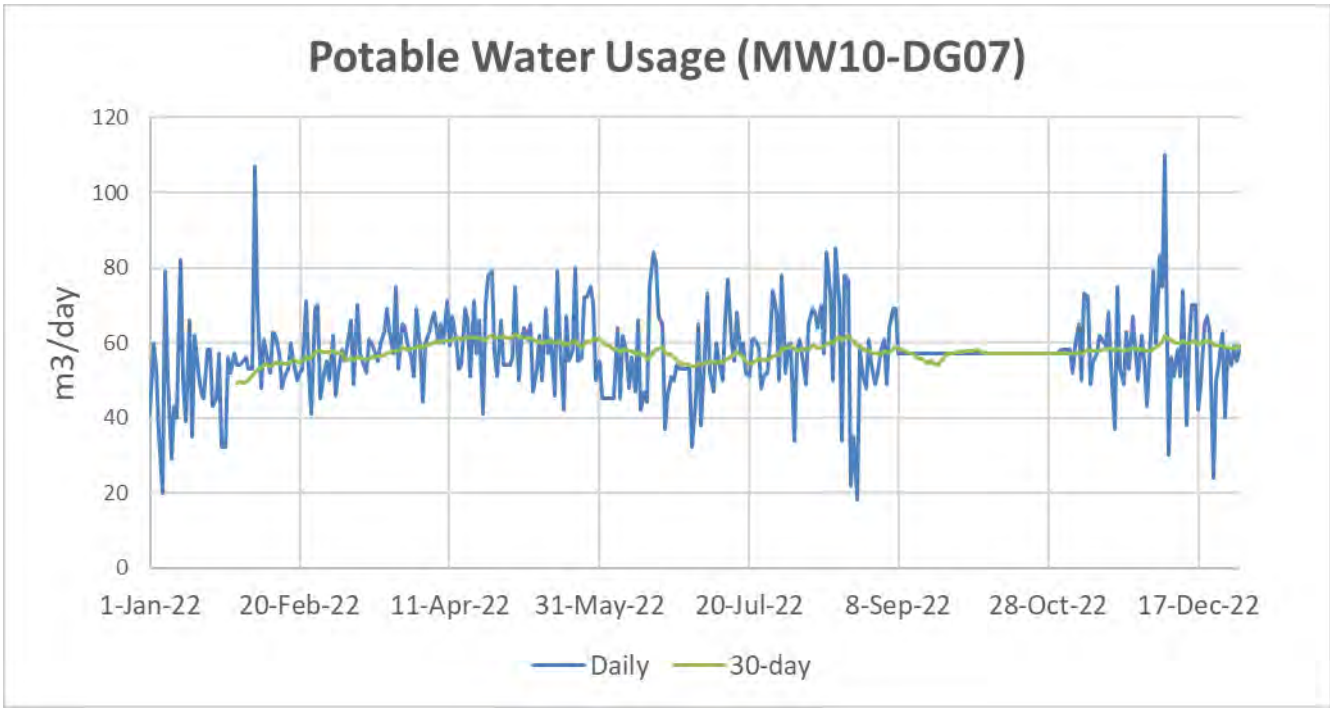


Figure 2.5-1: Daily Potable Water Usage in 2022

Water supply for drilling was sourced from the Camp Well (PW-JDS18-001) located just north and adjacent to Dorm A. Usage was intermittent throughout each month, ranging from 2.4 m^3/month in February to over 135 m^3/month in March, with an annual average of 0.9 m^3/day (Figure 2.5-2). The maximum usage in one day was 17.6 m^3/day on March 24, 2022.

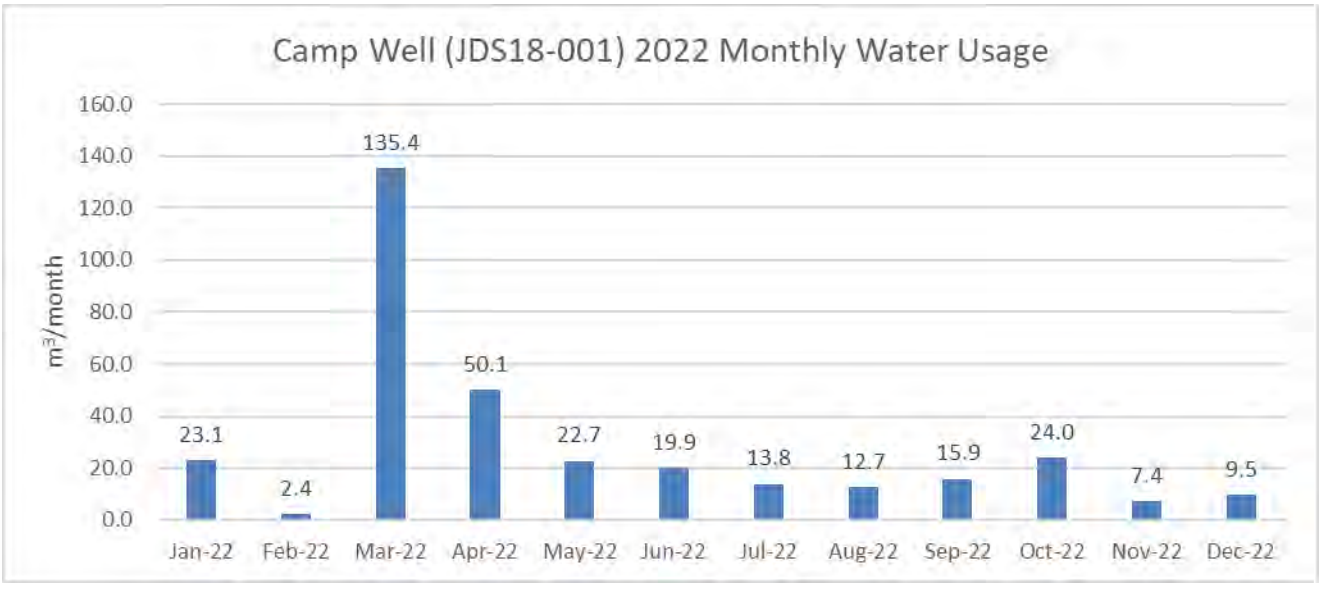


Figure 2.5-2: Monthly Camp Well Usage for Drilling in 2022

During 2022, approximately 33,400 m^3 of water was used for dust suppression. Usage peaked in July with a total consumption of 9,750 m^3, or an average daily rate of 315 m^3/day (Figure 2.5-3). The daily maximum at any given time was 875 m^3/day, which was less than the licensed daily allowable usage rate of 908 m^3/day.

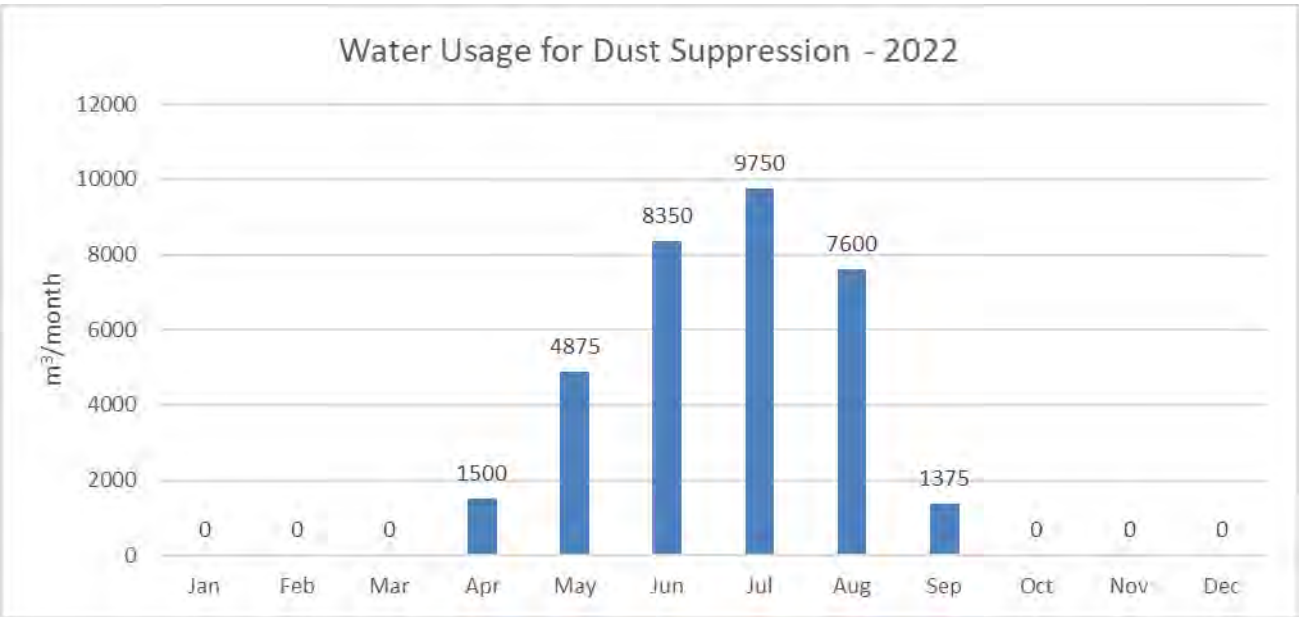


Figure 2.5-3: Water Usage for Dust Suppression in 2022

Total annual water usage for gold processing (water from ponds and groundwater used for leaching and rinsing ore) was ~646 m^3/day, which was within the QZ14-041-1 limit of 3,387 m^3/day. This is discussed further in Section 2.6 as part of the HLF Solution Inventory Monitoring Program.

2.5.1.2 Water Storage

Water licence condition #134a(ii) requires records of the measurement of water volume inventories in the HLF, storage ponds, and sediment control ponds, and in this case the Events Pond, In-Heap Pond and the LDSP. The amount of water stored within the Events Pond and LDSP are calculated based on regular surveys of fluid elevations in each pond. The In-Heap Pond is determined based on piezometer measurements of the fluid elevations levels within the HLF. More detail on the volumes of water associated with the HLF are described in Section 2.6.1 (HLF Solution Inventory Monitoring Program). Month-end volumes for these three ponds are provided in Table 2.5-1.

Table 2.5-1: Month End Pond Volume Inventories in 2022

End of Month	Month End Volume of Water Stored in Events Pond (m^3)	Month End Volume of Water Stored in LDSP (m^3)	Month End Volume of Water Stored in the In-Heap Pond (m^3)
January	84,294	35,883	25,680
February	99,913	24,327	34,915
March	108,327	6,152	16,407

End of Month	Month End Volume of Water Stored in Events Pond (m^3)	Month End Volume of Water Stored in LDSP (m^3)	Month End Volume of Water Stored in the In-Heap Pond (m^3)
April	190,022	31,986	23,867
May	215,768	27,899	40,269
June	156,056	55,276	24,215
July	112,459	38,806	20,347
August	101,104	56,601	35,445
September	108,846	51,688	40,910
October	197,669	60,309	53,238
November	250,414	36,127	48,178
December	251,823	49,893	35,793

Figure 2.5-4 compares the daily total available combined storage in the Events Pond and the In-Heap Pond throughout 2022 with the QZ14-041-1 Desired Available Storage (DAS) and the monthly changing (or operational) DAS calculated assuming the actual leaching rate. The QZ14-041-1 DAS is conservatively calculated assuming the potential maximum leaching rate of 2,070 m^3/hr for a 72-hour draindown, plus consideration for the 24-hour rainfall event and 0.5 m of freeboard. However, the actual leaching rate varied from about 1,415 m^3/hr during February 2022 to 1,866 m^3/hr in December, both below the potential maximum rate assumed in the licence calculation (Table 2.5-2), thus the operational DAS requirement was below the QZ14-041-1 DAS requirement throughout the year.

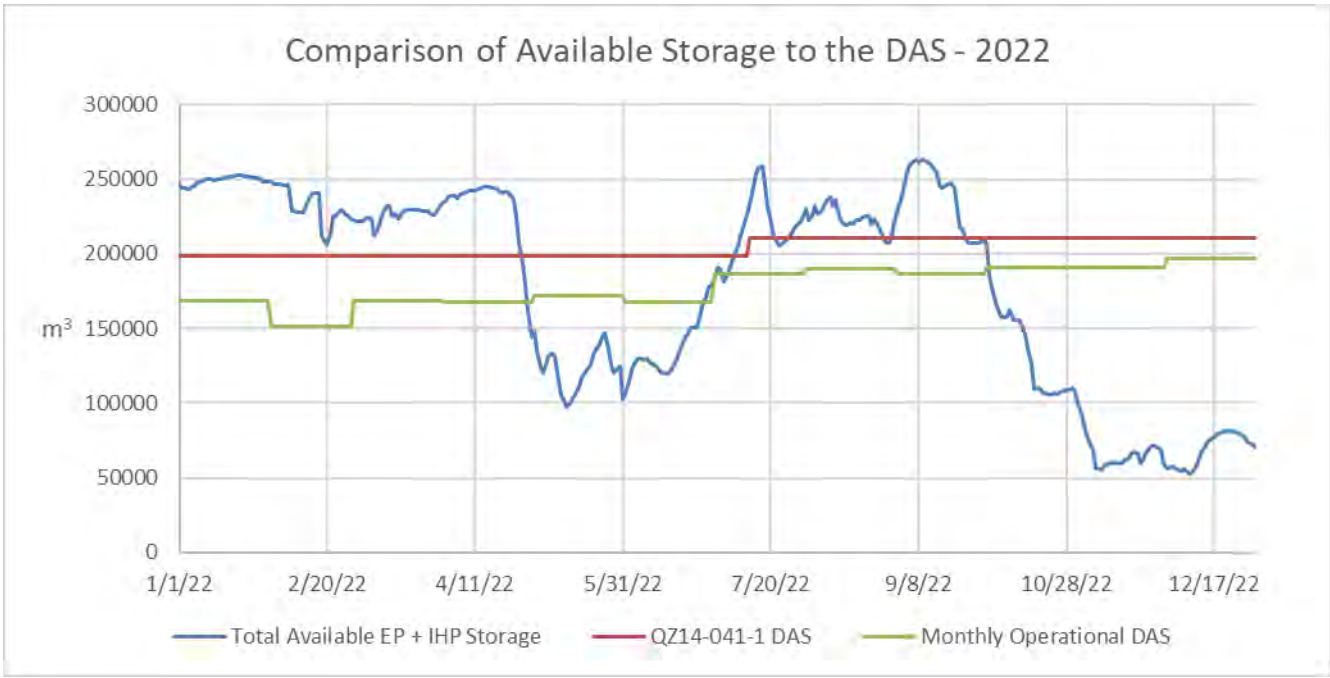


Figure 2.5-4: Comparison of Available Storage Volume to the Desired Available Storage Requirements

Available storage fluctuated in response to heap water demands, the timing of snowmelt (freshet) and rainfall, and the transfer of water between ponds as part of the overall water management strategy to minimize the risk of

an unauthorized discharge. Available storage was at a maximum (~250,000 m^3) in January and early February, a brief period in mid-July and again in early September. Available storage decreased through freshet and was below both the operational and license DAS threshold from late April to early July, and then again from the beginning of October to the end of the year. During these periods, the minimum available storage fluctuated between 100,000 m^3 and 150,000 m^3 in May and June, and then later in the year from about 50,000 m^3 to 80,000 m^3.

The first incursion below the DAS was rectified by increasing production rates (over 26,000 t/day during May and June, compared to 2,500 to 22,500 t/day earlier in the year), while using as much water as possible (average water use went from ~560 m^3/day in April to over 2,000 m^3/day in May – see Figure 2.5-5) and then by discharging ~108,000 m^3 in June/July and another ~56,000 m^3 in late August/early September to the receiving waters (further discussed Section 2.5.2). After that the available storage continued to decrease during September and October and remained at a minimum throughout November and December, while anticipating the commissioning of the Mine Water Treatment Plant (MWTP) in January 2023, and knowing that there were no rainfall-runoff event possibilities during the winter. At the time of this report, the DAS had been fully restored by the successful and compliant operation of the MWTP in early 2023.

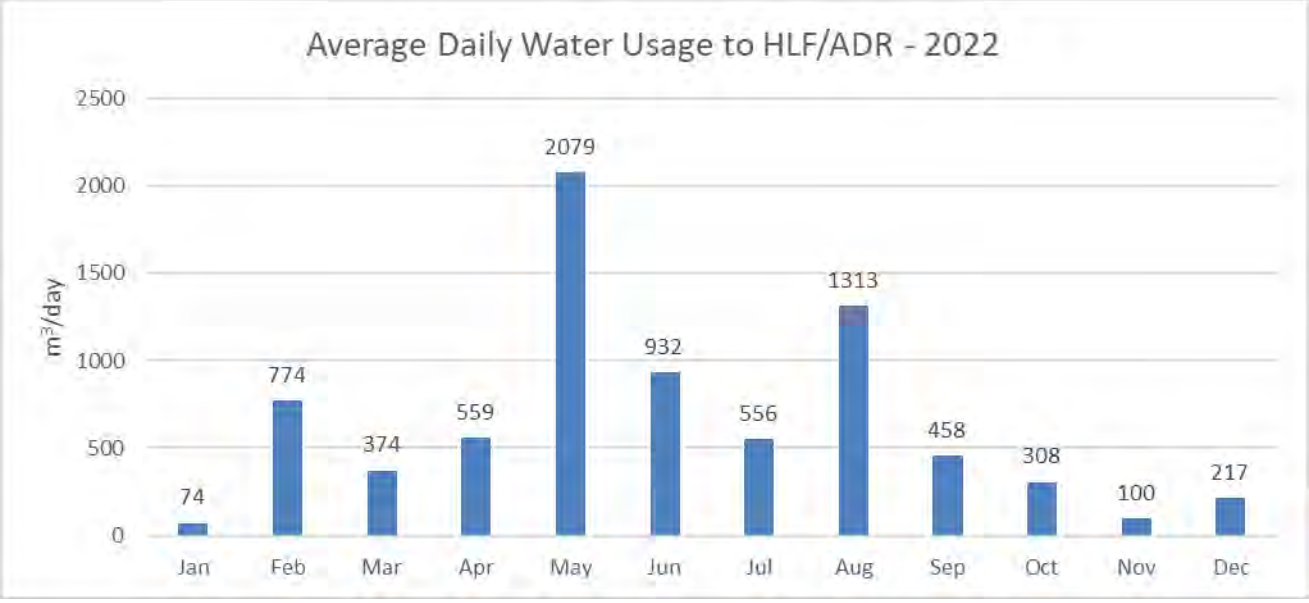


Figure 2.5-5: Average Daily Water Usage per Month for Process in 2022

Table 2.5-2: Monthly Operational Desired Available Storage Calculations in 2022

Month	Average Leach Rate (m^3/hr)	72-Hr Draindown (m^3)	0.5 m Freeboard (m^3)	24-Hr 100-yr Event Volume (m^3)	Monthly Operational DAS (m^3)
January	1,656	119,229	19600	29700	168,529
February	1,415	101,913			151,213
March	1,651	118,884			168,184
April	1,643	118,319			167,619
May	1,709	123,029			172,329
June	1,648	118,674			167,974
July	1,728	124,397		42499	186,496

August	1,771	127,526			189,625
September	1,728	124,387			186,485
October	1,784	128,435			190,534
November	1,792	129,001			191,099
December	1,866	134,332			196,431

Note:
1) Calculations assume a maximum Event Pond storage capacity of 300,577 m^3 and a maximum In-Heap Pond Volume of 57,763 m^3 for a combined storage of 358,340 m^3.
2) The Phase I and 2 interceptor ditch was decommissioned on July 13; thus after that the 100-yr event volume reflects the increase in catchment area.

2.5.1.3 Water Transfers

Section 2.6 provides specific details on the volumes and rates of water and solution management for the HLF as required under the Solution Inventory Monitoring Program specified in QZ14-041-1 (Condition 117). Other water transfers considered under Condition 134a(i) are described herein. The total 2022 annual transfer from the LDSP to the Events Pond was ~508,000 m^3. The relatively large volume of water transferred from the LDSP to the Events Pond from April and May (~42% of the annual total) reflect primarily snowmelt runoff collected in the LDSP during freshet, while the relatively large transfers from July and into October reflect the high runoff from higher-than-average rainfall totals plus groundwater inflows associated with pit depressurization that began in July. The continued high flows in October and November reflect steady inflows from accumulated storage in the LDSP catchment that did not appreciably attenuate until the end of November.

The monthly flow data collected from the HLF UMV reflects a slight lag and some attenuation in seasonal variability due to the groundwater signature, and the incremental increase in groundwater catchment while the underdrains were extended into and through the HLF Phase 2 catchment. Flow was highest during December (over 7,100 m^3/month or 230 m^3/day) and lowest in April (2,520 m^3 or 84 m^3/day).

Table 2.5-3: Month End Water Volumes and Transfers in 2022

Month	Total Volume Pumped from HLF Underdrain to Events Pond (m^3)	Total Volume Pumped from LDSP to Events Pond (m^3)
January	4,136	0
February	2,695	10,596
March	2,651	7,907
April	2,520	101,346
May	3,116	111,390
June	4,433	9,791
July	5,235	44,788
August	5,305	36,389
September	5,108	37,142
October	5,135	96,912
November	6,328	52,016
December	7,172	0
Annual Total	**53,834**	**508,277**

HLF UMV daily flow pumped to the Events Pond was generally steady from day to day (Figure 2.5-6). The slow decline over the winter from ~150 m^3/day to ~80 m^3/day reflected slowly decreasing groundwater capture by the underdrains, which was followed by a slow and steady increase beginning in early May and then plateauing in mid-July at ~160 m^3/day. The lag between peak freshet and peak groundwater flow to the underdrains is attributed to delay in the time required for precipitation to recharge groundwater. Post July the flow signature is relatively steady (160-170 m^3/day) through to mid-October, and then the steady increase to over 230 m^3/day into December, reflecting the increased catchment area due to the extension of the underdrains uphill.

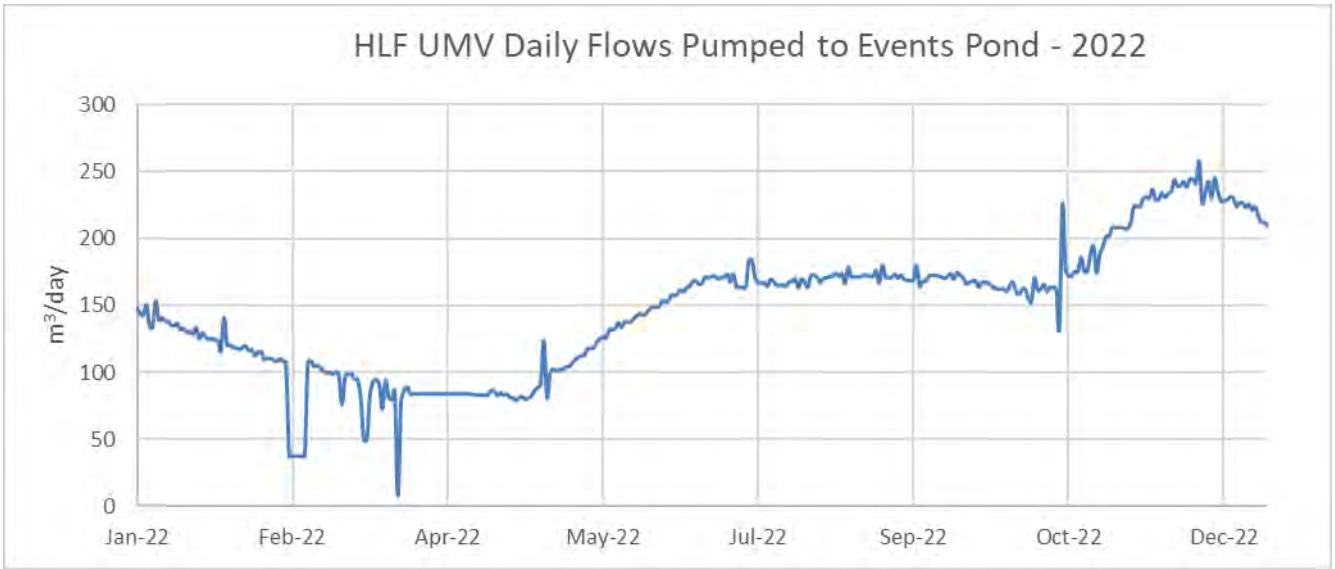


Figure 2.5-6: Daily Volume of Flow Transferred from the HLF UMV to the Events Pond in 2022

The total volume held in the LDSP fluctuated between 6,600 m^3 in late March 2022 to over 60,000 m^3 on five separate occasions during August, September, and October 2022, as depicted in Figure 2.5-7. Inflow reflected snowmelt runoff, periodic rainfall events and pit depressurization (beginning in July), plus a steady baseflow from the contributions from Ditches A and B, while the outflow events were primarily due to periodic transfers of the water to the HLF or the Events Pond.

Figure 2.5-7: Daily LDSP Volume Held in Storage in 2022

2.5.2 Deposit of Waste

Discharges of water compliant with the effluent quality standards of QZ14-041-1 were undertaken from June 25 to July 16 and then again from August 29 to September 4. After sufficient settling time in both the LDSP and then later the Events Pond, approximately 108,500 m^3 of water with an average daily discharge rate of ~5,166 m^3/day were discharged from the Events Pond through the LDSP weir and into Ditch C during the first discharge event. Then again, during the second discharge event, another 56,200 m^3 of water with an average daily discharge rate of ~8,026 m^3/day were discharged in the same manner. Section 3.2 provides a detailed description of the managed flows with respect to effluent quality character and water quality objectives for the receiving waters (Haggart Creek).

2.6 HLF Solution Monitoring Program

Stacking of ore on the Heap Leach Pad continued on a daily basis through 2022; a few exceptions occurred due to planned maintenance down times or operational issues throughout the year. In addition to the water volume, storage and transfer data reported on in Section 2.5, there are additional reporting requirements associated with the HLF Solution Inventory Monitoring Program (HLF SIMP) that are described below.

2.6.1 Water Use licence Section 117 Requirements

The WUL condition #117 requires eleven specific data requirements be recorded as part of HLF SIMP. Conditions 117a) and 117j) require daily reporting while the remaining conditions require monthly reporting. The following summarizes the data for each sub-condition of WUL #117.

117a) The daily average available storage volume for 2022 in the In-Heap Pond is provided in Appendix B and shown graphically on Figure 2.6-1.

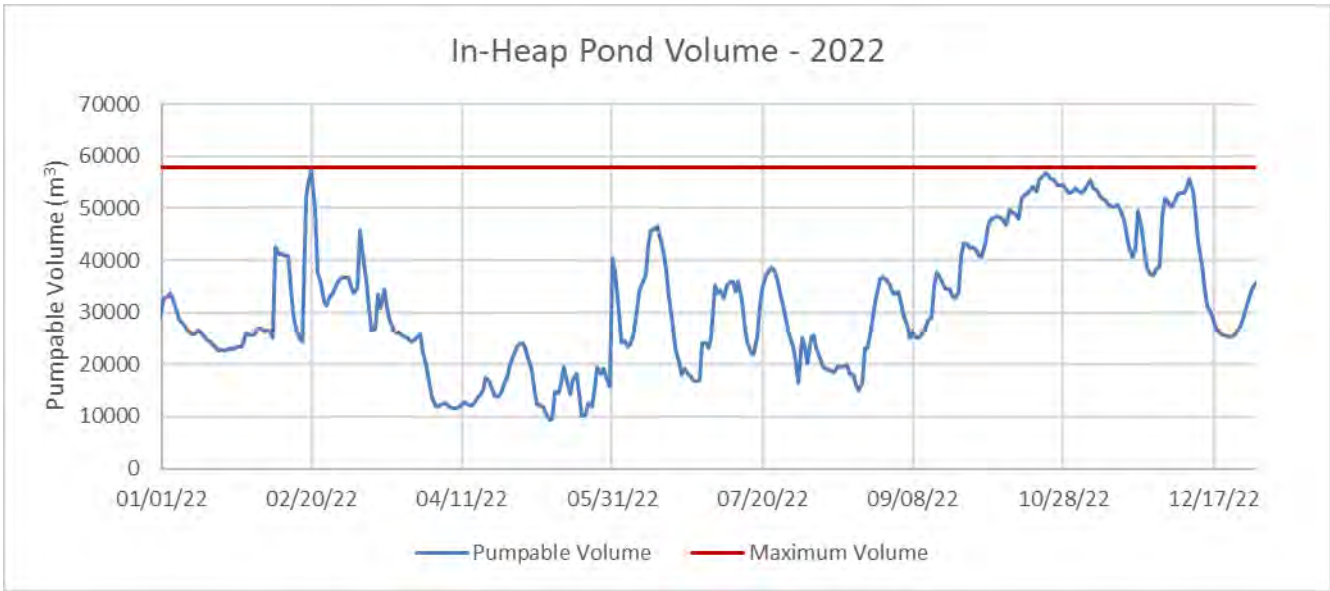


Figure 2.6-1: Daily In-Heap Pond Volumes in 2022

117b) The month-end volumes of water stored in the HLF during 2022 are provided in Table 2.6-1 and are compared graphically to 2021 in Figure 2.6-2. These volumes include the snow water equivalent of any snow cover on the Heap Pad, the Event Pond, and the Events Pond catchment below the ADR Plant; it also includes the month end volumes of water stored in the Events Pond and the In-Heap Pond plus the month-end volume of draindown water (or mobile leaching volume) stored in ore. The overall increase in moisture gained from the previous year reflect the increasing tonnage of stacked ore.

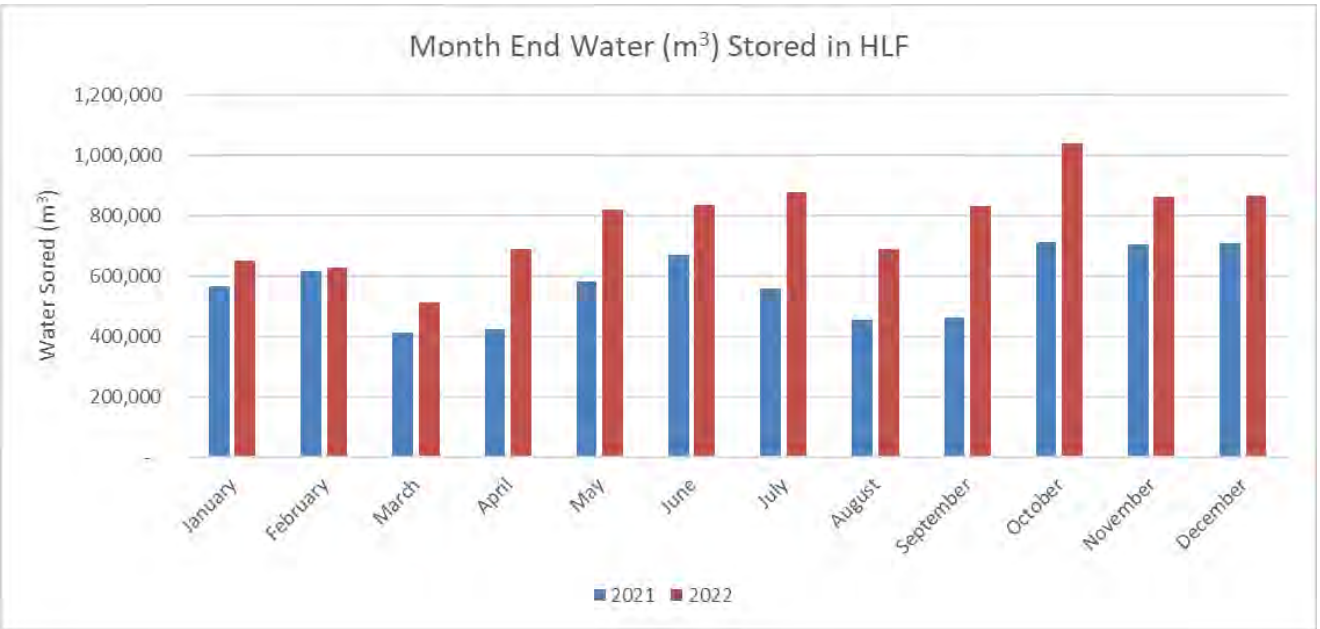


Figure 2.6-2: Comparison of 2022 and 2021 Month End Water Stored in the HLF

117c) The total monthly volumes and the average pumping rates of barren solution pumped to the heap leach pad for leaching during 2022 are provided in Table 2.6-1.

117d) The total monthly volumes and the average pumping rates of pregnant solution pumped from the In-heap Pond to the ADR during 2022 are provided in Table 2.6-1.

117e) There were no water transfers from the In-Heap Pond to the Events Pond during the 2022 reporting period.

117f) The total monthly volumes of water pumped from the Events Pond to the ADR and the In-Heap Pond during 2022 are provided in Table 2.6-1.

117g) The total monthly volumes of precipitation falling on the HLF and the Events Pond catchments are provided in Table 2.6-1. These values reflect the catchments below diversions.

117h) The total monthly volumes of Water Transfers into the HLF are provided in Table 2.6-1. The values reflect a small component of groundwater input from the main production well (3360 m3/yr), as well as the substantial transfers from the Events Pond (166,300 m^3/yr) and a lesser amount from the LDSP (66,300 m^3/yr).

117i) No HLF solution water was released to the environment during 2022.

117j) The daily average moisture volumes of ore delivered to the HLF is provided in Appendix B. The total annual volume added to the HLP as ore moisture was 174,174 m^3, averaging 477 m^3/day.

117k) The monthly volumes of water added to the HLF as ore moisture content are provided in Table 2.6-1. These values are based on the daily moisture volumes in Appendix B.

Table 2.6-1: Heap Leach Solution Inventory Monitoring Program – Monthly Volumes and Flow Rates

End of Month	**117b)** Month-end Volume of Water Stored in the HLF (m^3)[a]	**117c)** Total Volume of Barren Solution Pumped to HLP (m^3)	**117c)** Average Barren Flow Rate (m^3/hr)	**117d)** Total Pregnant Volume Pumped to ADR (m^3)	**117d)** Average Pregnant Return Flow Rate (m^3/hr)	117f) Total Volume from Control Pond to ADR Plant or In-Heap Pond (m^3)	117f) Total Volume from Events Pond to ADR Plant or In-Heap Pond (m^3)	117f) Total Volume from Deep Well to ADR Plant or In-Heap Pond (m^3)	117g) Total Precipitation Falling on HLF and Event Pond Catchment (m^3)[b]	117h) Total Volume of Water Transfers Pumped into HLF/ADR (m^3)	117k) Total Volume of Water Added to HLP as Ore Moisture (m^3)
January	650,637	1,202,124	1,616	1,261,950	1,696	910	0	1,386	22,826	2,296	6,229
February	629,482	1,025,564	1,378	1,080,635	1,452	21,661	0	0	29,813	21,661	1,721
March	513,672	1,196,424	1,608	1,260,503	1,694	9,002	2,248	332	18,539	11,582	12,928
April	689,026	1,197,691	1,610	1,247,565	1,677	0	15,140	1,640	4,615	16,780	16,430
May	821,977	1,257,208	1,690	1,285,397	1,728	6,271	58,176	0	13,410	64,447	22,698
June	836,690	1,199,669	1,612	1,252,936	1,684	1,198	26,776	0	41,306	27,974	18,560
July	878,758	1,258,481	1,692	1,312,393	1,764	8,701	8,525	0	90,946	17,225	16,987
August	691,501	1,288,685	1,732	1,346,853	1,810	7,393	33,318	0	106,394	40,711	16,692
September	832,631	1,256,314	1,689	1,314,344	1,767	11,121	2,610	0	76,300	13,731	21,284
October	1,040,942	1,297,278	1,744	1,357,048	1,824	0	9,838	0	45,054	9,838	14,155
November	862,426	1,300,654	1,748	1,365,358	1,835	0	2,990	0	24,054	2,990	16,905
December	867,269	1,355,331	1,822	1,420,871	1,910	0	6,722	0	48,954	6,722	9,586
Annual		14,835,423	1,694	15,505,853	1,770	66,257	166,341	3,358	522,209	235,957	174,174

NOTES:
a) Defined as total water stored in In-Heap Pond minus field capacity, plus the draindown volume stored above the In-Heap Pond at optimum moisture minus residual by volume, plus water stored in the Events Pond, plus snow on the pad that is held in storage.
b) The HLF catchment increased (from 493,113 m2 to 705,613 m2) in July due to the decommissioning of the interceptor ditch separating Phase 1 and 2 pad areas.

2.6.2 HLF Foundation Drainage System Monitoring

The WUL condition #134a requires that the annual report include a description of the water use and of any deposit of waste carried out during the year associated with leakage into the Leak Detection and Recovery System (LDRS) of the HLF. There was no deposit of waste associated with the LDRS. All leakage was recovered in the LDRS and pumped back into the process solution circuit.

Figure 2.6-3 shows the measured leakage rates compared to the allowable AL1 leakage rate since July 2020 to September 2022. The data indicate that the HLF liner system is functioning as designed. These rates were reviewed by the Engineer of Record for the HLF and verified to represent proper functioning of the liner system.

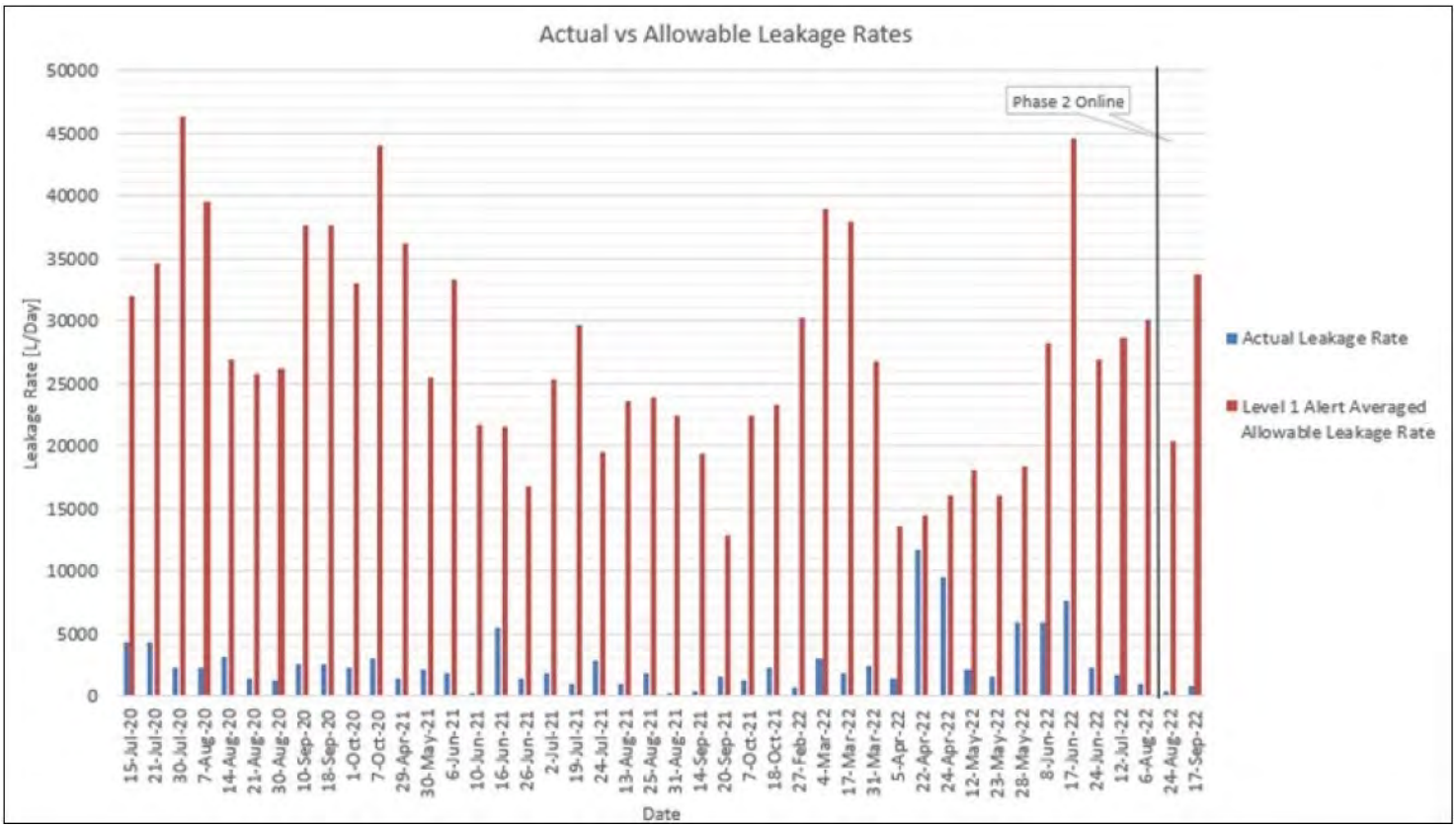


Figure 2.6-3: LDRS Actual Leakage Rates Versus AL1 Leakage Rates Since July 2020

3 ENVIRONMENTAL MONITORING

3.1 Surface Water Hydrology

The 2022 Streamflow Monitoring Report included as Appendix C presents summary of all streamflow data (i.e., baseline, construction and operational data) collected for the Project since August 2007, including hydrometric information summarized in previous reports (Jacques Whitford 2008; Stantec 2010; Stantec 2011; Stantec 2012; Knight Piésold 2013, Lorax 2017, Lorax 2018, Lorax 2019, Lorax 2020 and Lorax 2022) and data collected in 2022. Figure 3.1-1 shows the locations of Project hydrometric stations monitored in 2022. Table 3.1-1 describes Project hydrology stations as detailed in the WUL QZ14-041-1 and their status in 2022. Table 3.1-2 describes station monitoring records and drainage information for automated stations (stations collecting continuous water level data).

Table 3.1-1: Project Hydrology Stations

WUL Station Category	Station	Station Name	Northing[1]	Easting[1]	2022 Status	Type of Flow Measurement	Notes
Compliance	LDSP	Lower Dublin South Pond (LDSP) Outflow	7100857	458672	Active	Continuous during discharge	Active only during two discharge events Jun 25-Jul 15 and Aug 29-Sep 4
	LDSP-UND	LDSP underdrain outlet	7100,928	458547	Active	Manual Spot Flow	--
	CS-07	SG-G4 – below Ice Rich Overburden Storage Area	7098627	458268	Not Active	N/A	--
	MWTP Discharge	Mine Water Treatment Plant Discharge	TBD	TBD	Not Active	N/A	Station will be activated in 2023 when MWTP is commissioned.
	HLFUMV	Heap Leach Facility Underdrain Monitoring Vault	7101298	459445	Active	Continuous during discharge	No discharge from HLFUMV occurred in 2022. Flow monitoring for transfers to the EP conducted.
	ADR Pad Ditch	ADR Pad Ditch Outlet	TBD	TBD	Not Active	N/A	--
Surface Water	W1	Dublin Gulch above Stewart Gulch	7101545	460249	Active	Continuous	--
	W4	Haggart Creek below Dublin Gulch	7101223	458144	Active	Continuous	--
	W5	Haggart Creek above Lynx Creek	7095888	457815	Active	Continuous	--
	W6	Lynx Creek above Haggart Creek	7095964	458099	Active	Continuous	--
	W20	Bawn Boy Gulch	7101961	461945	Active	Manual Spot Flow	--
	W21	Dublin Gulch below Event Ponds	7101261	458359	Active	Continuous	--
	W22	Haggart Creek above Dublin Gulch	7101377	458319	Active	Continuous	--
	W23	Haggart Creek below Lynx Creek	7095683	457790	Active	Manual Spot Flow	--
	W26	Stewart Gulch	7101443	460331	Active	Continuous	--

WUL Station Category	Station	Station Name	Northing[1]	Easting[1]	2022 Status	Type of Flow Measurement	Notes
	W27	Eagle Creek near Camp	7100997	458235	Active	Continuous	--
	W29	Haggart Creek below Eagle Creek	7099583	458225	Active	Continuous	--
	W39	Haggart Creek above South McQuesten River	7086504	449780	Active	Manual Spot Flow	--
	W45	Eagle Creek at Mouth	7099740	458243	Active	Continuous	--
	W49	South McQuesten River below Haggart Creek	7085495	449221	Active	Manual Spot Flow	--
	W99	Haggart Creek above 15 Pup	7098180	458322	Active	Continuous	--
Internal Water Transfers	EPS	Eagle Pup WRSA Seepage	7100909	459834	Active	Manual Spot Flow	--
	PDI & PG_PTS	Platinum Gulch Ditch into LDSP	7099523	459184	Active	Manual Spot Flow	PG_PTS not active, will be activated once PTS is commissioned.
	PGS	PGS WRSA Seepage	7099436	459281	Active	Manual Spot Flow	Transfer between engineered structures
	PS	Open Pit Sump	7099574	459536	Not Active	N/A	--
	FT	Mine Water Treatment Plant Finishing Tank	TBD	TBD	Not Active	N/A	To be activated when Mine Water Treatment Plant is activated
	LDSPI	Low Dublin South Pond Inflow	7100824	458926	Active	Manual Calculated	LDSPI calculated based on inflows from Ditch A and B
	OPP[2]	Open Pit Pond	7099460	459359	Not Active	--	
	OPPO[2]	Open Pit Pond Overflow	7099460	459359	Not Active	--	

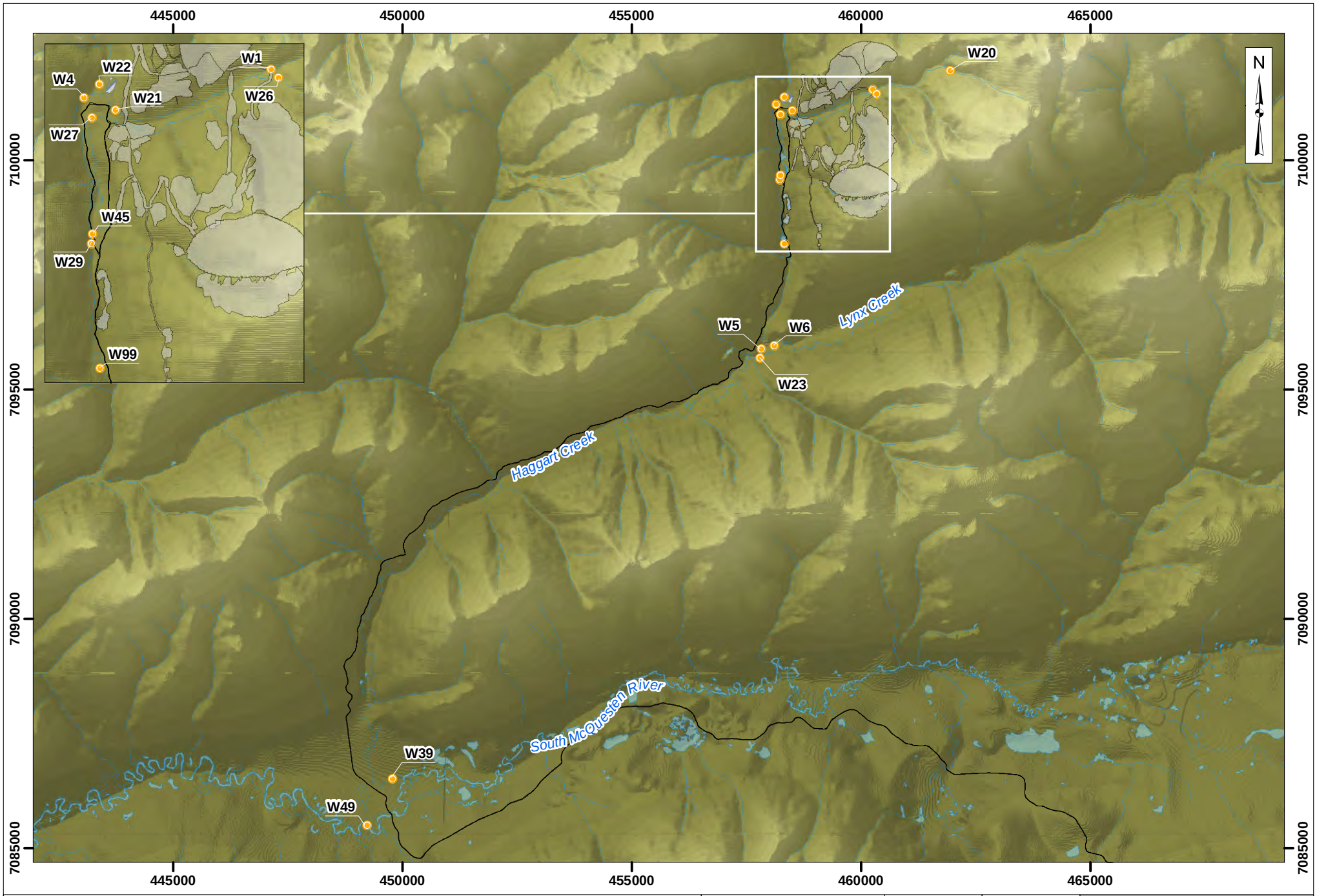
Notes:
1 – Coordinates listed are based on QZ14-041-1. Field locations vary to accommodate seasonal constraints and as built configurations.
2 – During Active Closure Only

Table 3.1-2: Station Monitoring Records and Drainage Infomration ofr Automated Stations in 2022

Station	Station Name	Record Period	Northing	Easting	Drainage Area (km^2)	Median Basin Elevation (m asl)	Notes
W1	Dublin Gulch above Stewart Gulch	2007 – 2022	7101545	460249	7.0	1,303	Continuous discharge time-series 2022 logging period: May 22 to Oct 18
W4	Haggart Creek below Dublin Gulch	2007 – 2022	7101223	458144	76.9	1,125	Continuous discharge time-series 2022 logging period: Apr 29 to Oct 18
W5	Haggart Creek above Lynx Creek	2007 – 2022	7095888	457815	97.5	1,091	Continuous discharge time-series 2022 logging period: May 11 to Oct 18
W6	Lynx Creek above Haggart Creek	2007 – 2022	7095964	458099	100.9	1,049	Continuous discharge time-series 2022 logging period: May 15 to Oct 8
W21[2]	Dublin Gulch below Event Ponds	2018 – 2022	7101261	458359	10.1	1,216	Continuous discharge time-series 2022 logging period: May 20 to Oct 18
W22	Haggart Creek above Dublin Gulch	2007 – 2022	7101377	458319	66.8	1,113	Continuous discharge time-series 2022 logging period: Apr 29 to Oct 18

Station	Station Name	Record Period	Northing	Easting	Drainage Area (km^2)	Median Basin Elevation (m asl)	Notes
W26	Stewart Gulch	2007 – 2022	7101443	460331	1.3	1,183	Continuous discharge time-series, manual data only for 2007 - 2009, 2011. 2022 logging period: Jun 21 to Oct 18
W27	Eagle Creek near Camp	2007 – 2022	7100997	458235	2.7	1,037	Continuous discharge time-series, manual data only for 2007 and 2018 2022 logging period: June 18 to Oct 18
W29[3]	Haggart Creek below Eagle Creek	2010 – 2015 2020-2022	7099583	458225	86.1	1,112	Manual measurements for 2010, continuous data thereafter 2022 logging period: May 8 to Oct 18
W45[4]	Eagle Creek at Mouth	2018 – 2022	7099740	458243	3.9	1,018	Continuous water level time-series, manual measurements 2022 logging period: Apr 29 to Oct 18
W99	Haggart Creek above 15 Pup	2019-2022	7098180	458322	90.1	1,116	Continuous discharge time-series 2022 logging period: May 19 to Oct 18
W20	Bawn Boy Gulch	2016-2020	7101961	461945	2.4	1,364	Manual Measurements

NOTES:
1 - Source of UTM co-ordinates, drainage area and median basin elevation (Knight-Piésold, 2013).
2 - Water level sensor malfunctioned in 2019 and 2020, therefore no continuous water level data are available for these years.
3 - No continuous water level data are available for this station for 2016-2019, however manual measurements continue. See Section 2.2.3 for details.
4 - Water level sensor malfunctioned in 2021, therefore no continuous water level data are available for this year.



Legend:

- Hydrology Station
- Facility Footprint
- Watercourse - Perennial
- Watercourse - Ephemeral
- Watercourse - Intermittent

VICTORIA GOLD CORP

0 750 1,500 3,000
Metres

Projection: NAD 83 UTM Zone 8N	Drawn By: HC	EAGLE GOLD MINE YUKON TERRITORY	
Date: 2022/03/31	Figure: 3.1-1	Project Hydrology Stations	

3.1.1 Surface Water Hydrology Monitoring

Streamflow data for the twelve stations listed in Table 3.1-2 are provided in Appendix C presented in the following formats:

- Monthly tables showing average, maximum and minimum 15-minute discharge values (m3/s);
- Monthly tables showing average discharge (m3/s), average unit yields (L/s/km2) and total runoff (mm);
- Time-series plots of continuous average daily discharge (m3/s) and spot flow measurements (m3/s), and;
- Time series plots of average daily unit yields (L/s/km2), by year.

Issues were encountered with the stage records for 2022 at the following stations:

- W6- The W6 datalogger cable was chewed by wildlife in summer 2022, which resulted in a data gap from August 4 to September 10, 2022.
- W29 - The station was re-commissioned in July 2020 as a backup for the W99 record and to maintain site in accordance with licence terms, and was operated during the open water season in 2022. Manual measurements continue to be reported for this station in Table 1.1 11 Table 3 12.
- W45 - Measured water levels in 2022 deviate from those measured from 2018-2020, likely due to channel scouring of the highly mobile bedload. A Parshall flume was installed on August 2, 2022.
- W20 - Manual flow and stage measurements are conducted when access allows which can be challenging in freshet or winter conditions. Data is not sufficient to develop a rating curve.

Table 3.1-3 to Table 3.1-12 below compare the complied streamflow summary statistics (average, minimum and maximum flows) for 2022 to the same statistics compiled over the full period of baseline record. All values are in m3/s using 15-minute continuous discharge records.

Table 3.1-3: W1 Comparison of 2022 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2022	Average	--	--	--	--	0.34	0.44	0.12	0.08	0.08	0.22	--	--
	Maximum	--	--	--	--	1.03	1.79	0.66	0.19	0.16	0.45	--	--
	Minimum	--	--	--	--	0.12	0.10	0.07	0.05	0.05	0.00	--	--
All Years	Average	--	--	--	0.024	0.266	0.137	0.094	0.088	0.089	0.112	0.069	--
	Maximum	--	--	--	0.104	1.304	1.793	0.660	0.503	0.557	0.719	0.091	--
	Minimum	--	--	--	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.053	--

Table 3.1-4: W4 Comparison of 2022 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2022	Average	--	--	--	0.477	1.651	2.020	0.947	0.766	0.868	1.466	--	--
	Maximum	--	--	--	0.600	4.411	3.932	4.051	1.266	1.539	5.991	--	--
	Minimum	--	--	--	0.395	0.403	0.881	0.648	0.558	0.653	0.435	--	--
All Years	Average	--	--	--	0.357	2.240	1.234	0.864	0.891	0.907	0.869	--	--
	Maximum	--	--	--	0.600	8.079	9.600	4.834	6.649	2.905	5.991	--	--

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Minimum	--	--	--	0.150	0.060	0.304	0.090	0.159	0.021	0.021	--	--

Table 3.1-5: W5 Comparison of 2022 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2022	Average	--	--	--	--	2.479	2.154	1.142	1.055	1.220	1.955	--	--
	Maximum	--	--	--	--	4.242	4.127	4.570	1.631	2.077	2.626	--	--
	Minimum	--	--	--	--	1.538	0.915	0.742	0.778	0.919	0.546	--	--
All Years	Average	--	--	--	--	3.020	1.507	1.065	1.042	1.061	1.166	--	--
	Maximum	--	--	--	--	11.424	7.265	6.883	6.815	4.196	4.904	--	--
	Minimum	--	--	--	--	0.819	0.264	0.153	0.132	0.124	0.081	--	--

Table 3.1-6: W6 Comparison of 2022 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2022	Average	--	--	--	--	4.834	2.664	1.255	0.640	0.969	2.430	--	--
	Maximum	--	--	--	--	8.752	5.893	5.980	0.734	2.342	5.050	--	--
	Minimum	--	--	--	--	3.288	0.891	0.561	0.550	0.498	0.932	--	--
All Years	Average	--	--	--	--	3.855	1.271	0.978	1.103	1.188	1.158	0.903	--
	Maximum	--	--	--	--	17.947	8.308	7.120	6.007	4.427	5.172	1.788	--
	Minimum	--	--	--	--	0.280	0.136	0.038	0.166	0.162	0.112	0.385	--

Table 3.1-7: W21 Comparison of 2022 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2022	Average	--	--	--	--	0.241	0.251	0.148	0.121	0.132	0.240	--	--
	Maximum	--	--	--	--	0.324	0.370	0.316	0.228	0.226	0.393	--	--
	Minimum	--	--	--	--	0.141	0.126	0.101	0.078	0.100	0.123	--	--
All Years	Average	--	--	--	--	0.261	0.167	0.093	0.122	0.092	0.116	--	--
	Maximum	--	--	--	--	0.525	0.500	0.316	0.349	0.226	0.393	--	--
	Minimum	--	--	--	--	0.139	0.003	0.009	0.030	0.000	0.000	--	--

Table 3.1-8: W22 Comparison of 2022 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2022	Average	--	--	--	0.143	1.327	1.829	0.894	0.741	0.877	1.614	--	--
	Maximum	--	--	--	0.247	3.904	3.743	4.661	1.355	1.645	4.987	--	--
	Minimum	--	--	--	0.075	0.094	0.758	0.564	0.521	0.641	0.260	--	--
All Years	Average	--	--	--	0.399	2.167	1.067	0.724	0.826	0.799	0.826	0.937	--
	Maximum	--	--	--	1.455	20.630	8.811	4.661	3.928	2.951	4.987	1.342	--
	Minimum	--	--	--	0.075	0.015	0.105	0.002	0.186	0.106	0.060	0.558	--

Table 3.1-9: W26 Comparison of 2022 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2022	Average	--	--	--	--	--	0.005	0.007	0.008	0.011	0.024	--	--
	Maximum	--	--	--	--	--	0.008	0.101	0.017	0.018	0.107	--	--
	Minimum	--	--	--	--	--	0.002	0.001	0.003	0.005	0.004	--	--
All Years	Average	--	--	--	--	0.029	0.015	0.011	0.013	0.011	0.010	--	--
	Maximum	--	--	--	--	0.182	0.176	0.143	0.065	0.063	0.107	--	--
	Minimum	--	--	--	--	0.001	0.000	0.000	0.000	0.000	0.001	--	--

Table 3.1-10: W27 Comparison of 2022 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2022	Average	--	--	--	--	--	0.010	0.005	0.006	0.009	0.018	--	--
	Maximum	--	--	--	--	--	0.015	0.013	0.024	0.023	0.089	--	--
	Minimum	--	--	--	--	--	0.003	0.001	0.003	0.004	0.006	--	--
All Years	Average	--	--	--	0.007	0.054	0.026	0.022	0.020	0.018	0.023	--	--
	Maximum	--	--	--	0.020	0.335	0.144	0.315	0.138	0.123	0.105	--	--
	Minimum	--	--	--	0.000	0.000	0.000	0.000	0.000	0.000	0.000	--	--

Table 3.1-11: W29 Comparison of 2022 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2022	Average	--	--	--	--	1.708	1.860	1.068	0.945	1.033	1.732	--	--
	Maximum	--	--	--	--	3.305	3.490	3.813	1.342	1.571	6.071	--	--
	Minimum	--	--	--	--	0.866	0.962	0.795	0.774	0.844	0.526	--	--
All Years	Average	--	--	--	--	2.518	1.281	1.094	1.147	1.076	1.056	--	--
	Maximum	--	--	--	--	13.604	3.766	4.497	4.955	2.818	6.071	--	--
	Minimum	--	--	--	--	0.653	0.229	0.421	0.007	0.177	0.023	--	--

Table 3.1-12: W99 Comparison of 2021 Summary Statistics to Baseline Record

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2022	Average	--	--	--	--	2.41	2.09	1.05	0.93	0.98	2.58	--	--
	Maximum	--	--	--	--	4.30	4.67	4.68	1.22	1.72	9.64	--	--
	Minimum	--	--	--	--	1.56	0.85	0.78	0.81	0.83	0.40	--	--
All Years	Average	--	--	--	1.499	2.535	1.739	0.950	0.974	0.948	1.455	--	--
	Maximum	--	--	--	2.753	6.503	7.986	4.683	2.983	2.765	9.643	--	--
	Minimum	--	--	--	0.728	0.641	0.314	0.230	0.208	0.201	0.070	--	--

NOTE:
W99 station was installed in 2019.

3.1.2 Site QA/QC Programs

3.1.2.1 Stage Measurements and Corrections

All automated stations were instrumented with metric staff gauges, mounted to vertical angle iron in the stream channel, and regularly surveyed to nearby benchmarks. Continuously recording pressure transducers were installed in stilling wells and set to record water level every 15 minutes. These readings were corrected for fluctuations in barometric pressure in a post-processing step. During each site visit, unless in winter ice conditions, water level was noted on the staff gauge. These readings form the basis for the continuous water level records, which were adjusted to match the manual stage readings. Level surveys determined the staff gauge zero datum and water level, and were used to correct the station records for changes as needed due to shifts in the channel bed (i.e., aggradation or scour), frost-jacking or station relocation following a high-magnitude flood event.

3.1.2.2 Rating Curve Error

The overall quality of the discharge record was assessed by reviewing the average and standard errors calculated from the differences between the measured discharges, and those estimated from the rating equation. A positive rating curve error is defined where the discharge calculated from the rating curve overestimates the value when compared to the measured discharge, and vice-versa for a negative error.

A summary of the error metrics for all stations and rating curve control percentages are presented in Table 3.1-13. Rating curve control values indicate the percent of time that a continuously recorded observation (15-minute intervals) falls between the highest and lowest manually recorded measurements for each monitoring station.

Overall, the rating curves provide reasonable estimates of discharge across a wide range of flows at most of the Project stations. The rating curve errors presented in Table 3.1-13 indicate that the average errors are relatively low, ranging from -7% (W29) to 9% (W21). The standard error, or the degree of variability about the average error values varies more between stations, from a high of 30% for station W21, to a low of 12% for station W6. Note that continuous discharge data are sporadic for W21 prior to 2021 due to limited water level data, and that the W29 data, due to bank and stream section instabilities, are considered only as a potential backup in regard to adaptive management evaluations in the event that data from W99 are not available.

Rating curves for the site hydrometric stations are presented Appendix C. For the 2017 update, the rating equations were compared to those previously developed for each station to ensure that the coefficients and exponents were consistent through time. After examining the 2018 data, no further updates to the rating curves developed in 2017 were necessary, and the same curves were applied to the 2018 through 2021 continuous water level data. A similar conclusion was drawn based on inclusion of field data collected in 2022 within the rating relations per monitoring station, except W21, for which a secondary rating equation was introduced to handle the high flow from June, 2022. Note that because stations W26, W27 and more recently W45 are instrumented with Parshall flumes, rating curves were not developed for these stations. The rating curve plot and error table for the relatively new hydrometric station W99, are presented in Appendix C and based on measurements collected in 2019 through 2022.

Table 3.1-13: Rating Curve Error Summary for Project Hydrometric Stations

Station	Measurements (n)	Average Error (%)	Standard Error (%)	Rating Curve Control
W1	60	-1%	25%	100%
W4	65	-1%	15%	100%
W5	52	3%	17%	97%
W6	41	-4%	12%	93%
W21	23	9%	30%	98%
W22	53	0%	15%	100%
W26	50	--	--	100%
W27	93	--	--	100%
W29	34	-7%	28%	95%
W99	19	5%	21%	95%
Average	52	0%	20%	94%

NOTES:
Stations W26 and W27 currently have Parshall flumes installed, and therefore rating curves were not developed for these sites as part of the 2022 Streamflow Monitoring Report

3.1.3 Effluent Discharge

Water management infrastructure for the Project is designed to convey site contact water via Ditch C during discharge, which joins Haggart Creek above the W4 station. When discharging, flows in Ditch C are monitored continuously with a flow meter. Salt dilution and Rhodamine dilution measurements are made periodically downstream of Ditch C to confirm the instantaneous discharge values. Total monthly discharge volumes are then calculated from the continuous metered functional totalizer. Daily surveys of Event Pond water level are used to evaluate potential erroneous data. The total volume of water discharged from the LDSP in 2022 was 164,666 m^3, over two discharge events in June 25-July 15 (108,486 m^3) and August 29-September 4 (56,180 m^3 Table 3.1-14).

Table 3.1-14: Monthly Discharge Totals from LDSP Weir - 2022

Month	Discharge
June	35,177
July	73,309
August	16,607
September	39,573
Total	**164,666**

3.1.4 Adaptive Management

The EMSAMP outlines adaptive management protocols for the Project. A three-tiered threshold system has been developed for the adaptive management of surface water flow. The thresholds provided in Table 2.4-1 of the EMSAMP are different for the ice-free and ice-affected seasons, and are based on the median baseflows established for hydrometric stations W4 and W29 over the baseline period that encompassed the period August 2007 to August 2017. In 2022 adaptive management evaluations for the W29 station (due to bank and stream section instabilities) has been replaced by the W99 station, which has a 3% larger drainage area (Table 3.1-2).

To account for this difference, the W29 baseline values have been adjusted upward by a factor of 1.03 to represent baseline conditions at W99.

Flow values presented in Table 3.1-15 for the months of May through September inclusive are median values, derived from continuous time-series discharge data. In 2022, only three days of continuous data are available upon which to calculate the median monthly flow. The flow values reported for the months of November through April are based on one to two manual measurements (when possible), and therefore the deviation between baseline values and reported values for the current year may be higher due to limited baseline records and infrequent flow measurements taken in challenging conditions (i.e., under ice). Note that there is much less inter- and intra-annual variability in the winter low flows, as they are primarily driven by groundwater discharge to the stream channels.

In 2022, streamflows were lower than the median baseline condition in seven of twelve months at W99, yet were consistently elevated above baseline at W4 in all months except February, May and August, noting that the percent differences from baseline for these months are negligible (i.e., < 10%). However, the lower flows at W99 relative to baseline only meet the Threshold 1 criteria in April, noting that the reduction only exceeds the threshold of -20% by 1%, below the accepted margin of streamflow measurement error of 5% (Table 3.1-15). In addition, April is represented by a single measurement made on the 4th, and is more representative of winter low-flow conditions than the median April value, which is influenced by rising freshet flows from low elevation snow melt.

Given that streamflows are elevated above baseline at W4, it is unlikely that water management practices in the Dublin Creek catchment are resulting in the noted lower streamflows at the W99 station. However, flows from Platinum Gulch, Suttles Gulch and Eagle Pup that would normally report to lower Eagle Creek (W45) are being diverted to the LDSP, which may account for a portion of the reduction in streamflows noted at W99 during the open water season. Unfortunately, the levelogger at W45 did not produce reliable water level data in 2022, and therefore this mechanism cannot be confirmed with any degree of certainty. Note that a Parshall flume has been installed at this station to improve data quality for future assessments. Several factors should be considered when assessing deviations from the baseline (2010-2017) streamflow regime in Haggart Creek.

Table 3.1-15: Median Monthly Streamflows for the Baseline (2007-2017) Period and for 2022 for W4 and W99

Month	Baseline (2007-2017)			2020			Percent Difference[1]		
	W4	W29	W99	W4	W29	W99	W4	W29	W99
Jan	0.187	N/A	0.258	0.260	0.236	0.228	39%	N/A	-11%
Feb	0.193	0.350	0.232	0.180	0.210	0.197	-6%	-40%	-15%
Mar	0.133	0.200	0.206	0.227	0.192	0.174	71%	-4%	-16%
Apr	0.159	0.196	0.202	0.182	0.177	0.160	15%	-10%	-21%
May	1.826	1.765	1.817	1.717	1.678	2.241	-6%	-5%	23%
Jun	0.922	0.966	0.995	1.599	1.575	1.629	73%	63%	64%
Jul	0.756	1.093	1.126	0.811	0.942	0.908	7%	-14%	-19%
Aug	0.739	0.911	0.938	0.721	0.904	0.911	-2%	-1%	-3%
Sep	0.812	1.019	1.050	0.819	0.993	0.926	1%	-3%	-12%
Oct	0.729	0.840	0.866	1.393	1.458	1.808	91%	73%	109%

Month	Baseline (2007-2017)			2020			Percent Difference[1]		
	W4	W29	W99	W4	W29	W99	W4	W29	W99
Nov	0.333	0.321	0.330	0.992	0.914	0.630	198%	185%	91%
Dec	0.248	0.275	0.283	0.437	0.710	0.401	76%	158%	42%

NOTES:
Shaded areas in Table indicate ice covered season, when flow measurements are limited to monthly manual data.
1 - Percent difference calculated as (2022 – Baseline)/Baseline. Positive values indicate that flows were higher than baseline in 2022, and vice versa.

3.2 Surface Water Quality

3.2.1 Surface Water Quality Monitoring

The surface water quality monitoring program for the Project includes monitoring of water quality of watercourses within the Project area at strategic locations and at water management facilities that have the potential to discharge to the environment. The water quality monitoring plan has been designed to meet the following objectives:

- Collect water quality data in the receiving environment at stations upstream and downstream of potential Project influences.
- Collect water quality data to verify compliance with the Effluent Quality Standards (EQSs) and monitor receiving environment Water Quality Objectives (WQOs) specified in QZ14-041-1 for Haggart Creek at W4, W29, W99 and W23.
- Provide water quality data for receiving aquatic environments to be used as input for the water quality modeling and development of water quality predictions for key mining phases of the project. Ongoing monitoring data also provide results for water balance and water quality model validation.
- Provide a continuous water quality database to support adaptive management strategies to meet water quality objectives in Haggart Creek in order to protect aquatic life.

Surface water quality monitoring programs are outlined in the EMSAMP. Surface water quality monitoring in 2022 consisted of monitoring those sites as identified for the operations phase monitoring in the EMSAMP which were active and includes all receiving environment locations specified in QZ14-041-1 (Schedule 1A) for the Project (Figure 3.2-1 and Table 3.2-1).

Table 3.2-1: Active Surface Water Quality Monitoring Locations and Frequency - 2022

Station Category	Monitoring Station	Location Description	Coordinates (Zone 8)		Sampling Frequency		
					Field Measurements	Laboratory Analysis	
			North	East	pH, Temp. DO Conductivity	Analytical Suite	48-Hour and 96-Hour LT50
Surface Water	W1	Dublin Gulch above Stewart	7101545	460249	M	M	-
	W21	Dublin Gulch below Event Ponds	7101261	458359	M	M	-
	W4	Haggart Creek below Dublin	7101223	458144	D, M	D[1], M[1]	-
	W22	Haggart Creek above Project Influence	7101378	458319	M	M[2]	-
	W5	Haggart Creek above Lynx Creek	7095888	457814	M	M[2]	-
	W6	Lynx Creek above Haggart Creek	7095964	458099	M	M[2]	-
	W20	Bawn Boy Gulch	7101961	461945	M	M	-
	W23	Haggart Creek below Lynx Creek	7095682	457790	M	M[2]	-
	W27	Eagle Creek near Camp below LDSP	7100997	458235	M	M	-
	W26	Stewart Gulch	7101443	460331	M	M	-
	W29	Haggart Creek below Eagle Creek & Platinum Gulch	7099583	458225	D, M	D[1], M[2]	-
	W39[5]	Haggart Creek above South McQuesten River	7086504	449780	Q	Q[2]	-
	W45	Eagle Creek above Haggart Creek	7099684	458243	M	M	-
	W49	South McQuesten River below Haggart Creek	7085495	449221	Q	Q[2]	-
	W99	Haggart Creek above 15 Pup	7098180	458322	M	M[2]	-
Internal Water Transfer	PDI	Platinum Gulch Ditch into Lower Dublin South Pond	7099523	459184	M	M	-
	PGS	Platinum Gulch WRSA Seepage	7099436	459281	M	M	-
	LDSPI	Lower Dublin South Pond Inflow	7100824	458926	D, M	D[2], M	M
Compliance	LDSP	Lower Dublin South Pond Outflow	7100857	458672	D, W	D[2], W[2,3]	Md
	HLFUMV	Heap Leach Facility Underdrain Monitoring Vault	7101298	459445	C, D, W	D[4], M[2,3]	M

Station Category	Monitoring Station	Location Description	Coordinates (Zone 8)		Sampling Frequency		
					Field Measurements	Laboratory Analysis	
			North	East	pH, Temp. DO Conductivity	Analytical Suite	48-Hour and 96-Hour LT50
	LDSP-UND	LDSP Underdrain Outflow	7100937	458570	M	M[3]	-
	ADR Pad Ditch	ADR Pad Ditch Outlet	7101566	459160	D,M	D[2]M	-

NOTES:
1 – Laboratory analysis includes WAD, Total CN, Thiocyanate and Cyanate.
2 – Laboratory analysis includes WAD and Total CN.
3 – Calculation of un-ionized ammonia
4 - Laboratory analysis only includes WAD and Total CN - no other parameters required.
5 – An alternate monitoring location for W39 that provides more reliable year-round access has been established. Location listed in Table 3.2-1 is from QZ14-041-1 and remains a monitoring location while the monitoring data from the alternate location is assessed to ensure that it is an appropriate alternative.
C – Continuous monitoring for specific conductance; D – Daily when discharging; W – Weekly when discharging; M – Monthly; Md – Monthly when discharging; Q – Quarterly

3.2.2 Field Sampling Methods

Water samples were collected following methods outlined in the 2013 British Columbia Field Sampling Manual Ambient Freshwater and Effluent Sampling, Part E – Water and Wastewater Sampling. For compliance monitoring locations, the Guidance Document for the Sampling and Analysis of Metal Mining Effluents (Environment Canada, Minerals and Metals Division 2001) was followed to meet QZ14-041-1 conditions and the requirements of the Metals and Diamond Mining Effluent Regulations.

Elemental analysis was performed by ALS Environmental located in Vancouver or Burnaby BC and certified by the Canadian Association for Laboratory Accreditation (CALA) with sample filtration and/or preservation performed in the field. In situ measurements for pH, turbidity, temperature, conductivity, and dissolved oxygen were also recorded at each site prior to sample collection.

3.2.3 Laboratory Methods

Samples were analyzed for parameters listed in Schedule 1B of QZ14-041-1 according to the station category and location (Table 3.2-1). For full suite analyses, samples were analyzed for physical parameters (pH, conductivity, hardness, TSS, TDS, turbidity), major anions, nutrients, total and dissolved organic carbon (DOC), and total and dissolved metals. For cyanide analyses, samples were analyzed for total and weak acid dissociable (WAD) cyanide and also for cyanate and thiocyanate at certain sites.

Conventional parameters, major ions and nutrients, and metals were analyzed using procedures described in APHA Standard Methods for the Examination of Water and Wastewater (2005). Cyanide analysis was carried out using procedures adapted from APHA Method 4500-CN “Cyanide”. Total or strong acid dissociable cyanide and weak acid dissociable cyanide are determined by sample distillation and analysis determined by a Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis.. The lowest available limit of detection for metals was achieved by using inductively coupled plasma/mass spectrometry (ICP/MS; EPA Method 6020). Mercury analysis in water was carried out by cold vapor atomic fluorescence spectrophotometry (EPA Method 245.7). This procedure involves a cold oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride.

3.2.4 Quality Assurance and Quality Control Program

VGC has a well-established quality assurance/quality control (QA/QC) program in place to ensure the surface water quality program for the Project is reliable, representative of the water quality conditions throughout the project. This program is intended to validate the monitoring data, and to identify any potential methodological and/or analytical errors in the data set that might require modifications to the program and or laboratory analyses. The following sections provide a summary of the QA/QC program with respect to field quality, analytical data processing and internal laboratory procedures for the 2022 collection year.

3.2.4.1 QA/QC Methodology - Field Sampling Program

Water quality samples were collected in accordance with methods described in the EMSAMP. As indicated above, water samples were collected following the methods outlined in the 2013 British Columbia Field Sampling Manual, Ambient Freshwater and Effluent Sampling, Part E – Water and Wastewater Sampling. The associated QA/QC protocols are designed to provide reliable data by preventing sampling error and cross contamination of the collected samples. In a given water course, samples were collected from downstream to upstream to avoid

substrate disturbance and potential sample contamination. Haggart Creek samples and Dublin Gulch monitoring locations, within the immediate vicinity of the Project, were sampled on the same date, when possible, for data comparability and to support data analysis and adaptive management considerations. The integrity of the water quality sampling program is evaluated by the collection of quality control samples, including field blanks and replicates described in detail below.

Field Blanks

Field blank samples (Sample ID02) are analyte-free reagent water samples used to assess the purity of chemical preservatives and potential contamination sources at the sampling location due to the collection method, handling, preservation, and exposure to the environment. Blank samples are generated by pouring de-ionized (DI) water into clean sample bottles, exposing the sample bottles to the same environment in which regulated samples were collected. Field blanks are generated at the Project using resident DI water as opposed be being pre made and shipped by the laboratory. The Field blanks are analyzed for the same parameters as collections taken as part of the regular program.

The widely used acceptability criterion of two times the Reported Detection Limit (RDL) was used to evaluate the integrity of the collected field blanks. Detected values in blanks higher than the proposed criterion were flagged assessed and a deamination made as to whether further investigation was required.

Travel Blanks

Travel blanks (Sample ID03) are prefilled samples provided by the analytical laboratory and are used during field surveys to identify potential contamination during storage and transport. These blanks are kept sealed and transported with water collected samples. Concentrations in these blanks are below detection limits, however if any measured parameter is detected above detection limit, potential contamination during sample handling and transport is assumed. The variability of concentrations of analytes within DI water also has the potential to impact QA/QC analyses.

Field Duplicates

Field duplicate samples (Sample ID01) were collected to confirm sample integrity. The British Columbia Field Sampling Manual (Clark 2013) specifies that a relative percent difference (RPD) greater than 20 percent indicates a possible sample contamination. An RPD greater than 50 percent indicates a confirmed sample integrity problem; however, it is not unusual to find high variability for field duplicates, especially if the water is turbid with elevated total suspended solids (TSS). Field duplicate samples are collected at the same location and time as a site sample to assess the natural variability of the site. For the purpose of this analysis, originals and duplicates are considered paired replicates collected from the same location sequentially in time and were used to calculate the RPD.

3.2.4.2 QA/QC Methodology - Laboratory Analytical

All analytical analyses were performed by ALS laboratories (Burnaby, BC) a member of the Canadian Association for Laboratory Accreditation Inc. (CALA). The laboratory QA/QC program included analysis of certified reference materials, laboratory control samples, laboratory duplicates, method blanks and matrix spikes to determine accuracy and precision of instrumentation and methods. The majority of reported data met the laboratory data quality objectives (DQOs). However, in some instances, method recovery was not accurately calculated due to matrix interferences; thus, detection limits were adjusted to prevent any influence on analytical results. Overall,

reported data were of good quality and met the laboratory QA/QC objectives. Laboratory data reports are included in the monthly monitoring reports and are not duplicated herein.

Dissolved Metal versus Total Metals Concentrations

A dissolved metal concentration that was higher than the corresponding total metal concentration was considered an indicator of potential sample contamination and/or analytical error. Samples for total and dissolved metals are collected in separate bottles and are handled differently however are sourced from the same general chemistry bottle to mitigate variance due to different timing of sample aliquots. For example, samples for dissolved metal analysis are filtered through a 45 µm filter and the filtering process can introduce error or contamination into the sample. The 45 um filters that are used are not individually sealed.

Dissolved metal concentrations were flagged as a potential QA/QC issue if the concentration was >20% higher than the corresponding total metal value in the same sample. Variability of less than 20% is excluded because it generally falls within the analytical margin of uncertainty (or error). Dissolved and total metal pairs are included in this analysis if the dissolved value is greater than five-times its RDL (Clark 2013).

3.2.4.3 Results and Discussion

Detailed analysis of the results for the quality assurance and quality control program are provided in section 2.2.3 of the 2022 Surface Water Quality Summary Appendix D.

Field Blanks

Field blanks were collected and analyzed to assess purity of chemical preservatives and potential contamination sources at the sampling location; a total of two field blank samples were prepared and submitted for QA/QC as part of the routine water quality monitoring. For both samples, all parameters were measured at concentrations below the detection limit with the sole exception of dissolved Mo in the August 8, 2022 sample. The measured concentration was very slightly higher than the analytical detection limit. These results indicate good sampling collection protocols.

Travel Blanks

A total of 19 travel blanks were submitted during water quality monitoring at the Project in 2022. All the measured parameters were below their respective detection limit (DL) with the sole exception of a few samples for NH3-N where slightly higher than DL concentrations were reported. These results indicate that good protocols of sample handling and transporting were applied in the field. The detectible concentrations of NH3-N may be indicative of a potential issue with travel blank preparation by the analytical laboratory. The consistency of NH3-N being the only parameter above detection limits also supports the potential for this observation to be derived from laboratory source water. However, these results do not compromise the quality of the collected samples.

Field Duplicates

A total of 18 surface water field duplicates were collected as part of the surface water quality sampling program in 2022. A total of 272 full suite water quality samples were collected in 2022 from surface water monitoring stations; accordingly, the field duplicate component of the QA/QC program was approximately 7% of the overall surface water quality monitoring effort. When field blank samples (e.g., 21 samples) are included, the number of QA/QC samples as part of the water quality monitoring program exceeds 15% of the sampling effort.

Water quality results were generally similar between field duplicates. Most duplicates had at least one parameter with an RPD between 20 and 50%, but typically less than half of duplicates had one or more parameters with an RPD greater than 50%. An RPD greater than 50 percent indicates a sample integrity problem; however, it is not unusual to find higher variability for the field duplicates, especially under certain conditions such as for example, relatively high total suspended solids and/or turbidity, particularly occurring during freshet or after precipitation events. This is demonstrated by the results wherein only four of the 18 duplicates that analyzed TSS and turbidity did not have an association with a high RPD in TSS or turbidity.

Dissolved Metal versus Total Metal Concentrations

The number of analyte pairs with dissolved metal values greater than 120 and 150% of the corresponding total metal values are uncommon (generally < 6 occurrences of the total collected samples per station for each parameter, except for phosphorous and selenium). Se showed nine (9) samples above the 120% range for station W4. For phosphorous, samples > 120%, 150% and 200% occurred in the majority of the sampled stations. Other parameters with percentages above 150% seldom occurred for the remaining stations. Particularly for phosphorous, the results are most likely representative of some kind of interference in the sample matrix, leading to incomplete digestion in many of the samples. Although unlikely, these exceedances could also be indicative of cross-contamination or mislabeling of bottles occurring during sample collection or at the laboratory. However, this is unlikely since other analytes did not experience the same trend of higher dissolved concentrations. Notably the number of recorded incidents in parameter concentrations above 120% and/or 150% occurred primarily for phosphorous, while only in a low number for other parameters, which reflects reasonable confidence in the reported results.

3.2.5 Water Quality Results

The following sections focus on surface water quality monitoring results for key mine site stations associated with the Lower Dublin South Pond, mine-site internal water transfers, compliance monitoring sites as well as receiving environment locations in Haggart Creek where QZ14-041-1 water quality objectives (WQO) are established at W4, W29, W99 and W23. Where relevant to the interpretation of monitoring results, background Haggart Creek data at W22 and Dublin Gulch at stations W1 and W21 are discussed to provide to context to observed results in Haggart Creek at those stations with WQO.

3.2.5.1 Mine Site Monitoring Compliance Results

Results of water quality monitoring in 2022 at mine site stations associated with the Lower Dublin South Pond (LDSPI, LDSPS), compliance monitoring of the HLFUMV and LDSP-UND, and discharge water quality at the LDSP final discharge point (FDP) are provided below.

Lower Dublin South Pond (LDSP)

Routine surface water quality monitoring of the Lower Dublin South Pond (LDSPI, LDSPS) occurred in 2022 to remain in compliance with QZ14-041-1 monitoring frequencies; to inform on-site water management; and, to inform on potential project discharges to the receiving environment to mitigate the possibility of releasing non-compliant water (e.g., greater than effluent quality standards (EQS)). As with previous years, water transfers with respect to the LDSP for the Project include:

- Direct pumping from the LDSP to the heap leach pad for make-up water requirements as necessary; and

- Intermittent pumping of LDSP water to the Events Pond

Pumping of water to the Events Pond increases available storage in the LDSP and also provides for additional settling of suspended solids within the Events Pond to improve water quality prior to discharge when necessary.

Monitoring points within the Lower Dublin South Pond are sampled and analyzed on a regular internal sampling schedule to inform operational water management and discharge decisions. Monitoring stations sampled in 2022 within the Lower Dublin South Pond include:

LDSPI – Inflow to Lower Dublin South Pond (listed as a WUL internal water transfer site); and

LDSPs – Along shore of Lower Dublin South Pond (a VGC internal site sampled to inform water management decisions).

Water quality entering, and within the Lower Dublin South Pond was measured and analyzed monthly or daily during discharge events for full suite analyses or the presence of CNWAD and total CN, respectively in 2022. The LDSPI represents a combined sample of all ditch inflows into the Lower Dublin South Pond from the forebay just prior to entering and then settling within the pond. Due to access issues during the winter, the location of LDSPI samples is adjusted as shown in Figure 3-1. The period where the location is modified (e.g., September to April) also coincides with significantly reduced inflow volumes to the pond

LDSPI and LDSPs sampling locations characterize water chemistry in the Lower Dublin South Pond; however, these are pre-discharge sampling locations and not subject to direct comparison to the EQS in and is provided only for the purposes of providing context to the results. In 2022, all parameters analyzed for LDSPI and LDSPs were present at concentrations well below QZ14-041-1 EQS with the exceptions of TSS, total As and total Fe.

TSS concentrations within the Lower Dublin South Pond were highest during the freshet period of April and May 2022 (ranging from ~45 mg/L to ~195 mg/L) and again in October (ranging from 3 mg/L to ~195 mg/L. Conversely and during most other months of the year, TSS levels were typically around the detection limit of 3 mg/L. Total As concentrations were the highest during the elevated TSS periods in April, May and October and ranged from 0.12 mg/L to 0.35 mg/L. TSS and total and dissolved As concentrations for all sampling events within the LDSP (LDSPI, LDSPS) for 2022.

During the lower flow months of November to March, total As concentrations were consistently around 0.100 mg/L during the lower flow periods (e.g., during the winter in January to March and November to December 2022, and during the summer in June, July, August and September); higher total As concentrations were coincident with the most elevated TSS values during April, May and October

Total Fe values above the EQS occurred in May 2022 (14 mg/L and 9.7 mg/L) and October (6.9 mg/L) and were associated with elevated TSS above 150 mg/L. Similar to As, the dissolved Fe concentration during this same period was much lower (0.075 mg/L) and observed above indicates most of the measured Fe was associated with the solid phase. All other parameters were present within the Lower Dublin South Pond (LDSPI, LDSPS) at relatively low concentrations and well below the respective EQS presented for comparative purposes. Total Se and total Zn concentrations at LDSPI document this observation and were present at very low concentrations; total Zn values were consistently below the detection limit of 0.003 mg/L. No discharge occurred from the Lower Dublin South Pond in 2022

Table 3.2-2: Mean Monthly Water Quality LDSPI in 2022

Parameter	QZ14-041-1 EQS	2022-01-13	2022-02-05	2022-03-03	2022-04-05	2022-05-10	2022-05-12	2022-05-23	2022-06-07	2022-07-03	2022-08-02	2022-08-25	2022-09-04	2022-10-01	2022-10-07	2022-10-21	2022-11-10	2022-12-06
pH	*6.5 – 8.44*	7.92	8.25	8.29	8.41	7.89	7.68	7.95	8.37	8.27	8.33	8.42	8.32	8.22	8.36	8.22	7.98	8.08
TSS	*15*	<3.0	<3.0	<3.0	44.5	197	44.1	160	6	14.2	7.8	4.6	3.6	194	14.3	3.9	7.3	<3.0
SO_4	*1850*	93.9	95.1	91.8	105	33.5	19.8	48	75.6	104	119	116	106	83.2	85.7	81.3	85.4	86.7
Cl	*250*	2.4	2.71	2.56	3.39	1.99	1.22	2.49	3.46	3.78	3.57	3.18	3.29	2.96	2.51	2.82	2.57	3.13
NO_3-N	*19.5*	0.736	0.752	0.685	0.842	0.457	0.26	1.03	1.67	2.6	3.1	2.56	2.3	1.93	2.61	2.51	2.11	1.7
NO_2-N	*0.12*	0.0021	0.0016	0.0016	0.0121	0.0103	0.0076	0.0295	0.0355	0.043	0.0577	0.0373	0.0332	0.0514	0.102	0.0746	0.0681	0.0226
NH_3-N	*7.5*	0.0199	0.0256	0.0158	0.0481	0.0236	0.0161	0.0087	0.0108	0.0555	0.0363	0.0157	<0.0050	0.0163	0.0074	0.0103	0.028	0.0392
CN_{WAD}	*0.03*		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050					<0.0050	<0.0050	<0.0050				<0.0050
Diss- Al	*0.4*	0.0013	0.0068	0.0018	0.0027	0.13	0.048	0.0212	0.0146	0.022	0.0377	0.014	0.0129	0.0075	0.0114	0.0044	0.0034	0.0016
T-Sb	*0.13*	0.00584	0.0062	0.00625	0.00888	0.0135	0.00806	0.0121	0.00876	0.0254	0.0289	0.0299	0.0237	0.0158	0.00894	0.00734	0.00681	0.00604
T-As	*0.053*	0.108	0.112	0.105	0.121	0.35	0.146	0.232	0.0452	0.0605	0.0524	0.0658	0.0702	0.236	0.0776	0.0566	0.112	0.11
T-Cd	*0.00125*	0.0000293	0.0000361	0.0000436	0.0000985	0.000389	0.000173	0.000239	0.0000618	0.0000151	0.0000333	0.0000262	0.0000275	0.000211	0.0000585	0.0000395	0.0000485	0.0000332
T-Co	*0.026*	0.00033	0.00039	0.00057	0.0016	0.00755	0.00328	0.00509	0.00091	0.00065	0.00089	0.00071	0.0007	0.00391	0.00118	0.00074	0.00097	0.00056
T-Cu	*0.026*	0.00138	0.00136	0.00121	0.00419	0.0327	0.014	0.0198	0.00542	0.00212	0.00207	0.00165	0.00265	0.0138	0.00296	0.00178	0.00185	0.00122
T-Fe	*6.4*	0.029	0.061	0.098	2.03	14.1	5.47	9.77	0.294	0.315	0.232	0.22	0.175	6.98	0.736	0.197	0.383	0.066
T-Pb	*0.05*	0.000144	0.000267	0.000492	0.00636	0.0462	0.0168	0.0276	0.00154	0.00139	0.00102	0.000774	0.000892	0.0251	0.00258	0.000954	0.0018	0.000349
T-Mn	*7.7*	0.0688	0.0874	0.0981	0.24	0.253	0.112	0.196	0.0668	0.0105	0.105	0.0325	0.0266	0.154	0.089	0.0674	0.157	0.103
T-Hg	*0.00008*	<0.000005	<0.000005	<0.000005	<0.000005	0.000051	0.0000179	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.0000171	<0.000005	<0.000005	<0.000005	<0.000005
T-Mo	*0.45*	0.00145	0.00159	0.00145	0.00229	0.0015	0.00116	0.00188	0.00264	0.00423	0.00581	0.0054	0.00462	0.00377	0.00292	0.00248	0.0018	0.00153
T-Ni	*0.5*	0.00122	0.00133	0.00165	0.00363	0.0185	0.00786	0.0125	0.00317	0.00292	0.0019	0.00212	0.00192	0.00909	0.00277	0.00195	0.00214	0.00153
T-Se	*0.025*	0.000689	0.000788	0.00065	0.000724	0.000716	0.000307	0.000713	0.00139	0.00217	0.00263	0.00243	0.00198	0.00182	0.00239	0.0021	0.00182	0.00151
T-Ag	*0.01*	<0.00001	<0.00001	<0.00001	0.00004	0.000264	0.000122	0.000182	0.000052	<0.00001	0.000013	<0.00001	<0.00001	0.000136	0.000023	<0.00001	0.00001	<0.00001
T-U	*0.09*	0.0105	0.0104	0.0108	0.011	0.0052	0.00286	0.00641	0.0112	0.0211	0.0254	0.0248	0.021	0.0144	0.0128	0.0114	0.0138	0.0128
T-Zn	*0.23*	<0.0030	<0.0030	<0.0030	0.0135	0.0751	0.0273	0.0428	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.0364	0.005	0.0033	0.0036	<0.0030

LDSP-UND

The LDSP-UND passes natural groundwater flow underneath the Lower Dublin South Pond to lower Eagle Creek; the site was monitored monthly and was monitored monthly and additionally on three occasions during the month of May 2022.

Water quality monitoring of the LDSP-UND showed that all parameters were present at concentrations below their respective EQS. It was documented in the May monthly report that a sample collected on May 7th, 2022 (and labeled as LDSP-UND) was inadvertently collected at an erroneous location. Specifically, the sample was taken within lower Eagle Creek which was receiving freshet surface water runoff and where the LDSP-UND discharges to rather than the end of the underdrain pipe. In response, two separate May 2022 samples were collected on May 26 and 29; these samples did not exhibit elevated TSS or total As concentrations and were measured at 0.027 mg/L and 0.022 mg/L, respectively and are consistent with other monthly sample results. For all other months and sampling events, TSS concentrations remained consistently below 3 mg/L and total As concentrations narrowly ranged between roughly 0.022 mg/L to 0.039 mg/L These observed results are consistent with background shallow groundwater quality in this area.

HLF-UMV

The HLFUMV is a discharge compliance monitoring point that captures natural groundwater flow passing underneath the HLF. Currently, and throughout 2022, all flow from the HLFUMV was captured and recirculated back to the Events Pond and no discharge to the receiving environment occurred. Water quality monitoring occurred monthly in 2022 with 2 and 3 sampling events occurring in the months of April and May, respectively. With the exception of the April 19, 2022 sample, water quality of the HLFUMV throughout 2022 exhibited concentrations for all parameters below their corresponding EQS. For the April 19th sample, TSS, dissolved Al and total As exceeded their respective EQS. For all other samples collected in 2022 at HLFUMV, total As concentrations narrowly ranged between approximately 0.038 mg/L to 0.044 mg/L and was very similar to values measured throughout 2021.

The concentrations of all remaining parameters, including no detectible CNWAD in any sample confirms that no measurable leakage of HLF solution to the underlying environment was identified in 2022.

Controlled Discharge Water Quality - LDSP Weir

All discharges from the Project to the receiving environment are required to meet EQS stipulated in QZ14-041-1. In 2022, two controlled discharge events to Haggart Creek occurred as indicated in table 3.2-4. The first controlled discharge into Haggart Creek from the LDSP FDP outlet occurred over a roughly 21-day period between June 25 and July 15, 2022. Effluent from the Events Pond was piped through the LDSP FDP and conveyed by pipe to Haggart Creek to avoid the potential entrainment of sediments from the Ditch C channel prior to entering Haggart Creek. During this period, roughly 108,486 m3 of compliant water was released from the LDSP FDP after transfer from the Events Pond. The discharge primarily contained water that was transferred from the Lower Dublin South Pond and then detained in the Events Pond to increase the overall suspended sediment settling time. The second controlled event occurred over seven days between August 29 and September 4, 2022. During this period, roughly 56,180 m3 of compliant water was released from the LDSP FDP (after transfer from the Events Pond). Discharges occurred to reduce water volumes in the Events Pond to within HLF DAS (Desired Available Storage) volumes. Water volumes were documented by calibrated flow meters. As noted above, no direct discharges from the Lower Dublin South Pond occurred to the environment in 2022. All parameters were below the EQS limits

throughout the discharge periods. All acute toxicity tests taken, as per QZ14-041-1 and the MDMER, for Rainbow trout and Daphnia magna were compliant and well below MDMER Schedule 4 Authorized Limits.

Table 3.2-3: Discharge Events in 2022 and Discharge Duration and Location

Month	Duration of Event
June -July	21 days (June 25 to July 15)
August - September	7 days (August 29 to September 4)

TSS concentrations remained low throughout the discharge periods ranging from <2.0 mg/L to approximately 4.0 mg/L. Total As concentrations were well below the EQS of 0.053 mg/L with concentrations measured consistently between 0.036 mg/L and n0.047 mg/L.

Table 3.2-4: Summary of Water Quality Results for Water Discharged to Ditch C and Haggart Creek Compared to EQS for QZ14-041-1

Parameter	QZ14-041-1 EQS	2022-06-25	2022-06-27	2022-07-01	2022-07-04	2022-07-05	2022-07-11	2022-08-29	2022-09-01
pH	***6.5 – 8.44***	7.63	7.74	7.7	7.8	7.7	7.8	8.22	7.93
TSS	***15***	2.5	<2.0	2.6	<2.0	<2.0	4.1	<2.0	<2.0
SO_4	***1850***	47.2	49.2	47.3	48.2	47.7	48.6	73.7	74.3
Cl	***250***	3.69	3.82	3.61	3.58	3.49	3.52	3.5	3.51
NO_3-N	***19.5***	0.694	0.717	0.687	0.668	0.677	0.678	1.41	1.4
NO_2-N	***0.12***	0.017	0.0179	0.0168	0.0142	0.0132	0.0152	0.028	0.0271
NH_3-N	***7.5***	0.0268	0.0226	0.0198	0.0153	0.0159	0.0135	0.0335	0.0361
CN_{WAD}	***0.03***	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0145	0.0117
Diss- Al	***0.4***	0.0102	0.0114	0.0104	0.0109	0.0135	0.0108	0.0174	0.0167
T-Sb	***0.13***	0.00467	0.00504	0.0051	0.00533	0.00563	0.00526	0.0152	0.0149
T-As	***0.053***	0.0383	0.0392	0.0365	0.0377	0.038	0.0415	0.0441	0.0473
T-Cd	***0.00125***	0.0000287	0.0000208	0.0000255	0.00002	0.00002	0.0000347	0.0000366	0.0000278
T-Co	***0.026***	0.00127	0.00144	0.00146	0.0017	0.00172	0.00191	0.00331	0.0036
T-Cu	***0.026***	0.00254	0.00243	0.00219	0.00214	0.00229	0.00242	0.0109	0.0107
T-Fe	***6.4***	0.161	0.211	0.121	0.09	0.098	0.199	0.058	0.07
T-Pb	***0.05***	0.00171	0.000746	0.000494	0.000322	0.000356	0.000803	0.000266	0.000213
T-Mn	***7.7***	0.00837	0.00577	0.00322	0.00235	0.00235	0.00423	0.0119	0.00999
T-Hg	***0.00008***	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
T-Mo	***0.45***	0.00196	0.00225	0.00226	0.00236	0.0023	0.00201	0.00376	0.00354
T-Ni	***0.5***	0.00208	0.00199	0.00182	0.00181	0.00186	0.00199	0.0039	0.00419
T-Se	***0.025***	0.000507	0.000581	0.000614	0.000609	0.000706	0.000615	0.00139	0.00144
T-Ag	***0.01***	<0.000010	0.00001	<0.000010	<0.000010	<0.000010	<0.000010	0.00004	0.000088
T-U	***0.09***	0.00477	0.00517	0.00542	0.00512	0.0058	0.00511	0.0126	0.0122
T-Zn	***0.23***	0.0044	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

3.2.5.2 Receiving Environment Surface Water Quality Monitoring Program

The 2022 surface water quality monitoring program included continuing the surveillance sampling of watercourses monitored as part of the EMSAMP with particular focus on those stations within Haggart Creek that have WQOs and associated adaptive management plan (AMP) water quality tiers at stations W4, W29, W99 and W23.

Table 3.2-5 provides a summary of the total number of sampling events where concentrations for any given parameter were greater than Tier 3 water quality objectives for stations W4, W29, W99 and W23.

All other parameters were measured at concentrations below their respective WQO at all locations and at all sampling periods in Haggart Creek (Appendix D). A more detailed discussion of the 2022 monitoring results for W4, W29, W99 and W23, including AMP analysis, is provided below. Specifically, monthly water quality data collected for the Project is compared to each station's baseline water quality condition. For stations W4 and W23, the baseline water quality is represented by monitoring results for the period 2007 to 2018. For station W29, the baseline period spans 2009 to 2018 and for station W99, there does not exist a true baseline as water quality sampling was initiated at this station in April 2019 during early operations. In the case of W99, monthly data for 2022 is compared only to 2019. Concentrations of parameters of interest in Haggart Creek exhibit strong flow-based variability and therefore monthly data were compared between years as the most appropriate approach rather than assessing water quality changes observed over consecutive months.

Determination as to whether parameters measured in 2022 are exhibiting an increasing short term excursion away from baseline has been based on consideration of the natural variability in the baseline. Specifically, monthly mean 2022 observations for AMP key parameters are compared to baseline monthly mean +1 and +2 standard deviations (e.g., 68th and 95th percentile). Monthly mean 2022 values within +1 standard deviation of baseline values are considered to be unchanged; values measured within +2 standard deviations are considered to be within the natural observed variability. Monthly mean 2022 values measured above +2 standard deviations of the baseline and above the Tier 3 WQO are considered to be an increase over the baseline condition. In some instances, and parameters, monthly mean 2022 values were measured above the Tier 3 WQO but below +2 standard deviations of baseline conditions. In these cases, no specific action is required and observed values are attributable to naturally high background conditions.

Table 3.2-5: Occasions where Measured Values were Greater than Tier 3 WQOs at EMSAMP Monitoring Locations in Haggart Creek (2020 and 2021)

Parameter List	Tier 3 WQOs W4, W29, W99, W23	W4	W29	W99	W23
TSS	15	**5**	**3**	**4**	**3**
SO_4	309	0	0	0	0
Cl	150	0	0	0	0
Nitrate-N	3	0	0	0	0
Nitrite-N	0.02	0	0	0	0
NH_3-N	1.13	0	0	0	0
CN_{WAD}	0.005	0	0	0	0
Diss-Al	0.1	**3**	**2**	**2**	**2**
Sb	0.02	0	0	0	0

Parameter List	Tier 3 WQOs W4, W29, W99, W23	W4	W29	W99	W23
As	0.0085	**24**	**4**	**5**	**2**
Cd	0.000197	0	0	0	0
Cu	0.005	0	0	0	0
Co	0.004	0	0	0	0
Fe	1.0	**4**	**2**	**2**	**1**
Pb	0.0077	0	0	0	0
Hg	0.00002	0	0	0	0
Mn	1.17	0	0	0	0
Mo	0.073	0	0	0	0
Ni	0.116	0	0	0	0
Se	0.002	0	0	0	0
Ag	0.0015	0	0	0	0
U	0.015	0	0	0	0
Zn	0.038	0	0	0	0

W4

Station W4 is located downstream of the confluence of both Dublin Gulch and downstream of where the controlled discharges enter Haggart Creek. Short term analysis summary of W4 utilizing baseline data from the period 2007 to 2017, compared to monthly mean 2022 water quality data for the open water period of April to November. Full graphical results for all parameters in 2022 are also presented in Appendix B. As illustrated, most parameters were measured at W4 during 2022 at concentrations very similar to baseline values (e.g., ≤ +2 std. dev.); only total As was measured at concentrations greater than the baseline variability and greater than the respective Tier 3 WQO. The higher As concentrations were likely associated with sampling bias of incompletely mixed effluent and Haggart Creek.

The elevated total As monthly mean for July and September have been described previously and are potentially attributable to poor mixing at W4 during discharge and/or lower assimilative capacity owing to the discharge volumes relative to flow in Haggart Creek in combination with the load from Dublin Gulch. Importantly the above analyses does not suggest an overall increasing trend of As in Haggart during July and September 2022, but rather reports on short term excursions of W4 WQOs generally during discharge periods. Concentrations for all parameters, including As, at W4 returned to values below AMP thresholds in months following the documented exceedances

Table 3.2-6: Summary Comparison of Key Water Quality Parameters at W4 for Baseline Period (2007 – 2017) to 2022 Monthly Mean Values Relative to AMP Threshold Values (mg/L)

Parameter	*T1*	*T2*	*T3*	W4 - Haggart Creek																				
				April			May			June			July			August			September			October			November		
				Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 2)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 3)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 7)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 15)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 4)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 5)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)
TSS				6	7	5.4	70	102	41	31	48	6	4	5	4	9	13	<3	4	4	13	4	4	11	4	5	<3
SO_4	***231.8***	***262.7***	***309***	100	107	94	28	38	28	50	56	45	68	77	53	64	72	58	70	92	59	70	76	37	77	82	59
Cl	***112.5***	***127.5***	***150***	0.5	0.5	0.53	2.3	3.3	<0.5	0.5	0.5	1.7	0.5	0.5	1.5	0.5	0.5	0.6	0.6	0.7	0.6	0.6	0.8	<0.5	0.5	0.5	<0.5
NO_3-N	***2.3***	***2.6***	***3***	0.144	0.156	0.16	0.046	0.065	0.034	0.794	1.253	0.321	0.058	0.067	0.300	0.061	0.071	0.156	0.102	0.126	0.222	0.169	0.204	0.080	0.160	0.175	0.090
NO_2-N	***0.015***	***0.017***	***0.02***	0.001	0.001	<0.0010	0.0047	0.0067	<0.0010	0.0010	0.0010	0.0062	0.0010	0.0010	0.0050	0.0010	0.0010	0.0021	0.0010	0.0010	0.0036	0.0099	0.0164	<0.0010	0.0010	0.0010	<0.0010
NH_3-N	***0.848***	***0.961***	***1.13***	0.005	0.005	0.0058	0.009	0.012	0.006	0.008	0.010	0.011	0.005	0.005	0.010	0.015	0.022	0.008	0.005	0.005	0.012	0.005	0.005	0.008	0.005	0.005	<0.005
CN_{WAD}	***0.005***	***0.005***	***0.005***	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050
Diss- Al	***0.075***	***0.085***	***0.1***	0.007	0.010	0.0036	0.221	0.286	0.431	0.050	0.070	0.021	0.013	0.017	0.009	0.023	0.033	0.016	0.015	0.019	0.024	0.008	0.010	0.046	0.004	0.005	0.006
T-Sb	***0.015***	***0.017***	***0.02***	0.0006	0.0008	0.0004	0.0007	0.0009	0.0005	0.0009	0.0011	0.0023	0.0005	0.0005	0.0023	0.0005	0.0005	0.0011	0.0005	0.0005	0.0028	0.0005	0.0006	0.0005	0.0004	0.0005	0.0004
T-As	***0.0064***	***0.0072***	***0.0085***	0.0093	0.0141	0.0037	0.0255	0.0377	0.0109	0.0151	0.0228	0.0194	0.0059	0.0079	0.0195	0.0057	0.0070	0.0071	0.0072	0.0092	0.0172	0.0067	0.0084	0.0083	0.0050	0.0064	0.0067
T-Cd	***0.00015***	***0.00017***	***0.0002***	0.00003	0.00004	0.00002	0.00010	0.00014	0.00007	0.0000	0.0000	0.00002	0.00002	0.00002	0.00001	0.00003	0.00004	0.00001	0.00003	0.00005	0.00002	0.00001	0.00002	0.00001	0.00002	0.00002	0.00001
T-Co	***0.003***	***0.0034***	***0.004***	0.00047	0.00065	0.00021	0.00192	0.00275	0.00095	0.00064	0.00097	0.00071	0.00012	0.00013	0.00075	0.00022	0.00030	0.00029	0.00016	0.00018	0.00085	0.00015	0.00017	0.00028	0.00016	0.00018	0.00010
T-Cu	***0.00375***	***0.00425***	***0.005***	0.00074	0.00096	0.0005	0.00511	0.00678	0.00352	0.00258	0.00378	0.00134	0.00065	0.00074	0.00117	0.00104	0.00140	0.00118	0.00073	0.00084	0.00262	0.00098	0.00131	0.00148	0.00097	0.00129	0.00050
T-Fe	***0.75***	***0.85***	***1***	0.47	0.69	0.15	3.09	4.50	1.64	1.42	2.25	0.20	0.11	0.14	0.13	0.31	0.48	0.13	0.11	0.14	0.61	0.10	0.12	0.49	0.09	0.11	0.06
T-Pb	***0.00578***	***0.00655***	***0.0077***	0.00065	0.00099	0.00019	0.00275	0.00407	0.0017	0.00178	0.00286	0.00038	0.00006	0.00006	0.00036	0.00017	0.00025	0.00008	0.00010	0.00013	0.00071	0.00007	0.00008	0.00033	0.00006	0.00007	0.00006
T-Mn	***0.878***	***0.995***	***1.17***	0.104	0.140	0.053	0.208	0.302	0.101	0.046	0.063	0.018	0.030	0.037	0.016	0.033	0.039	0.033	0.034	0.038	0.043	0.033	0.037	0.033	0.041	0.048	0.010
T-Hg	***0.000015***	***0.000017***	***0.00002***	0.000011	0.000013	<0.000005	0.000032	0.000047	0.000009	0.000037	0.000055	<0.0000050	0.000011	0.000013	<0.0000050	0.000011	0.000013	<0.0000050	0.000011	0.000013	0.000006	0.000010	0.000013	<0.0000050	0.000010	0.000013	<0.0000050
T-Mo	***0.0548***	***0.0621***	***0.073***	0.00018	0.00023	0.00024	0.00042	0.00062	0.00016	0.00080	0.00109	0.00107	0.00032	0.00041	0.00106	0.00031	0.00038	0.00048	0.00066	0.00092	0.00087	0.00061	0.00086	0.00040	0.00069	0.00101	0.00038
T-Ni	***0.087***	***0.099***	***0.116***	0.0024	0.0030	0.0017	0.0057	0.0075	0.0038	0.0025	0.0035	0.0014	0.0010	0.0012	0.0013	0.0012	0.0015	0.0014	0.0010	0.0011	0.0024	0.0010	0.0011	0.0016	0.0013	0.0015	0.0008
T-Se	***0.0015***	***0.0017***	***0.002***	0.00026	0.00031	0.00022	0.00021	0.00025	0.00012	0.00022	0.00025	0.00033	0.00020	0.00024	0.00033	0.00021	0.00025	0.00021	0.00021	0.00025	0.00036	0.00019	0.00022	0.00012	0.00023	0.00025	0.00022
T-Ag	***0.00113***	***0.00128***	***0.0015***	0.000010	0.000010	<0.000010	0.000033	0.000046	0.000020	0.000021	0.000028	0.000010	0.000010	0.000010	<0.000010	0.000010	0.000010	<0.000010	0.000010	0.000010	0.000014	0.000011	0.000012	<0.000010	0.000010	0.000010	<0.000010
T-U	***0.0113***	***0.0128***	***0.015***	0.0016	0.0017	0.0016	0.0005	0.0006	0.0005	0.0007	0.0008	0.0024	0.0010	0.0011	0.0026	0.0009	0.0011	0.0014	0.0010	0.0011	0.0026	0.0012	0.0014	0.0006	0.0013	0.0014	0.0008
T-Zn	***0.0285***	***0.0323***	***0.038***	0.0058	0.0072	0.0033	0.0148	0.0201	0.0088	0.0069	0.0098	0.0031	0.0034	0.0041	<0.0030	0.0033	0.0041	<0.0030	0.0034	0.0044	0.0043	0.0032	0.0033	<0.0030	0.0042	0.0049	<0.0030

All units in mg/L
Baseline period for W4 2007 – 2018

Colour Coding Legend for Trend Assessment	
Monthly 2021 mean is ≤ any Tier and ≤ Baseline 2 stdev	no action
Monthly 2021 mean is ≥ any Tier but ≤ Baseline 2 stdev	high background
Monthly 2021 mean is ≥ Tier 2 < Tier 3 ≥ Baseline 2 stdev	monitor
Monthly 2021 mean is ≥ Tier 3 > Baseline 2 stdev	Upward trend

W29

Water quality parameters at W29 in 2022 were present at concentrations very similar to the observed baseline values (e.g., ≤ +2 std. dev.) during the baseline period of 2009 to 2017. Exceptions to these observations occurred in May, June and September 2022.

In May, elevated TSS, and total As were present in concentrations greater than AMP T3 and baseline values for the same period. The elevated TSS above +2 standard deviations is, in part, a result of modifications to the 2009 to 2017 baseline dataset. Specifically, during the WUL process in 2015 for the Eagle Gold Project, regulators requested that water quality data associated with samples measuring greater than 50 mg/L TSS be ignored in developing site specific water quality objectives. As such, values exceeding 50 mg/L have been eliminated and the data is biased to the lower TSS concentrations as well as total As and total Fe as these parameters are closely correlated to TSS. The short-term excursion above baseline conditions is attributed to documented freshet influences outside and within the Project area, which were not considered within baseline data.

For June 2022, the monthly mean total As value (0.0087 mg/L) marginally exceeded the AMP T3 WQO of 0.0085 mg/L. Similarly in September, only total As was measured at concentrations (0.0093 mg/L) above the AMP T3 WQO but was only slightly greater than the baseline +2 standard deviations of 0.009 mg/L. The sample at W29 was collected on September 2 and likely reflects the residual influence of the August-September controlled discharge event but illustrates the effect of more complete mixing in Haggart Creek as significant additional dilution does not occur between W4 and W29 to account for the much lower concentrations observed at W29.

W99

Table 3.2-7: Summary Comparison of Key Water Quality Parameters at W29 for Baseline Period (2009 – 2017) to 2022 monthly Mean Values Relative to AMP Threshold Values (mg/L)

Parameter	T1	T2	T3	W29 - Haggart Creek																				
				April			May			June			July			August			September			October			November		
				Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 2)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 2)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 3)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 2)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)
TSS				10	14	<3.0	41	55	64	3	3	13	3	3	3	10	15	3	4	5	3	5	7	12	3	3	4.6
SO_4	***231.8***	***262.7***	***309***	100	107	100	36	40	25	55	63	37	70	79	60	73	84	62	65	67	62	71	78	40	85	91	65
Cl	***112.5***	***127.5***	***150***	0.9	1.1	<0.50	2.8	3.7	0.62	0.5	0.5	0.5	0.5	0.5	0.52	0.5	0.5	0.57	0.6	0.7	0.64	0.6	0.7	<0.50	1.2	1.6	<0.50
NO_3-N	***2.3***	***2.6***	***3***	0.139	0.148	0.14	0.046	0.055	0.03	0.083	0.094	0.081	0.059	0.069	0.098	0.065	0.081	0.1	0.098	0.116	0.2	0.124	0.136	0.076	0.154	0.162	0.092
NO_2-N	***0.015***	***0.017***	***0.02***	0.0010	0.0010	<0.0010	0.0056	0.0074	<0.0010	0.0010	0.0010	0.001	0.0010	0.0010	0.0016	0.0010	0.0010	0.0012	0.0010	0.0010	0.0029	0.0010	0.0010	<0.0010	0.0010	0.0010	<0.0010
NH_3-N	***0.848***	***0.961***	***1.13***	0.0050	0.0050	<0.0050	0.0069	0.0079	0.0054	0.0096	0.0119	0.005	0.0050	0.0050	0.005	0.0124	0.0173	0.005	0.0140	0.0200	0.0064	0.0124	0.0177	0.012	0.0050	0.0050	0.0053
CN_{WAD}	***0.005***	***0.005***	***0.005***	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050
Diss- Al	***0.075***	***0.085***	***0.1***	0.003	0.004	0.0021	0.130	0.165	0.18	0.022	0.027	0.046	0.013	0.016	0.0078	0.021	0.031	0.014	0.010	0.011	0.012	0.007	0.009	0.046	0.003	0.004	0.0049
T-Sb	***0.015***	***0.017***	***0.02***	0.0007	0.0008	0.00052	0.0009	0.0010	0.00061	0.0006	0.0006	0.00059	0.0008	0.0008	0.00076	0.0011	0.0014	0.00094	0.0007	0.0007	0.002	0.0007	0.0008	0.00058	0.0006	0.0007	0.0005
T-As	***0.0064***	***0.0072***	***0.0085***	0.007	0.0093	0.003	0.014	0.0176	0.034	0.005	0.0061	0.0087	0.007	0.0091	0.007	0.008	0.0108	0.0064	0.0074	0.0090	0.009	0.0075	0.0095	0.0075	0.0047	0.0055	0.0059
T-Cd	***0.00015***	***0.00017***	***0.0002***	0.00002	0.00002	0.000018	0.00008	0.00011	0.000079	0.00002	0.00002	0.000019	0.00002	0.00002	0.000012	0.00002	0.00002	0.000013	0.00002	0.00002	0.000016	0.00003	0.00004	0.000022	0.00002	0.00002	0.000014
T-Co	***0.003***	***0.0034***	***0.004***	0.00033	0.00045	0.00014	0.00110	0.00141	0.00099	0.00011	0.00012	0.00037	0.00012	0.00012	0.0002	0.00022	0.00031	0.00023	0.00012	0.00013	0.00047	0.00029	0.00041	0.00031	0.00011	0.00011	<0.00010
T-Cu	***0.00375***	***0.00425***	***0.005***	0.00126	0.00169	0.0005	0.00430	0.00497	0.0039	0.00094	0.00113	0.0012	0.00077	0.00090	0.00056	0.00111	0.00154	0.00098	0.00085	0.00100	0.0017	0.00092	0.00116	0.0019	0.00050	0.00050	0.00061
T-Fe	***0.75***	***0.85***	***1***	0.62	0.92	0.081	2.00	2.60	1.4	0.14	0.19	0.43	0.12	0.15	0.087	0.36	0.57	0.1	0.10	0.13	0.1	0.51	0.79	0.51	0.04	0.05	0.049
T-Pb	***0.00578***	***0.00655***	***0.0077***	0.0009	0.0013	0.000055	0.0022	0.0029	0.0023	0.0002	0.0002	0.00065	0.0001	0.0002	0.00012	0.0005	0.0008	0.000097	0.0003	0.0004	0.000091	0.0005	0.0007	0.00069	0.0001	0.0001	0.00012
T-Mn	***0.878***	***0.995***	***1.17***	0.068	0.081	0.081	0.108	0.135	0.1	0.018	0.021	0.041	0.039	0.049	0.028	0.037	0.044	0.035	0.040	0.044	0.044	0.051	0.064	0.039	0.057	0.070	0.021
T-Hg	***0.000015***	***0.000017***	***0.00002***	0.000010	0.000010	<0.000005	0.000010	0.000010	0.000012	0.000010	0.000010	0.0000061	0.000011	0.000013	0.000005	0.000011	0.000013	0.000005	0.000010	0.000013	0.000005	0.000011	0.000013	<0.000005	0.000010	0.000013	<0.000005
T-Mo	***0.0548***	***0.0621***	***0.073***	0.00020	0.00023	0.00016	0.00018	0.00020	0.00014	0.00025	0.00026	0.0003	0.00037	0.00046	0.00042	0.00035	0.00042	0.00044	0.00042	0.00050	0.00068	0.00036	0.00043	0.00034	0.00026	0.00029	0.00034
T-Ni	***0.087***	***0.099***	***0.116***	0.0028	0.0034	0.0014	0.0044	0.0050	0.0036	0.0010	0.0011	0.0015	0.0011	0.0012	0.00093	0.0013	0.0016	0.0013	0.0011	0.0012	0.0016	0.0012	0.0015	0.0017	0.0012	0.0014	0.00087
T-Se	***0.0015***	***0.0017***	***0.002***	0.00023	0.00025	0.00025	0.00022	0.00027	0.000087	0.00024	0.00024	0.00015	0.00021	0.00025	0.00022	0.00024	0.00029	0.0002	0.00023	0.00026	0.0003	0.00023	0.00027	0.00015	0.00023	0.00025	0.00022
T-Ag	***0.00113***	***0.00128***	***0.0015***	0.000010	0.000010	<0.000010	0.000027	0.000035	0.000017	0.000010	0.000010	0.000011	0.000010	0.000010	0.00001	0.000010	0.000010	0.00001	0.000010	0.000010	0.00001	0.000010	0.000011	<0.000010	0.000010	0.000010	<0.000010
T-U	***0.0113***	***0.0128***	***0.015***	0.0021	0.0023	0.0019	0.0007	0.0008	0.00059	0.0009	0.0009	0.00075	0.0012	0.0014	0.0013	0.0014	0.0017	0.0013	0.0013	0.0014	0.0023	0.0014	0.0016	0.00069	0.0017	0.0018	0.0011
T-Zn	***0.0285***	***0.0323***	***0.038***	0.007	0.008	<0.0030	0.012	0.015	0.0098	0.003	0.004	0.0038	0.005	0.006	0.003	0.003	0.004	0.003	0.003	0.004	0.003	0.004	0.005	0.0032	0.003	0.003	<0.0030

All units in mg/L
Baseline period for W4 2007-2018, samples with TSS<50 mg/L excluded

Colour Coding Legend for Trend Assessment	
Monthly 2021 mean is ≤ any Tier and ≤ Baseline 2 stdev	no action
Monthly 2021 mean is ≥ any Tier but ≤ Baseline 2 stdev	high background
Monthly 2021 mean is ≥ Tier 2 < Tier 3 ≥ Baseline 2 stdev	monitor
Monthly 2021 mean is ≥ Tier 3 > Baseline 2 stdev	Upward trend

Table 3.2-8: Summary Comparison of Key Water Quality Parameters at W99 for 2019 to 2022 monthly Mean Values Relative to AMP Threshold Values (mg/L)

Parameter	T1	T2	T3	W99 - Haggart Creek																						
				April			May			June			July			August			September			October			November		
				Baseline 1 stdev	Baseline 2 stdev	2021 mean	Baseline 1 stdev	Baseline 2 stdev	2021 mean	Baseline 1 stdev	Baseline 2 stdev	2021 mean	Baseline 1 stdev	Baseline 2 stdev	2021 mean	Baseline 1 stdev	Baseline 2 stdev	2021 mean	Baseline 1 stdev	Baseline 2 stdev	2021 mean	Baseline 1 stdev	Baseline 2 stdev	2021 mean	Baseline 1 stdev	Baseline 2 stdev	2021 mean
TSS			***15***	19	25	3	45	62	39	17	26	3	3	4	3	5	6	31	3	3	2	3	3	15	3	3	5
SO_4	***231.8***	***262.7***	***309***	98	102	107	58	82	45	72	90	52	82	83	76	86	86	56	92	92	61	82	82	64	90	90	72
Cl	***112.5***	***127.5***	***150***	3.4	4.3	0.5	0.7	0.8	0.7	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.9
NO_3-N	***2.3***	***2.6***	***3***	0.104	0.113	0.152	0.204	0.312	0.060	0.068	0.075	0.082	0.063	0.066	0.066	0.058	0.058	0.065	0.060	0.060	0.079	0.118	0.118	0.102	0.141	0.141	0.124
NO_2-N	***0.015***	***0.017***	***0.02***	0.0011	0.0012	0.0010	0.0017	0.0021	0.0010	0.0016	0.0019	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
NH_3-N	***0.848***	***0.961***	***1.13***	0.0158	0.0209	0.006	0.0067	0.0067	0.006	0.0056	0.0056	0.005	0.0122	0.0158	0.006	0.0050	0.0050	0.005	0.0201	0.0201	0.005	0.0050	0.0050	0.005	0.008	0.008	0.006
CN_{WAD}	***0.005***	***0.005***	***0.005***	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	-	-	0.005	-	-	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Diss- Al	***0.075***	***0.085***	***0.1***	0.013	0.015	0.002	0.191	0.269	0.085	0.066	0.095	0.023	0.008	0.010	0.009	0.004	0.004	0.031	0.004	0.004	0.013	0.006	0.006	0.014	0.002	0.002	0.004
T-Sb	***0.015***	***0.017***	***0.02***	0.0015	0.0018	0.0005	0.0010	0.0011	0.0016	0.0006	0.0007	0.0004	0.0007	0.0007	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006	0.0004	0.0005	0.0005	0.0011	0.0006	0.0006	0.0005
T-As	***0.0064***	***0.0072***	***0.0085***	0.0197	0.0231	0.0034	0.0178	0.0228	0.0333	0.0042	0.0045	0.0046	0.0038	0.0040	0.0052	0.0037	0.0037	0.0074	0.0030	0.0030	0.0053	0.0029	0.0029	0.0192	0.0030	0.0030	0.0040
T-Cd	***0.00015***	***0.00017***	***0.0002***	0.00004	0.00005	0.00002	0.00006	0.00008	0.00008	0.00003	0.00004	0.00001	0.00001	0.00002	0.00001	0.00001	0.00001	0.00003	0.00001	0.00001	0.00001	0.00001	0.00001	0.00003	0.00002	0.00002	0.00001
T-Co	***0.003***	***0.0034***	***0.004***	0.00065	0.00072	0.00018	0.00108	0.00140	0.00108	0.00038	0.00050	0.00017	0.00011	0.00012	0.00013	0.00013	0.00013	0.00056	0.00011	0.00011	0.00016	0.00010	0.00010	0.00060	0.00012	0.00012	0.00013
T-Cu	***0.00375***	***0.00425***	***0.005***	0.00222	0.00260	0.00050	0.00373	0.00479	0.00390	0.00231	0.00310	0.00098	0.00063	0.00065	0.00060	0.00057	0.00057	0.00215	0.00058	0.00058	0.00059	0.00063	0.00063	0.00205	0.00081	0.00081	0.00062
T-Fe	***0.75***	***0.85***	***1***	0.99	1.19	0.09	1.89	2.49	1.61	0.70	1.00	0.23	0.09	0.11	0.11	0.11	0.11	1.09	0.04	0.04	0.12	0.05	0.05	1.07	0.04	0.04	0.07
T-Pb	***0.00578***	***0.00655***	***0.0077***	0.0019	0.0024	0.00005	0.0023	0.0030	0.00451	0.0008	0.0011	0.00018	0.0001	0.0001	0.00013	0.0002	0.0002	0.00084	0.0001	0.0001	0.00009	0.0001	0.0001	0.00189	0.00006	0.00006	0.00010
T-Mn	***0.878***	***0.995***	***1.17***	0.132	0.148	0.090	0.108	0.132	0.105	0.053	0.058	0.038	0.049	0.049	0.052	0.063	0.063	0.065	0.067	0.067	0.046	0.056	0.056	0.080	0.067	0.067	0.047
T-Hg	***0.000015***	***0.000017***	***0.00002***	0.000005	0.000005	0.000005	0.000050	0.000068	0.000030	0.000007	0.000007	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000006	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005	0.000005
T-Mo	***0.0548***	***0.0621***	***0.073***	0.00034	0.00040	0.00018	0.00025	0.00030	0.00027	0.00019	0.00019	0.00024	0.00019	0.00019	0.00028	0.00019	0.00019	0.00029	0.00029	0.00029	0.00031	0.00021	0.00021	0.00030	0.00025	0.00025	0.00021
T-Ni	***0.087***	***0.099***	***0.116***	0.0027	0.0029	0.0017	0.0039	0.0048	0.0038	0.0025	0.0032	0.0013	0.0010	0.0010	0.0011	0.0010	0.0010	0.0022	0.0010	0.0010	0.0011	0.0010	0.0010	0.0023	0.0009	0.0009	0.0008
T-Se	***0.0015***	***0.0017***	***0.002***	0.00024	0.00026	0.00025	0.00018	0.00022	0.00016	0.00014	0.00015	0.00018	0.00015	0.00016	0.00013	0.00012	0.00012	0.00014	0.00012	0.00012	0.00013	0.00020	0.00020	0.00015	0.00014	0.00014	0.00013
T-Ag	***0.00113***	***0.00128***	***0.0015***	0.000019	0.000023	0.000010	0.000033	0.000044	0.000027	0.000013	0.000015	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000017	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010	0.000010
T-U	***0.0113***	***0.0128***	***0.015***	0.0027	0.0031	0.0022	0.0011	0.0015	0.0010	0.0011	0.0014	0.0007	0.0013	0.0014	0.0011	0.0014	0.0014	0.0009	0.0017	0.0017	0.0010	0.0014	0.0014	0.0012	0.0018	0.0018	0.0013
T-Zn	***0.0285***	***0.0323***	***0.038***	0.006	0.007	0.0032	0.010	0.013	0.0105	0.004	0.004	0.0030	0.003	0.003	0.0030	0.003	0.003	0.0044	0.003	0.003	0.0030	0.003	0.003	0.0048	0.0030	0.0030	0.0030

NOTES:

No baseline available for W99 - sampling commenced in April 2019

Colour Coding Legend for Trend Assessment	
Monthly 2021mean is ≤ any Tier and ≤ Baseline 2 stdev	no action
Monthly 2021mean is ≥ any Tier but ≤ Baseline 2 stdev	high background
Monthly 2021mean is ≥ Tier 2 < Tier 3 ≥ Baseline 2 stdev	monitor
Monthly 2021mean is ≥ Tier 3 > Baseline 2 stdev	Upward trend

W23

Water quality at W23 reflects loadings from all upstream non-mine related tributaries (e.g., Lynx Creek, 15 Pup, Gil Gulch and Fisher Gulch), and all mine related inputs from Dublin Gulch and Eagle Creek. Water quality observed in 2022 at W23 relative to the baseline period of 2007 to 2017 indicated that all parameters measured in 2022 were at concentrations very similar to those observed during baseline monitoring. Indeed, all parameters were present at a concentration within +1 standard deviation of the baseline monthly mean concentration, documenting that short term excursions above baseline conditions observed in July and September at W4 were not persistent below near field of the Project.

Table 3.2-9: Summary Comparison of Key Water Quality Parameters at W23 for Baseline Period (2007 – 2017) to 2022 monthly Mean Values Relative to AMP Threshold Values

Parameter	T1	T2	T3	W23 - Haggart Creek																						
				April			May			June			July			August			September			October			November		
				Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 2)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)
TSS				15	22	<3.0	91	135	60	45	67	18	4	4	<3.0	3	3	<3.0	9	13	<3.0	3	3	7.9	3	3	<3.0
SO_4	***231.8***	***262.7***	***309***	89	89	110	24	30	21	53	60	25	74	82	71	72	79	69	68	75	67	74	82	57	91	99	83
Cl	***112.5***	***127.5***	***150***	0.5	0.5	<0.50	1.5	2.2	<0.50	0.5	0.5	<0.50	0.5	0.5	<0.50	0.5	0.5	<0.50	0.6	0.7	<0.50	0.6	0.7	<0.50	0.6	0.7	<0.50
NO_3-N	***2.3***	***2.6***	***3***	0.179	0.191	0.26	0.035	0.042	0.038	0.071	0.084	0.061	0.055	0.065	0.095	0.068	0.082	0.066	0.099	0.118	0.075	0.160	0.179	0.14	0.205	0.222	0.11
NO_2-N	***0.015***	***0.017***	***0.02***	0.0010	0.0010	<0.0010	0.0030	0.0044	<0.0010	0.0010	0.0010	<0.0010	0.0010	0.0010	<0.0010	0.0010	0.0010	<0.0010	0.0010	0.0011	0.001	0.0010	0.0010	<0.0010	0.0010	0.0010	0.0015
NH_3-N	***0.848***	***0.961***	***1.13***	0.0071	0.0083	<0.0050	0.0100	0.0124	<0.0050	0.0299	0.0427	<0.0050	0.0050	0.0050	0.014	0.0158	0.0225	<0.0050	0.0118	0.0168	0.043	0.0133	0.0187	<0.0050	0.006	0.006	0.0068
CN_{WAD}	***0.005***	***0.005***	***0.005***	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050
Diss- Al	***0.075***	***0.085***	***0.1***	0.006	0.008	0.0026	0.167	0.215	0.12	0.038	0.052	0.051	0.019	0.027	0.007	0.010	0.013	0.0076	0.017	0.022	0.01	0.008	0.010	0.015	0.004	0.005	0.0048
T-Sb	***0.015***	***0.017***	***0.02***	0.0015	0.0021	0.00055	0.0010	0.0012	0.00062	0.0014	0.0019	0.00047	0.0006	0.0007	0.00069	0.0006	0.0006	0.00046	0.0007	0.0008	0.00062	0.0005	0.0006	0.0006	0.0005	0.0005	0.00059
T-As	***0.0064***	***0.0072***	***0.0085***	0.0291	0.0436	0.0051	0.0178	0.0238	0.017	0.0271	0.0398	0.0068	0.0055	0.0061	0.0068	0.0059	0.0063	0.0061	0.0072	0.0084	0.006	0.0056	0.0061	0.0083	0.0046	0.0047	0.0054
T-Cd	***0.00015***	***0.00017***	***0.0002***	0.00006	0.00008	0.0000086	0.00011	0.00015	0.000078	0.00016	0.00024	0.000034	0.00003	0.00004	0.000015	0.00003	0.00004	0.000016	0.00003	0.00004	0.000018	0.00003	0.00004	0.000022	0.00002	0.00002	0.000033
T-Co	***0.003***	***0.0034***	***0.004***	0.00086	0.00130	<0.00010	0.00149	0.00213	0.00088	0.00267	0.00414	0.00037	0.00010	0.00010	0.00014	0.00010	0.00010	<0.00010	0.00020	0.00026	0.00014	0.00019	0.00026	0.00024	0.00024	0.00032	<0.00010
T-Cu	***0.00375***	***0.00425***	***0.005***	0.00325	0.00492	0.0005	0.00554	0.00719	0.0037	0.00612	0.00882	0.0018	0.00087	0.00097	0.00068	0.00085	0.00096	0.0007	0.00172	0.00225	0.00097	0.00097	0.00114	0.0013	0.00087	0.00106	0.00085
T-Fe	***0.75***	***0.85***	***1***	1.77	2.78	0.052	2.63	3.79	1.4	0.75	1.04	0.51	0.07	0.10	0.076	0.09	0.12	0.079	0.14	0.19	0.11	0.09	0.13	0.4	0.04	0.05	0.041
T-Pb	***0.00578***	***0.00655***	***0.0077***	0.0032	0.0051	<0.000050	0.0037	0.0055	0.002	0.0078	0.0123	0.00069	0.0001	0.0001	0.000084	0.0001	0.0001	<0.000050	0.0005	0.0007	0.000073	0.0003	0.0004	0.00049	0.00036	0.00055	<0.000050
T-Mn	***0.878***	***0.995***	***1.17***	0.092	0.123	0.039	0.154	0.217	0.11	0.305	0.472	0.037	0.021	0.023	0.022	0.025	0.029	0.021	0.035	0.043	0.035	0.032	0.037	0.034	0.033	0.037	0.035
T-Hg	***0.000015***	***0.000017***	***0.00002***	0.000009	0.000009	<0.000005	0.000042	0.000061	0.0000071	0.000044	0.000061	0.0000051	0.000042	0.000062	<0.000005	0.000040	0.000059	<0.000005	0.000038	0.000056	<0.000005	0.000047	0.000068	<0.000005	0.000016	0.000022	<0.000005
T-Mo	***0.0548***	***0.0621***	***0.073***	0.00050	0.00057	0.00061	0.00035	0.00041	0.00025	0.00089	0.00116	0.00033	0.00056	0.00058	0.00066	0.00060	0.00064	0.00061	0.00076	0.00093	0.00064	0.00077	0.00091	0.00056	0.00087	0.00106	0.00063
T-Ni	***0.087***	***0.099***	***0.116***	0.0026	0.0039	0.0009	0.0047	0.0062	0.0032	0.0052	0.0076	0.0018	0.0007	0.0008	0.0008	0.0008	0.0009	0.00095	0.0011	0.0013	0.0011	0.0009	0.0011	0.0015	0.0009	0.0011	0.0009
T-Se	***0.0015***	***0.0017***	***0.002***	0.00109	0.00138	0.00046	0.00094	0.00133	0.00019	0.00111	0.00147	0.00025	0.00100	0.00138	0.00034	0.00104	0.00141	0.00029	0.00104	0.00143	0.00032	0.00090	0.00124	0.00029	0.00081	0.00108	0.00046
T-Ag	***0.00113***	***0.00128***	***0.0015***	0.000029	0.000039	<0.000010	0.000049	0.000072	0.000019	0.000033	0.000046	<0.000010	0.000010	0.000010	<0.000010	0.000010	0.000010	0.000015	0.000015	0.000018	<0.000010	0.000015	0.000018	<0.000010	0.000017	0.000021	<0.000010
T-U	***0.0113***	***0.0128***	***0.015***	0.0017	0.0017	0.0022	0.0004	0.0005	0.00042	0.0011	0.0013	0.00036	0.0011	0.0011	0.0013	0.0010	0.0011	0.001	0.0011	0.0012	0.0011	0.0013	0.0015	0.00097	0.0016	0.0017	0.0012
T-Zn	***0.0285***	***0.0323***	***0.038***	0.011	0.016	<0.0030	0.014	0.019	0.0093	0.023	0.035	0.0035	0.003	0.004	<0.0030	0.003	0.004	<0.0030	0.005	0.006	<0.0030	0.004	0.005	<0.0030	0.0044	0.0052	0.0044

Colour Coding Legend for Trend Assessment	
Monthly 2021mean is ≤ any Tier and ≤ Baseline 2 stdev	no action
Monthly 2021mean is ≥ any Tier but ≤ Baseline 2 stdev	high background
Monthly 2021mean is ≥ Tier 2 < Tier 3 ≥ Baseline 2 stdev	monitor
Monthly 2021mean is ≥ Tier 3 > Baseline 2 stdev	Upward trend

3.3 Water Balance and Water Quality Modeling

The Eagle Gold Project water balance and water quality model (WBWQM) is a mass-conserving mixing model that predicts water quality for 38 parameters at key monitoring and compliance points in the receiving waters affected by mine activity. The model was designed on the GoldSim® platform and the water balance and water quality model uses a daily time-step for 50 years, spanning operations, closure and several years into post-closure.

The WBWQM has been updated and integrates the following:

- An updated water management plan as described in: Eagle Gold Project Water Management Plan. Version 2020-01. January 2020 and incorporating operations-specific water management up through 2022 (e.g., water transfers);
- Revisions to the heap leach facility water balance modeling as prepared by Forte Dynamics (2023);
- Baseline climate and hydrology data collected since 2007 and inclusive of data collected in 2022;
- Baseline surface water quality monitoring data collected from 2007 to 2017 prior to initiation of construction in August 2017;
- Surface water quality monitoring data collected in 2018 through 2022 reflective of construction and early Operations phases;
- Site hydrological monitoring data for ditches and collection ponds up through 2022, and
- Updated geochemical source terms were modelled using the same laboratory kinetic test loading rates as presented in previous model iterations. Site- and parameter-specific scaling factors were derived based on operations seepage quality data (2020 through 2022) from the Platinum Gulch Waste Rock Storage Area (WRSA) and Eagle Pup WRSA. Data from re-designed field kinetic testing, inclusive of the 2022 monitoring period, were used to validate geochemical source terms employed in the WBWQM.

The other main change from the modelling approach from previous years has been the integration of the Events Pond in the WBWQM. The change has been done to better capture site-wide water management practices and predict future pond levels. Further details on the modelling approach are provided in Appendix E and Appendix F.

The operations water management plan and site-wide water balance model are represented by the generalized model schematic (Figure 3.3-1). During operations, water quality in mine discharge is driven by contact water reporting to the Lower Dublin South Pond. Contact water from Platinum Gulch WRSA, the temporary (or 90-Day) ore stockpile, and any drainage from the open pit all report to the LDSP through Ditch A. Suttles Gulch and the Eagle Pup WRSA drain to the LDSP via Ditch B. During 2022, excess water into the LDSP was primarily managed through:

- Transfer of LDSP water to the Events Pond to allow additional settling of solids;
- Transfer of water from the Events Pond or directly from the LDSP to the HLF for process make-up water;
- Discharge to Haggart Creek via Ditch C when water quality met discharge requirements of QZ14-041-1 for effluent quality (EQS).

The MWTP was constructed during 2022 wth final commissioning anticipated to be complete in Q1 2023.

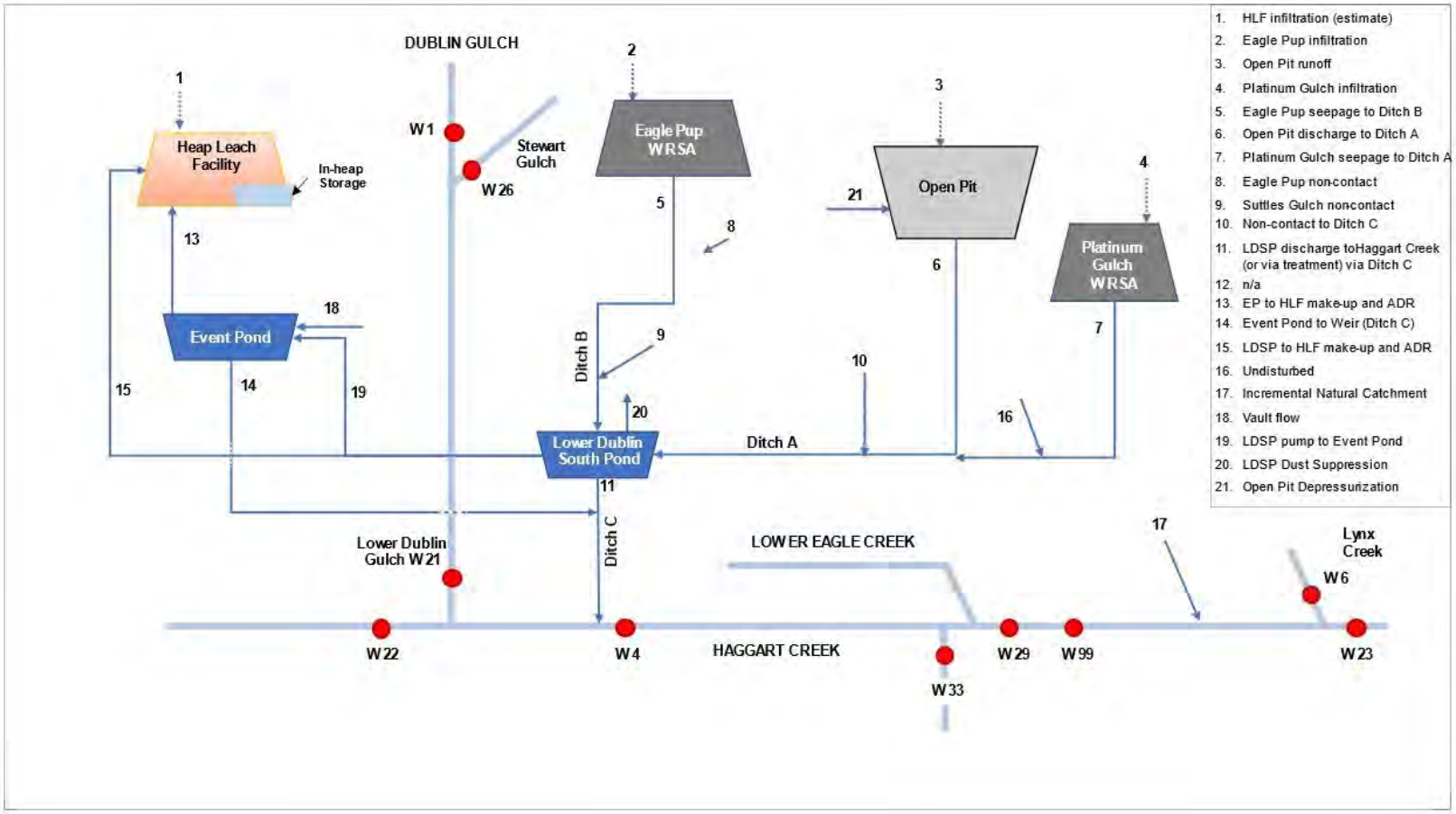


Figure 3.3-1: Generalized Water Balance Model Schematic - Overview

3.3.1 Site-Wide Surface Water, HLF Water Balance and Groundwater Model Integration

The Eagle Gold WBWQM is a GoldSim-based integrated site-wide water balance and water quality model that was developed by Lorax Environmental Services Ltd. (Lorax) to combine source concentrations of potential contaminants of concern with contact and non-contact flows allowing contaminant loading to be tracked throughout the mine site and into the receiving waters of Haggart Creek.

The WBWQM is integrated with both a heap leach facility water balance model (HLF WBM) and a groundwater model. It incorporates groundwater baseflow and recharge rates estimated by the latest numerical groundwater model (BGC 2020). Figure 3.3-2 illustrates the integration of the site-wide water balance model, with the HLF WBM, groundwater model and water quality model.

The Forte Dynamics GoldSim HLF WBM (i.e., Forte HLF WBM) was revised to include updated observed ore water content estimates and to employ an up-to-date ore placement schedule consistent with the current mine plan in the WBWQM. The Forte HLF WBM uses the same climate inputs to match the inputs to the WBWQM. Forte HLF WBM outputs, including makeup water demand, integrated drain-down volume and post-closure seepage rates were directly input into the WBWQM. Drain down was refined to reflect the assumed practice for recycling water back to the heap pad during treatment to manage discharge loading; additionally, post-closure seepage from the Forte HLF WBM was scaled assuming a cover is placed on the HLF during rinsing and draindown. Additionally, as noted above, the WBWQM, rather than the HLF WBM as has been done in previous years, has been updated to incorporate the use of the Events Pond to mimic the water management practice of using the Events Pond for make-up water storage (see Appendix E and F).

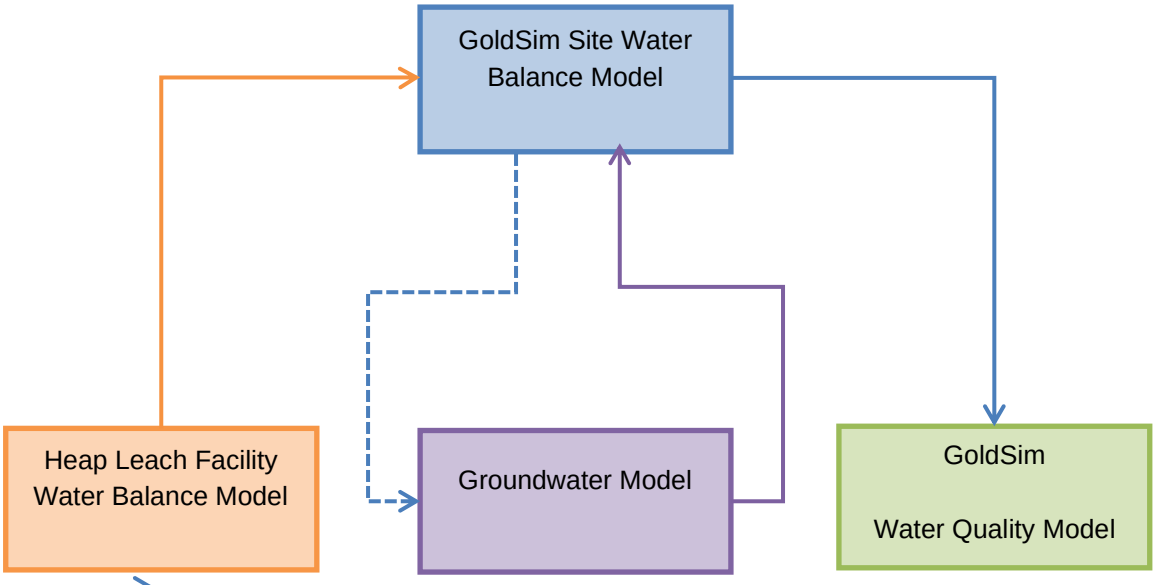


Figure 3.3-2: Water Balance Model Integration

3.3.1.1 Results

The results of the updated models are provided in the Eagle Gold Project 2022 Water Balance and Water Quality Model Update Report (Appendix F) and Forte Heap Leach Facility Water Balance Model Report (Appendix E). The models utilize the active mine plan and consider the receiving environment WQOs developed for the QZ14-041-1, the effluent quality standards mandated by QZ14-041-1, and updated data collected under the Environmental Monitoring, Surveillance and Adaptive Management Plan.

3.4 Groundwater

At the time of this submission, full QA/QC of groundwater associated data has not been complete. It will be provided on or before April 14, 2023.

3.5 Geochemical Monitoring

The geochemical monitoring program continued to provide on-going characterization of rock encountered during the operation of the Project. Whenever possible the geochemical monitoring program is tied to operational activities and the monitoring program has been designed to:

- Assess the level of weathering-driven reaction products and their potential to migrate;
- Verify geochemical predictions made during the mine planning phase;
- Assess the potential for metal leaching and acidic drainage from excavated rock to determine if it is suitable for construction material and;
- Evaluate the effectiveness of measures to prevent and control metal leaching and acidic drainage (if applicable).

3.5.1 Geochemical Barrel Testing

The assessment of water chemistry for leachate through field barrels developed from site waste rock continued throughout 2022. Natural precipitation percolates through the barrels and is captured in collection jugs that are connected to the bottom of the barrels. Field staff collect samples several times throughout non-freezing conditions and samples are processed by ALS laboratories.

In 2022, two composite samples were sampled throughout the non-freezing season. LX-2020-FB-1 is representative of the composition within the Platinum Gulch WRSA which is mainly composed of metasediments. LX-2020-FB-2 was constructed with granodiorite blended with various other lithologies in proportions representative of the Eagle Pup WRSA. The results for pH in 2022 were relatively consistent with 2020, 2021 and showed that when the barrels were re-constructed the mixed lithology showed more consistent and moderate concentrations when compared to the water quality seen when the barrels were just based on each distinct rock type.

Table 3.5-1: 2022 Geochemical Field Barrel Testing

Barrel	Date	Time	Temp	Sp.Cond.	pH	Volume
			(°C)	(µS/cm)		(L)
LX-2020-FB-1	25-Jun-22	9:40	12.1	259.6	7.94	8
	July 19, 2022	10:15	10	251.7	7.7	12

Barrel	Date	Time	Temp	Sp.Cond.	pH	Volume
			(°C)	(µS/cm)		(L)
	12-Aug-22	13:00	15.5	97.7	7.75	8
	10-Sep-22	13:50	7.3	264.4	7.78	15
	9-Oct-22	7:50	3.4	224.5	7.67	20
LX-2020-FB-2	25-Jun-22	9:00	12.8	299	7.92	10
	July 19, 2022	10:00	10.3	249.9	8.03	12
	12-Aug-22	13:15	16.3	96.5	7.45	10
	10-Sep-22	14:10	7.5	307.3	7.69	12
	9-Oct-22	7:26	5.1	222.2	7.9	20

3.5.2 Material Testing

3.5.2.1 Construction Material Sampling

During this reporting period, there was one construction project (the EP WRSA rock drain), that required borrow or fill material and thus required geochemical analysis to determine if the construction grade rock criteria of the licenses was met.

All samples analyzed to determine suitable as construction grade material are outlined in Table 3.5-2. Results from samples met the criteria required for construction or fill purposes, with a pH of at least 5.0, a total sulphide sulphur content of no greater than 0.3%, and an NP:AP ratio of at least 3:1. Samples ranged in pH from 7.9 to 8.21, with a median of 8.01, and with Sulphur content ranging from <0.01% to 0.06% and a median of 0.033 (Table 3.5-2).

Table 3.5-2: 2022 Construction Rock Characterization Summary

Sample ID	ALS ID	Date Sampled	Paste pH	Sulfur (%)	NP:AP Ratio
Construction Testing					
C00218252-Con	VA22A7416-001	31-Mar-22	9.0	0.08	8:2.5 (3.2)
C00218253-Con	VA22A7416-002	31-Mar-22	9.2	0.13	11:4.1 (2.71)
C00218254-Con	VA22A7416-003	31-Mar-22	9.1	0.23	13:7.2 (1.81)

3.5.2.2 Waste Rock Characterization

Additional waste rock characterization is conducted as further confirmation of the geochemical composition of waste materials placed in the WRSAs. The program includes quarterly grab samples representing blasted waste and annual waste sampling analysis of at least one grab samples per one million tonnes waste rock representing placed material in the WRSAs. Samples were taken from various benches and sample locations were mapped for future analyses (Figure 3.5-1). As outlined in the EMSAMP the Sobek Method for Modified Acid Base Accounting was used to analyze each grab sample from an accredited laboratory.

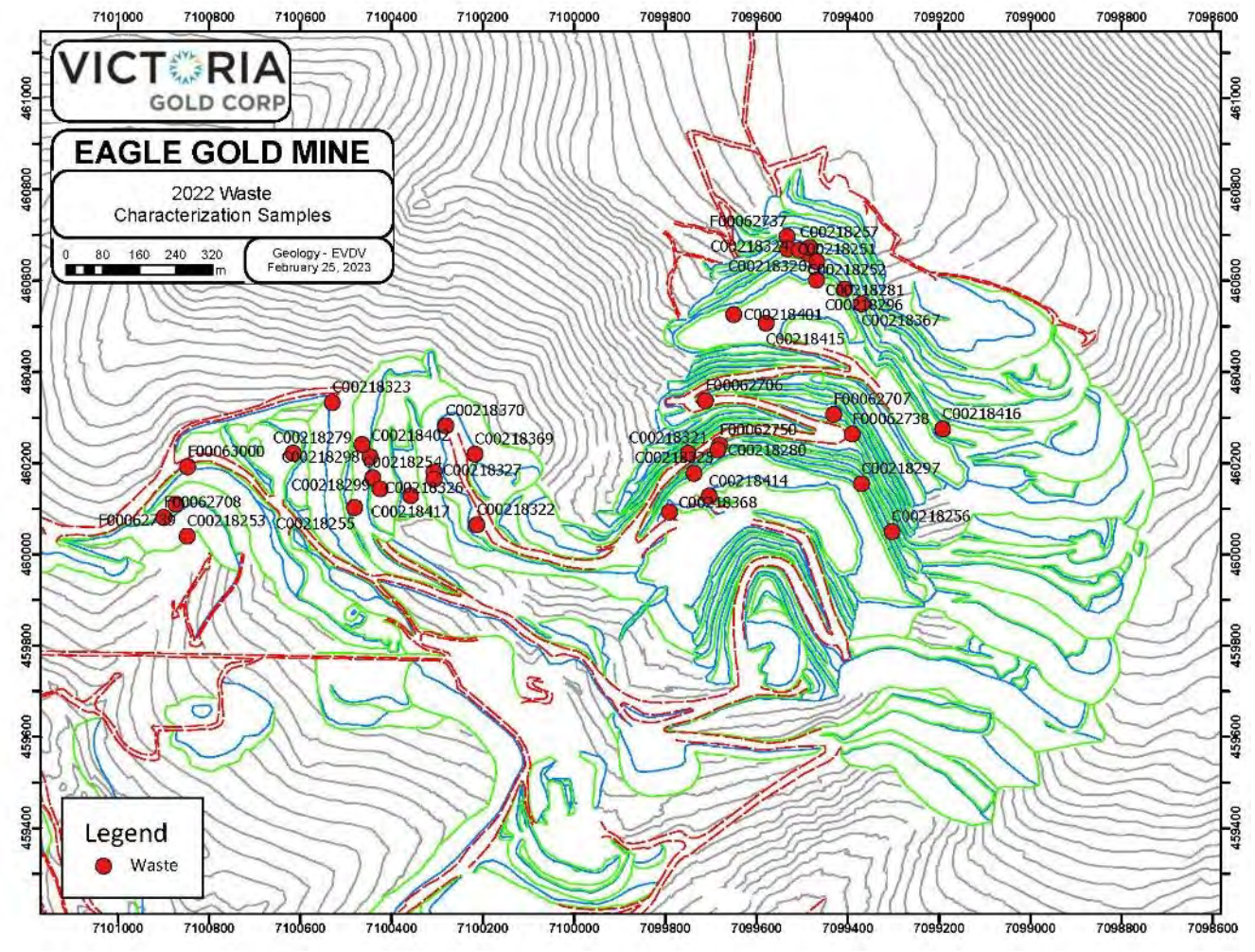


Figure 3.5-1: 2022 Waste Characterization Samples

As a preliminary check of the material characteristics, geochemical results were compared to the construction grade use criteria (Table 3.5-3). All samples were above neutral (pH=7.0) and were lower than 0.3% sulfur. All samples had NP:AP ratios that were above the 3:1 ratio. Overall, these results confirm pre-mining assumptions that the majority of the waste rock and ore from this site has a low sulfur content (typically less than 0.3%), and is predominantly non-acid generating.

Table 3.5-3: 2022 Waste Rock Characterization Summary

Sample ID	ALS ID	Date Sampled	Paste pH	Sulfur (%)	NP:AP Ratio
Quarterly Sample					
F00062706	WR2200040-001	18-Jan-22	8.2	0.06	21:1.9 (11.2)
C00218252-Con	VA22A7416-001	31-Mar-22	9.0	0.08	8:2.5 (3.2)
C00218279	WR2200501-001	30-May-22	8.4	0.06	12:1.9 (6.4)
C00218325	WR2200986-002	26-Aug-22	9.0	014	22:4.4 (5.03)

Sample ID	ALS ID	Date Sampled	Paste pH	Sulfur (%)	NP:AP Ratio
Annual Samples per Million Tonnes Waste					
F00062706	WR2200040-001	18-Jan-22	8.2	0.06	21:1.9 (11.2)
F00062750	WR2200231-002	20-Mar-22	8.5	0.09	53:2.8 (18.84)
C00218256	WR2200313-002	18-Apr-22	8.8	0.04	7:1.3 (5.6)
C00218280	WR2200501-002	30-May-22	8.5	0.21	72:6.6 (10.97)
C00218296	WR2200705-001	23-Jun-22	9.1	0.12	28:3.8 (7.47)
C00218321	WR2200780-002	21-Jul-22	8.9	0.13	35:4.4 (8)
C00218326	WR2200986-003	26-Aug-22	9.1	0.10	28:3.1 (8.96)
C00218368	WR2201361-002	17-Oct-22	NR	NR	NR
C00218402	WR2201549-002	29-Nov-22	NR	NR	NR
C00218416	R2201580-003	24-Dec-22	NR	NR	NR

NOTE:
NR - At the time of this report results had not been received from the laboratory.

3.5.2.3 Blast Hole Chip Sampling

Geochemical analysis from 10% of pulp splits of every blast pattern have been tested for a multielement ICP-MS at an external lab. From December, 2021 to November, 2022, 1,412 samples from 24 different benches had been sent for analysis. In addition to these samples, under the blast hole composite sampling program during 2022, 991 blast hole composite samples comprised of a mix of ore and waste had been analyzed from 24 different benches. The composite samples test for As, S and C.

Results for both the blast hole chip sampling and the blast hole chip composite sampling are presented in Table 3.5-4.

Table 3.5-4: Summary of 2022 Blasthole Geochemistry Assay Results

Bench	Total Tonnes Mined per Bench	Blasthole Composite Samples				Grade Control Check Assay Samples			
		Number of Samples	Arsenic (ppm)	Sulfur (%)	Total Inorganic Carbon (%)	Number of Samples	Arsenic (ppm)	Sulfur (%)	Total Inorganic Carbon (%)
1355	232,816	14	120	0.12	0.05	17	198	0.3	
1345	208,664	18	247	0.11	0.06	36	391	0.2	
1335	436,669	35	72	0.14	0.07	53	91	0.14	
1325	522,960	45	121	0.14	0.07	65	121	0.13	
1315	509,192	43	126	0.21	0.14	68	54	0.15	
1305	657,985	45	114	0.15	0.19	42	98	0.21	
1295	832,885	50	37	0.16	0.11	16	39	0.14	
1285	921,037	50	141	0.27	0.25	-	-	-	
1275	327,480	10	NR	NR	NR	-	-	-	
1235	297,572	15	431	0.09	0.16	6	91	0.02	
1225	665,582	25	50	0.12	0.13	70	55	0.12	
1215	1,188,898	64	91	0.09	0.17	123	124	0.09	
1205	1,407,779	68	147	0.13	0.34	133	376	0.11	
1195	1,283,048	55	153	0.12	0.34	122	200	0.13	
1185	1,441,705	65	158	0.09	0.33	133	314	0.12	
1175	1,698,662	90	259	0.14	0.35	162	321	0.13	
1165	1,471,673	73	267	0.18	0.31	109	321	0.13	
1155	1,838,957	78	203	0.11	0.31	67	407	0.21	

Bench	Total Tonnes Mined per Bench	Blasthole Composite Samples				Grade Control Check Assay Samples			
		Number of Samples	Arsenic (ppm)	Sulfur (%)	Total Inorganic Carbon (%)	Number of Samples	Arsenic (ppm)	Sulfur (%)	Total Inorganic Carbon (%)
1145	1,551,395	48	749	0.35	0.31	23	412	0.15	
1135	738,595	15	NR	NR	NR	NR	NR	NR	
1085	22,157	5	537	0.01	0.05	2	828	ND	
1075	750,350	40	629	0.07	0.26	74	766	0.1	
1065	665,365	25	676	0.09	0.33	64	707	0.09	
1055	324,235	15	409	0.09	0.17	27	793	0.15	

NOTE:
NR - At the time of this report results had not been received from the laboratory.

3.5.3 Geochemical Interpretation

The Average Crustal Abundance of metals outlined in Price (1997) can be used to gauge if the metal concentration contained within a sample is elevated (SRK, 2013). According to SRK (2013), a sample result is elevated when it is 10 times higher than the ACA listed in Price. Table 3.5-5 outlines the Elements considered of interest in SRK (2013) for Eagle Mine and the values reported by Price.

Table 3.5-5: Elements of Interest - Adapted from Price (1997) Average Crustal Abundance

Element	As	Cd	Hg	S	Sb	Se	Mn	Mo	U
Average Crustal Abundance (ACA)	1.8	0.15	0.085	350	0.2	0.05	950	1.2	2.7
Detection to 50% of ACA	0.9	0.075	0.043	175	0.1	0.025	475	0.6	1.35
50% of ACA to ACA	1.8	0.15	0.085	350	0.2	0.05	950	1.2	2.7
ACA to 5 times ACA	9	0.75	0.425	1750	1	0.25	4750	6	13.5
5 times ACA to 10 times ACA	18	1.5	0.85	3500	2	0.5	9500	12	27
>10 times ACA	>18	>1.5	>0.85	>3500	>2	>0.5	>9500	>3200	>27

In comparison to the Price ACA values, the ICP-MS data from the blast hole chip sampling suggests that there are areas where results are elevated in As, Cd, Hg, S, Sb, Se, Mo and U. Manganese (Mn) is not elevated and all readings are within range for average crustal abundances. Maps of the Elements of interest are presented in Figure 3.5-2 to Figure 3.5-6. The elevated results for the other elements are associated with high grade gold-bearing veins within the granodiorite. Outside of the main ore body, readings are elevated in the metasediments where there is evidence of intrusion of high-grade gold-bearing veins. Generally, the results suggest that the deleterious elements are most closely associated with the ore body and that average metal concentrations within the waste materials are in the expected range for average crustal rock.

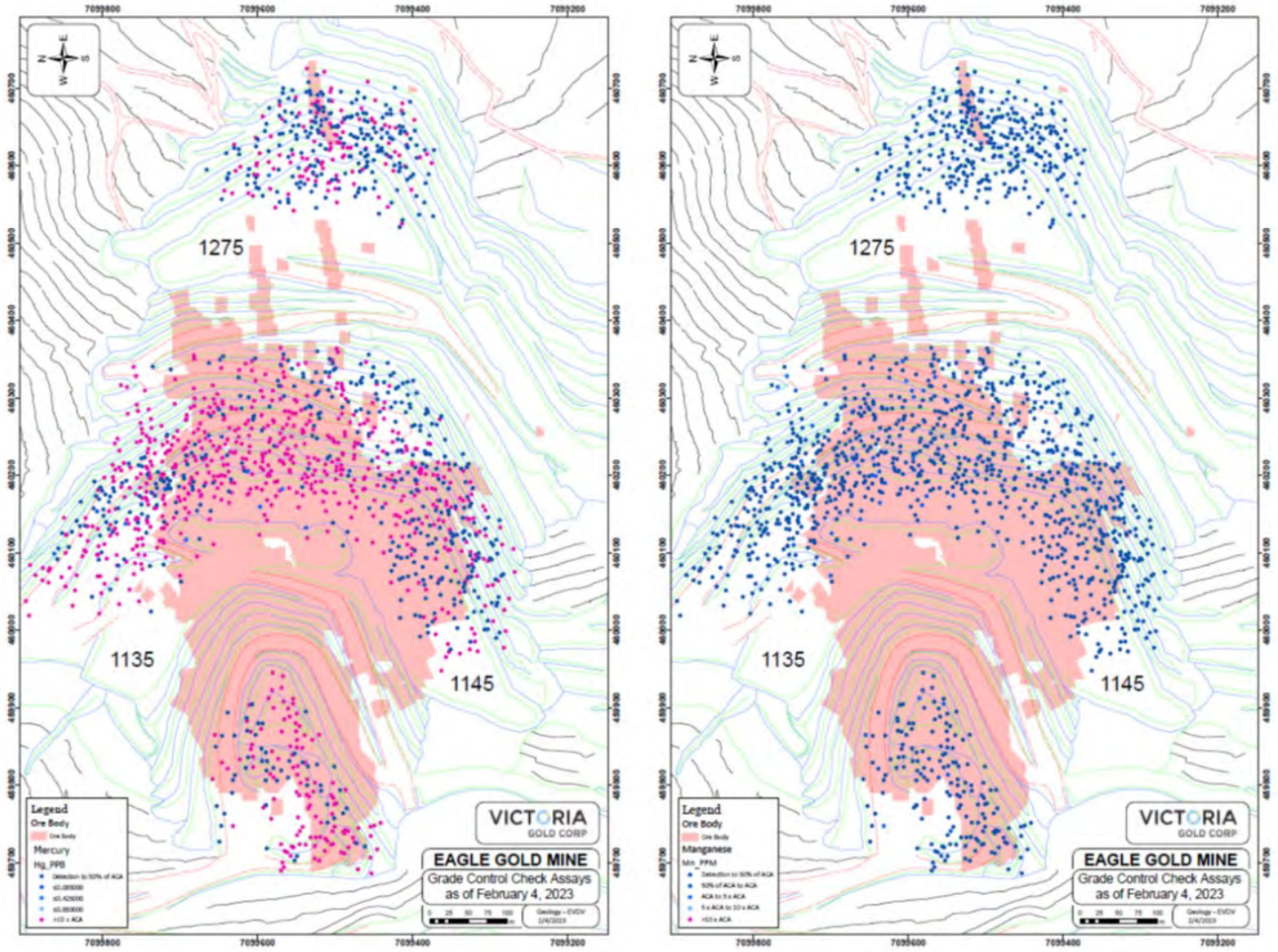


Figure 3.5-2: Multi-Element ICP-MS Results Compared to ACA (Hg and Mn)

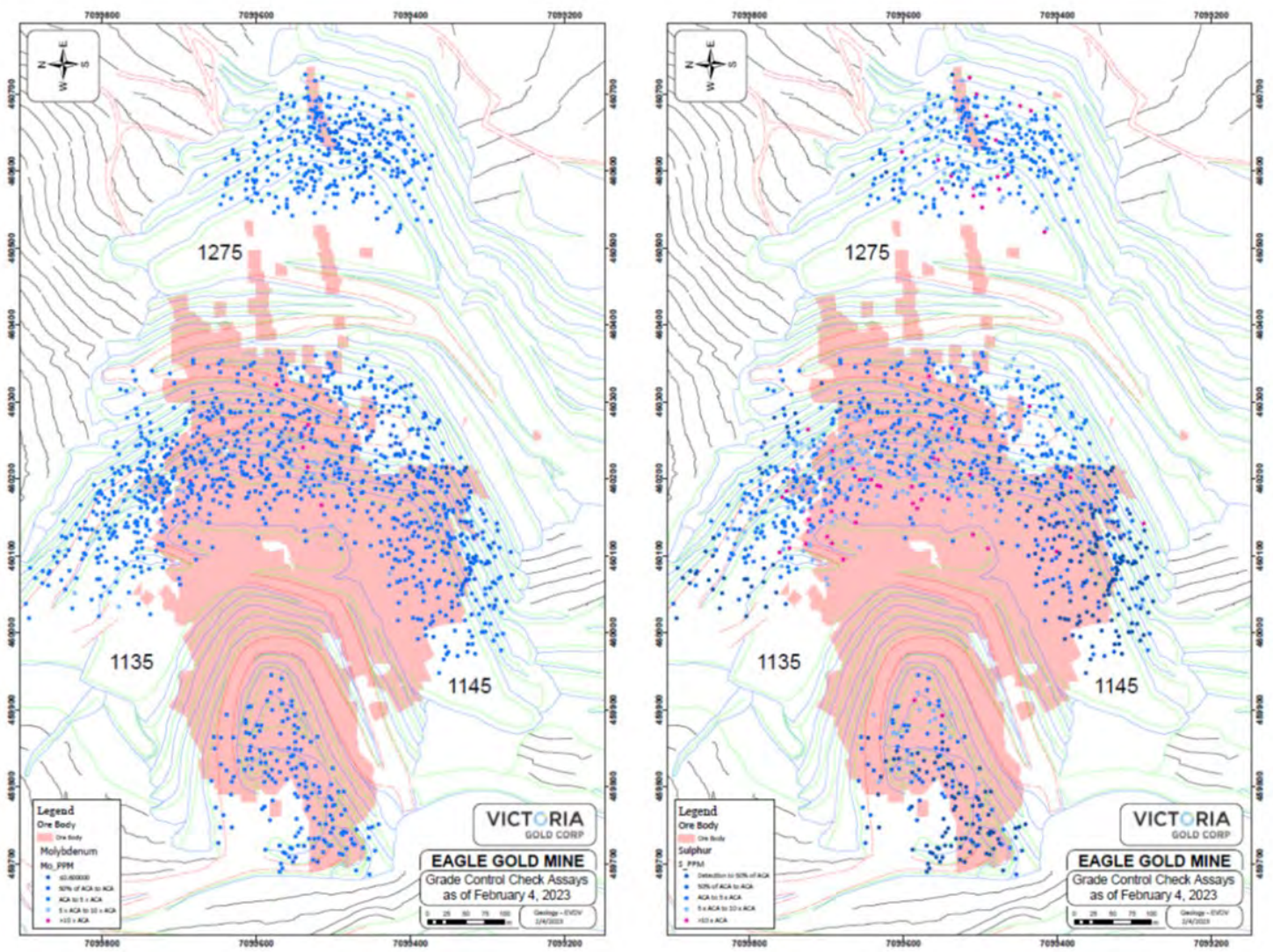


Figure 3.5-3: Multi-Element ICP-MS Results Compared to ACA (Mo and S)

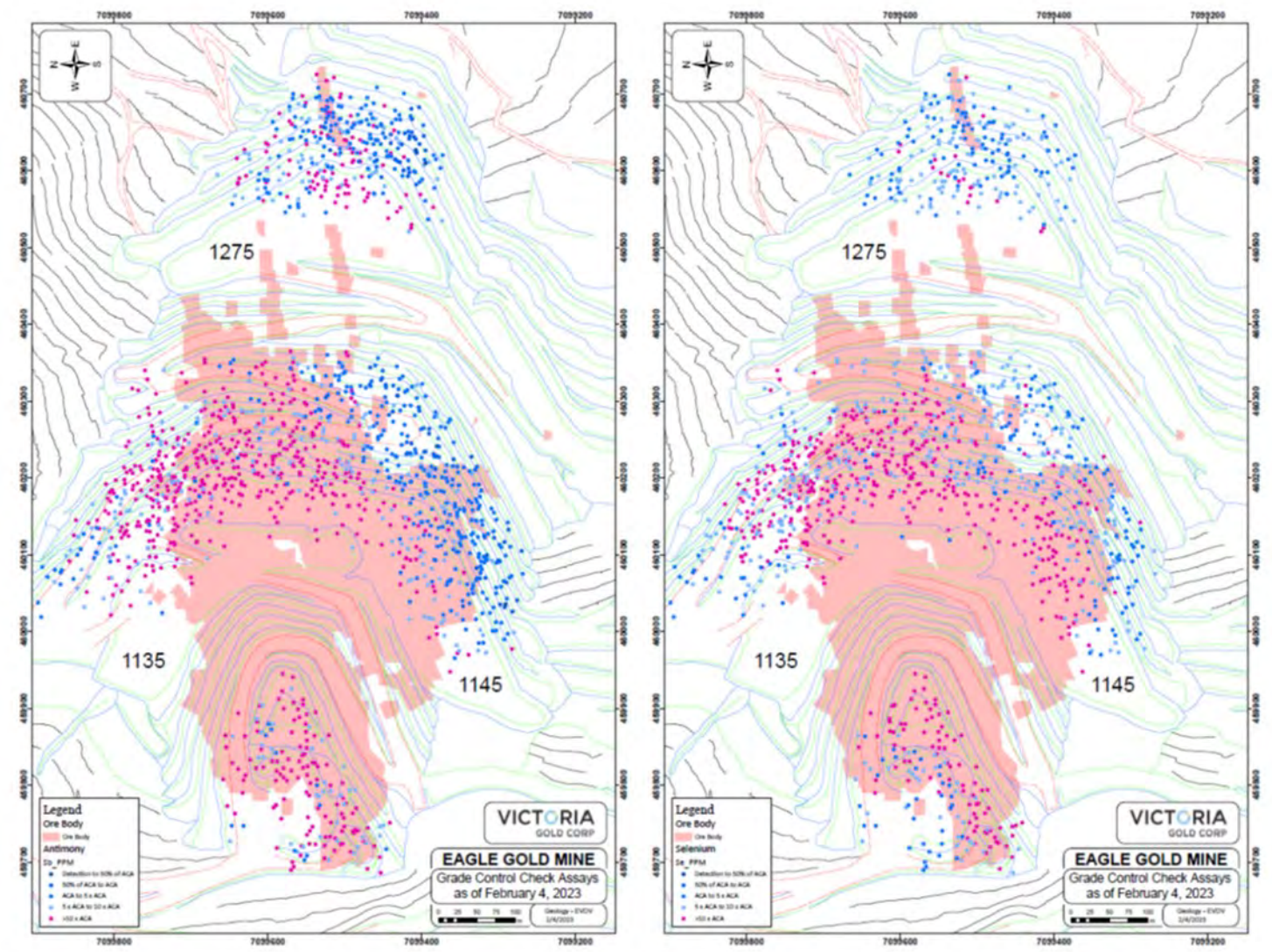


Figure 3.5-4: Multi-Element ICP-MS Results Compared to ACA (Sb and Se)

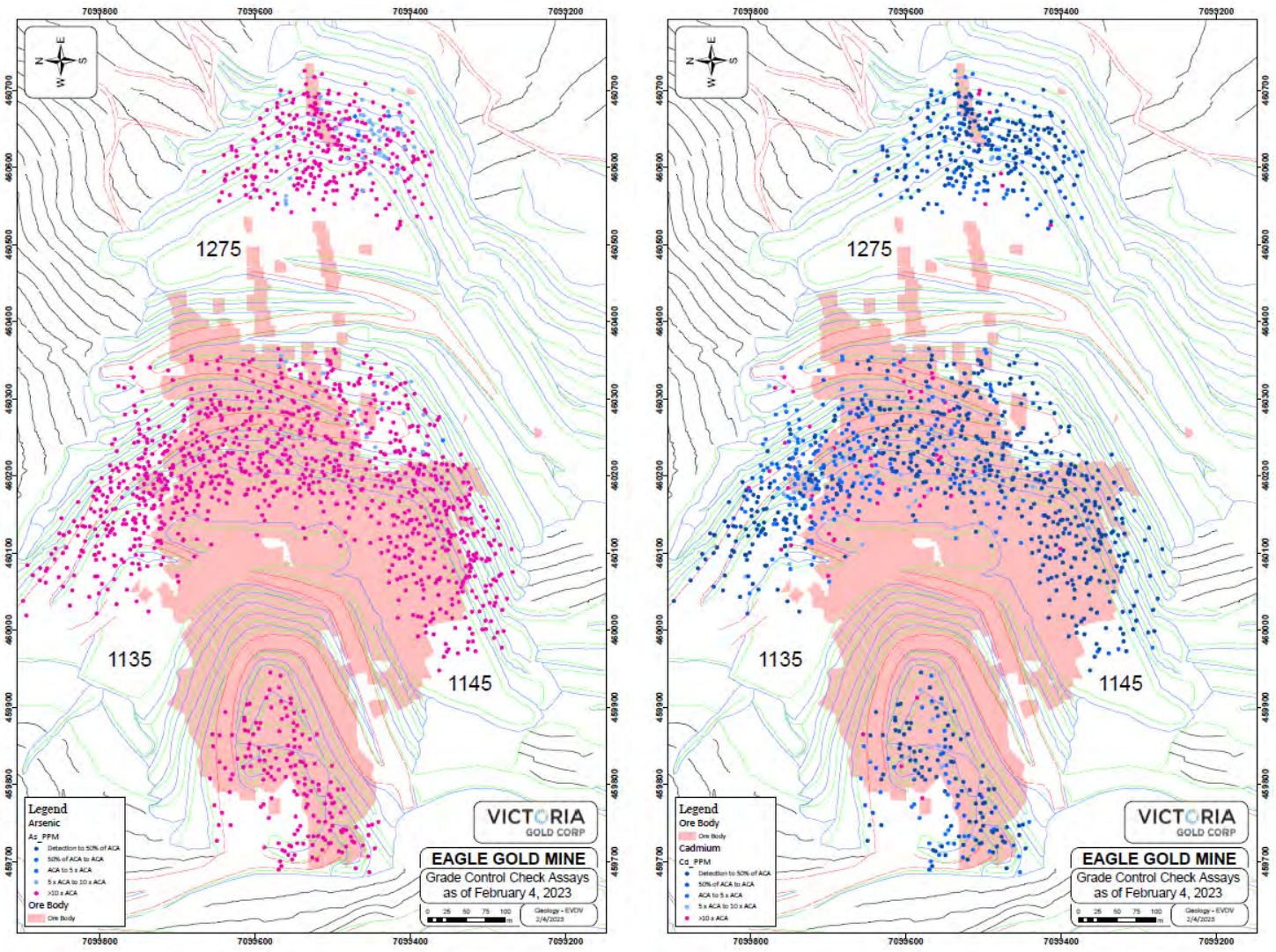


Figure 3.5-5: Multi-Element ICP-MS Results Compared to ACA (As and Cd)

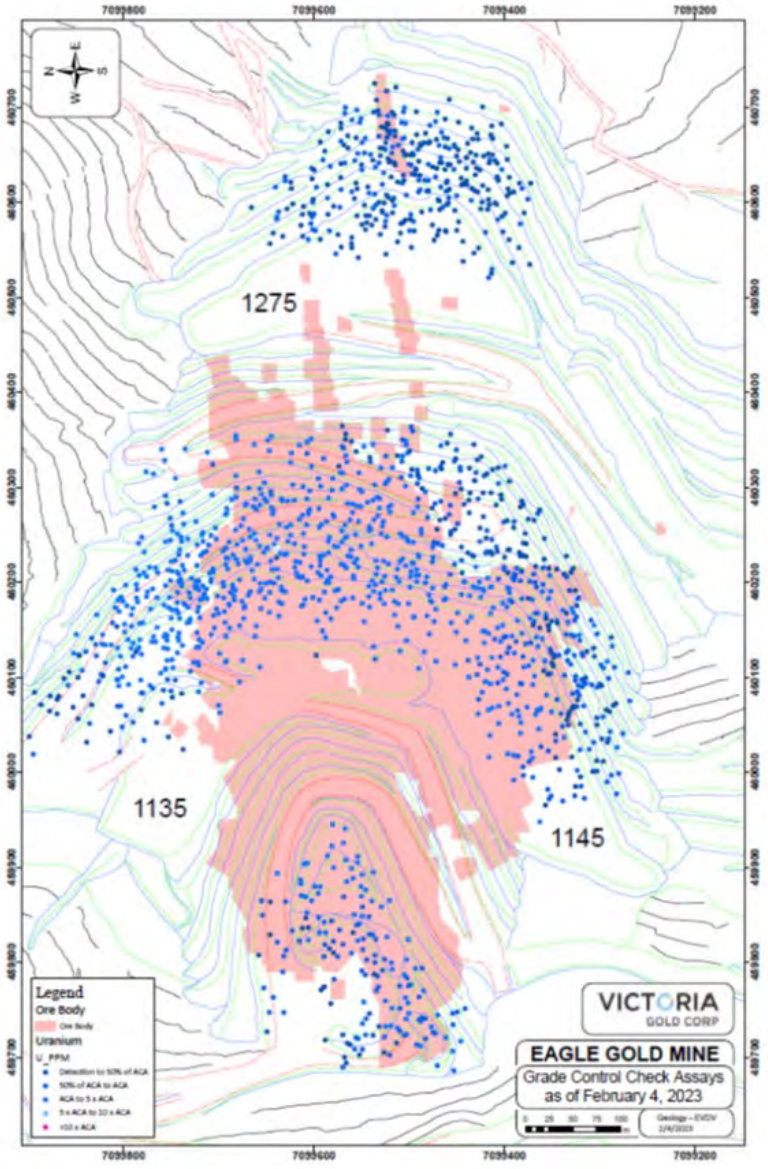


Figure 3.5-6: Multi-Element ICP-MS Results Compared to ACA (U)

3.6 Aquatic Environment

Stream sediment, benthic macroinvertebrate, and water quality programs have historically been performed as per WUL requirements on a biennial basis (i.e., once every 2 years) to evaluate potential mine related effects on primary receiving environments. On April 20, 2019, the mine became subject to *Metal and Diamond Mining Effluent Regulations (*MDMER) and as a result required an Environmental Effects Monitoring (EEM) program to be developed and approved under the MDMER. An EEM Study Design was submitted to Environment and Climate Change Canada (ECCC) on April 20, 2020 which was subsequently approved by ECCC on December 11, 2020. As stated in the EMSAMP, the aquatic environment monitoring program for the Project will now conform to the

EEM study design and the scope of the program under the EMSAMP is now considered to be the same as the EEM Study. The full phase 1 study results was submitted to ECCC on April 20 2022 and as required by QZ14-041-1, the results obtained under the EEM study is presented within Appendix G of this report. The second full study design designed to evaluate continuing potential for mine related impacts will be submitted to ECCC on April 20 2024, in alignment with regulated frequencies.

The approved program follows a 3-year cycle as is standard with EEM studies. The first year of monitoring outlined within the Phase 1 study design was performed in spring and fall 2021. Minnow Environmental Inc. (Minnow) completed benthic invertebrate community sampling from September 1st to 2nd, 2021, lethal fish sampling for slimy sculpin (*Cottus cognatus*) from May 20th to 24th, 2021, and non-lethal sampling of arctic grayling (*Thymallus arcticus*) from September 3rd to 5th, 2021. A figure of the study area and monitoring locations are presented below.

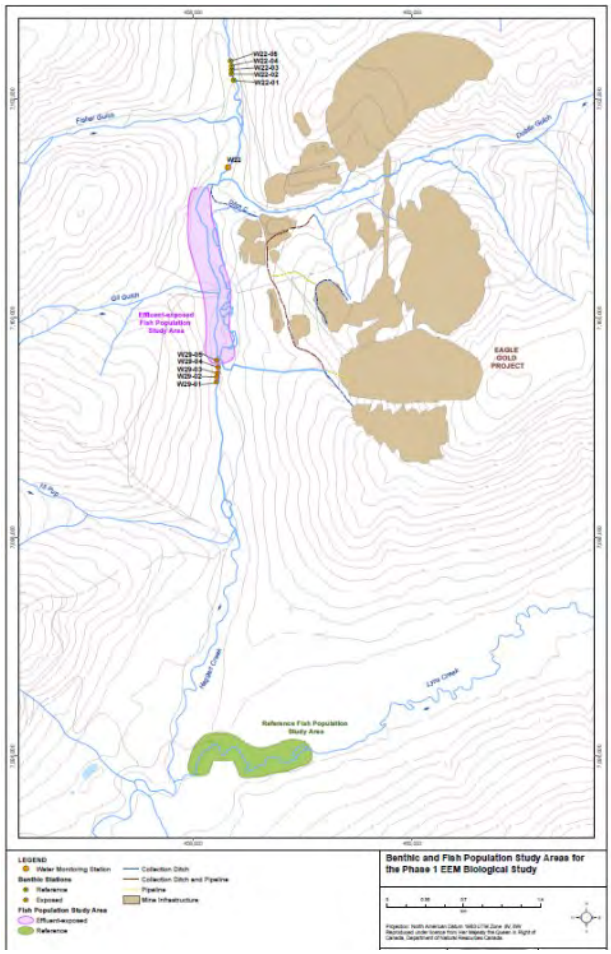


Figure 3.6-1: Study Area and Monitoring Locations of the Phase 1 EEM Study

Stream sediment monitoring at the Project site was not conducted as this sampling was not a requirement under the ECCC approved EEM study design. The Haggart Creek study area contains very limited depositional habitat suitable for deposit of fine sediments, being primarily composed of small cobble and gravel. The general absence of any substantial accumulation of fine sediments in Haggart Creek was deemed to preclude meaningful assessment of potential mine-related influences on sediment chemistry within, along and/or between watercourses. In addition, the applicability of stream sediment chemistry monitoring to support the interpretation

of benthic invertebrate community data was determined to be minimal given that fine sediment composes much less than ~5% of available substrate within the study area

Benthic invertebrate community sampling was conducted in September 2021 to meet the EEM requirement to assess potential impacts of mine effluent on food resources for fish. The design of the benthic study included sampling at Haggart Creek downstream of the Ditch C confluence (Station W29-01 to W29-05) as the effluent-exposed area, and Haggart Creek upstream the Dublin Gulch confluence (Station W22-01 to W22-05) as the reference area (Figure 3.6-1). A total of 5 samples were collected from each of the station areas and results were evaluated for EEM primary metrics density, richness, Simpson's Evenness Index, and the Bray-Curtis Index of Dissimilarity as well as additional comparisons involving relative abundance of dominant/indicator groups, functional feeding groups, and habit preference groups to augment interpretation of effects. Interpretation of the 2021 benthic invertebrate community data documented significantly lower benthic invertebrate density downstream of potential effluent discharge in Haggart Creek compared to upstream, however no significant difference in species richness was indicated between these study areas. The relative abundance of metal-sensitive Ephemeroptera (mayflies) did not differ significantly between the effluent-exposed and reference area indicating that differences in community structure were unrelated to differing metals exposure potentially related to the mine effluent discharge. Benthic invertebrate density at both areas in Haggart Creek was lower in 2021 than in previous studies conducted in 2007 and 2018, but richness and relative abundance of metal-sensitive Ephemeroptera at each area were similar between 2021 and 2007 suggesting that benthic invertebrate community structure has not changed substantially between post- and pre mine operations. Minnow concluded that no adverse mine-related influences on benthic invertebrates were indicated within Haggart Creek and a full summary of the results are included in (Appendix G).

Fish population (health) sampling was conducted in May 2021 and again in September 2021 to meet the EEM requirement to assess potential impacts of mine effluent on fish health. The design of the fish health study included sampling at Haggart Creek downstream of the Ditch C confluence (spanning the area between Station W4 and W29) as the effluent-exposed area, and lower Lynx Creek (Station L1) serving as the reference area (Figure 3.6-1). The survey employed a control-impact lethal design targeting slimy sculpin (Cottus cognatus) and a control impact non-lethal design targeting arctic grayling (Thymallus arcticus). Health endpoints related to survival (age and age structure), energy use (growth and reproduction), and energy storage (condition and relative liver size) were evaluated to determine differences between the effluent-exposed areas of Haggart Creek and the Lynx Creek reference area.

Fish species captured during the May and September field studies in 2021 generally conformed to the same species and relative numbers reported previously at each of Haggart and Lynx creeks considering electrofishing methods and time of year. Nevertheless, Arctic grayling were caught in greater abundance within Haggart creek as compared to Lynx creek supporting that Haggart creek continued to be healthy ecosystem for resident fish species.

Reproduction effects (relative gonad weight) for female slimy sculpin were greater than the critical effect size (CES) in larger fish but below the CES in smaller fish. In both cases the exposure was greater than reference. When the magnitude of differences was below the CES differences were likely not ecologically meaningful. Differences in relative gonad weight may have reflected production of similar number but smaller sized eggs in females within Haggart Creek. Relative gonad weight showed minimum detectable differences between the exposed and reference areas that were outside the applicable CES suggesting greater uncertainty regarding statistical outcomes due to the small sample size. No effects for reproduction (relative gonad weight) for male

slimy sculpin was observed. Reproductive effects were not measured in Arctic Grayling due to the non lethal study design.

Condition of liver for slimy sculpin for males and females did not show an effect. Condition of liver for arctic grayling was not measured due to the non lethal study design.

An effect was observed for male slimy sculpin for condition considering weight at length however since the magnitude of difference was within the CES differences between areas were attributed to be ecologically meaningful. No effect was observed for female slimy sculpin. No effect was observed for arctic grayling.

An effect was observed for arctic grayling for condition considering growth when considering weight and length however differences in length and weight occurred between exposed and reference areas was not significant in condition. The difference in growth (of length and of weight) was potentially attributed to the natural differences in habitat, including the lack of large, deep pools at the exposed versus the reference area likely accounting for differing life stages of non-YOY in each area. No effect for male or female slimy sculpin was observed for condition when considering growth (weight at age).

An effect for survival when considering length frequencies was observed for arctic grayling however no direction could be concluded and it did not meet CES. Differing life stages between the exposed and reference area was believed to be due to the general absence of large deep pools at the effluent-exposed area. The differences seen in the length frequency distribution was potentially attributed to the natural differences in habitat likely accounting for differing life stages of non-YOY in each area. No effect for survival when considering length frequencies for male or female slimy sculpin were observed.

Minnow concluded that no significant adverse mine-related influences on fish health were indicated within Haggart Creek and a full summary of the results are included in Appendix G.

3.7 Metal and Diamond Mining Effluent Regulations Monitoring Program

The MDMER requires monitoring and reporting of discharged effluent volume and quality to ECCC. Details of registered Final Discharge Points (FDPs) and required monitoring results are submitted on a quarterly and annual basis to ECCC through the online electronic Mine Effluent Reporting System (MERS) and the Environmental Effects Monitoring Reporter (EEMR).

The MDMER requires effluent monitoring and sampling at FDPs if discharge occurs. Deleterious substance samples are collected at least 24 hours apart and not more than 7 days apart if discharge is occurring. Effluent Characterization, are collected on a quarterly basis while Reference and Exposure Water Quality sample are collected four times a year at least one month apart if discharge is occurring. Acute lethality tests are performed on a monthly basis, while sublethal testing occurs on an annual or biannual basis if discharge occurs for less than 30 consecutive days or more than 30 consecutive days, respectively.

Discharge from the LDSP FDP sourcing from the Events Pond occurred twice during the calendar year. Discharge occurred for 21 days in June and July 2022 and for 7 days in August and September 2022. Schedule 4 deleterious substance criteria during both discharges was within compliance without exception. Details regarding this discharge event are provided in Section 3.2.5.

Water from the HLFUMV FDP was captured and recirculated back to the Events Pond. No water was discharged from the Events Pond FDP Emergency spillway.

The Annual Effluent Monitoring Program results are presented in Appendix H.

3.8 Meteorology and Air Quality Monitoring

3.8.1 Climate Monitoring

Climate monitoring continued at the Project throughout 2022 from two onsite climate stations; the Potato Hills station, a Campbell Scientific CR1000X datalogger (1,420 masl), and the Camp station, a Campbell Scientific CR800 datalogger (782 masl) (Table 3.8-1). Both stations measure temperature, rainfall, wind speed and direction, relative humidity, barometric pressure and solar radiation at 15-minute intervals. Appendix I presents a summary of all climate data collected for the Project since August 2007.

In 2022, the Camp Station only experienced one period greater than 24 hours with a loss of data (a five day duration) which was due to scheduled maintenance. The Potato Hills Station experienced serval data gaps greater than 24 hours as discussed below:

Potato Hills Station:

- Data loss occurred from October 1 to October 5 during station maintenance.
- Air temperature data is outside the expected range from July 21 to September 30 due to assumed sensor malfunction. For the dates corresponding to the erroneous data, the measurements were replaced by the air temperature record from a Solinst barologger located adjacent to the weather station, except for August as the barologger data was not available.
- The Barometric Pressure data record displayed unexpected values from January 1 to September 30. This data was also replaced with the nearby Solinst barologger record for the corresponding period.

Camp Station:

- Data loss occurred from October 1 to October 5 during station maintenance.

As part of the preventative maintenance program for the climate stations, a service technician from Campbell Scientific completed the annual inspection of the stations from October 4 to 6th. Appendix A.1 and A.2 of Appendix I provides details of the maintenance and calibration work completed by the service technician.

Snow course surveys, as considered in the EMSAMP, were completed in 2022. In addition to the surveys undertaken at the Potato Hills and the Camp stations, four new survey locations were assessed in the footprint of the HLF (Table 3.8-1).

Table 3.8-1: Project Climate Station and Snow Survey Locations - 2022

Site	Elevation (m asl)	Coordinates		Record Period
		North	East	
Climate Stations				
Potato Hills Station	1,420	7,100,833	463,544	2007 - Present
Camp Station	782	7,101,036	458,164	2009 – Present
Snow Surveys				
Camp	782	7,101,036	458,164	2009 – Present
Potato Hills	1,420	7,100,568	463,290	2007 - Present
HLF Station	1,078	7,102,319	459,859	2019-2022
PG WRSA 1370 Bench	1,370	7,099,188	460,581	2021 - Present

Site	Elevation (m asl)	Coordinates		Record Period
		North	East	
HLF 3b (Bench and Slope)	1,066	7,102,063	459,295	2021
HLF 4b (Bench and Slope)	1,049	7,102,212	459,602	2021
HLF 5b (Bench and Slope)	1,048	7,102,207	459,580	2021
HLF1b	1,072	7,102,344	459,821	2022
HLF1b-N	1,098	7,102,509	459,960	2022
HLF1b-NW	1,056	7,102,094	459,315	2022
HLF1b-NE	1,118	7,102,129	460,087	2022

April to September monthly precipitation values for 2022 at the Camp Station were second highest on record, and were nearly two times higher than the historical average. Although April to September precipitation also remained elevated above normal at the Potato Hills station, cumulative open water season precipitation was only slightly above the long-term average.

Notably, total annual precipitation was 656.0 mm at the Camp station, while it was lower at the Potato Hills station (427.2 mm), which is the inverse of the typical precipitation distribution with elevation (i.e., increased precipitation at higher elevations). This divergence is driven primarily by rainfall events in late-July through mid-September, which suggests that convective rainfall events were more intense at lower elevations in 2022. In addition, hoarfrost buildup around the precipitation gauge orifice was noted on two separate occasions in the winter months of 2022. This phenomenon is expected to have reduced precipitation measurements within winter months in Potato Hills. The precipitation sensors at both stations will continue to be checked by Campbell Scientific technicians on an annual basis to mitigate the potential for erroneous data collection.

Table 3.8-2: Comparison of Camp and Potato Hills Monthly and 24-Hour Maximum Rainfall (mm)

Month	Camp Station			Potato Hills Station		
	2022	Mean 2009-2022	Max 2009-2022	2022	Mean 2007-2022	Max 2007-2022
April	7.1	7.3	13.0	6.7	4.9	10.9
May	20.7	28.6	82.5	25.8	28.0	60.3
June	63.7	50.8	156.2	35.8	44.8	101.2
July	105.6	66.4	165.7	86.8	62.3	201.2
August	123.5	59.6	154.4	75.2	61.0	130.0
September	88.6	43.6	107.3	64.8	41.7	100.8
Apr-Sep Total	409.2	238.9	479.0	295.3	269.8	457.6

	Lower than monthly mean and maximum
	Exceeded monthly mean but not maximum
	Maximum on record

Note:
Rainfall only data was collected from 2007-2019; all-weather precipitation gauges were installed at both stations in 2020
Data from Lorax 2023 (2022 Climate Report)

3.8.2 Air Quality Monitoring

Ambient air quality is monitored at six locations for the Project (Table 3.8-3), employing multiple monitoring methods, as detailed described below:

a) Beta-Attenuation Particulate Monitors (EBAM) - collection of continuous active total suspended particulate matter (TSP), particulate matter less than 10 µm (PM10), and particulate matter less than 2.5 µm (PM2.5).

b) Dustfall samplers - passive collection of dust for analysis of total particulates and metals.

c) Passive air sampling systems (PASS) - collect samples for analysis of nitrogen dioxide (NO2), sulphur dioxide (SO2), and ammonia (NH3).

d) Partisol monitoring for 6-day TSP and quarterly metals concentrations is collected at AQ2B.

Across all air quality monitoring stations, QA/QC sample naming conventions consist of duplicates (ID:01), field blanks (ID:02), travel blanks (ID:03), and equipment blanks (ID:04). Standard operating procedures and operating manuals that include QA/QC and calibration methodologies for the air quality monitoring devises are documented in the Air Quality Management Plan.

Table 3.8-3: Project Air Quality and Dustfall Monitoring Locations

Monitoring Station	Dustfall Canister	Coordinates (Zone 8N)		Location	Parameter	Sampling Method	Sample Frequency
		UTM N	UTM E				
AQ1	D1	7,100,818	463,559	Exploration trail near Potato Hills weather station	Total Particulates, NO_2, SO_2, NH_3	Dustfall/ Passive	30 days
					Metals	Dustfall	91 days
AQ2B	D2B	7,100,976	458,254	Near the Camp Climate station and water quality station W27	TSP	Partisol	6 days
					Total Particulates, NO_2, SO_2, NH_3	Dustfall/ Passive	30 days
					Metals	Partisol/ Dustfall	91 days
AQ3	D3	7,099,088	460,583	Above Eagle Pit and PG WRSA	Total Particulates, NO_2, SO_2, NH_3	Dustfall/ Passive	30 days
					Metals	Dustfall	91 days
AQ4B	D4B	7,097,734	458,290	Rex Road near KM 42 and west side of HCR	Total Particulates, NO_2, SO_2, NH_3	Dustfall/ Passive	30 days
					Metals	Dustfall	91 days
AQ5B	D5B	7,095,942	457,864	Confluence of Lynx Creek and Haggart Creek (near W5)	Total Particulates, NO_2, SO_2, NH_3	Dustfall/ Passive	30 days
					Metals	Dustfall	91 days
EBAM	N/A	7,101,021	458,237	Near Camp station and south of Ditch C	TSP, PM_{10}, $PM_{2.5}$	EBAM	Hourly

NOTES:
1 - Dustfall samples have in some cases utilized the monitoring station identifier in Chain of Custody forms.
2 - Certain stations were relocated/renamed (denoted as a “B” station) as the monitoring program evolved. Station AQ4/D4 was decommissioned July 1, 2020. Station AQ5/D5 was renamed to AQ4B/D4B July 1, 2020. Station AQ5B/D5B was commissioned July 1, 2020.

Results derived from this monitoring are compared to the Yukon Ambient Air Quality Standards (YAAQS) and the conditions of Air Emissions Permit #60-060 issued for the Project. Further details on air quality monitoring datasets

and laboratory results for 2022 are provided in Air Emissions Permit #60-060 quarterly reports and WUL QZ14-041-1 monthly reports.

In support of the ambient air quality monitoring program, a visual monitoring program is also employed to identify areas where fugitive dust emissions from roadways, crushing facilities, construction areas, and transfer and conveying infrastructure for ore were prevalent. Fugitive dust events observed during the reporting period were generally minor and were addressed through the application of water in heavy traffic areas.

3.8.2.1 Particulate Matter

Three EBAMs are installed west of the camp. The EBAM system includes real time data transmission that can be monitored remotely with daily summaries automatically generated by the associated software platform. In addition, site personnel complete routine checks and monthly maintenance. Routine measurements are taken on 15-minute intervals for TSPs, $PM_{2.5}$ and PM_{10}.

Recorded air quality results for particulate matter are summarized and compared to the Yukon Ambient Air Quality Standards (YAAQS) in Table 3.8-4. In 2022, there were six exceedances of $PM_{2.5}$, three exceedances of PM_{10}, and one exceedance of TSP in July and August and were attributed to summer forest fire smoke impacting the Project area. Additionally, in October, there was one exceedance of PM_{10} 24hr ambient air standard with a value of 61.77 ug/m^3. For reference, the overall monthly 24-hour PM_{10} mean of 4.4 ug/m^3 was well below the applicable standard.

Table 3.8-4: Particulate Matter Monitoring Results - 2022

Parameter	Annual Ambient Air Quality Standard (µg/m^3)	Annual Results	24hr Ambient Air Quality Standard (µg/m^3)	24hr Results			No. of Exceedances
		Mean		Min	Max	Mean	
TSP	60	12.2	120	-1.1	127.6	12.3	1
PM_{10}	*	7.0	50	0.6	103.5	7.0	4
$PM_{2.5}$	8.8	2.9	27	-0.5	97.4	2.9	6

NOTE:
*No Annual Ambient Air Quality Objectives outlined in the Yukon Standard.
All noted exceedances above are for 24hr standards only

3.8.2.2 Dustfall

Dustfall stations are located around the Project site adjacent to the five permanent vegetation plots described in Section 3.9.1. These dustfall stations utilize a passive collection method, whereby dust is allowed to settle in a container with a known surface area over a timed period. This simple method allows for the deployment of a greater number of cannisters over a broad area than may be feasible for active particulate monitors and may be used to identify relative hotspots around the site. Dustfall container samples are collected and submitted for total particulate laboratory analysis on a monthly basis. Metals analysis is also completed on a quarterly basis, as discussed further below.

As the dustfall station monitoring (and PASS systems discussed below) have evolved, the location of the stations have been optimized to better to meet the intent of the monitoring program. In July 2020, the D4 station adjacent to the access road at km 42 was decommissioned and relocated to the D5 station on the Rex exploration road and renamed D4B. The D5 station was decommissioned and relocated to a new location situated adjacent to the W5 water quality sampling site at the Lynx/ Haggart creek confluence. The new station is called D5B. Relocation

of sites was required to align with locations documented in the Project Air Emissions Permit #60-060 and Air Quality Monitoring Plan.

The 2022 dustfall data is provided in Table 3.8-5, which show monthly measured total values compared against the monthly standard (7.0 g/m^2). Monthly means were processed into an annual g/m^2 values for comparison against the Project annual standard (4.6 g/m^2). In 2022, only one exceedance of 30-day standard was recorded at station D3 in November. All stations met annual standard.

Table 3.8-5: 30-Day Total and Annual Dustfall Monitoring Results – 2022

Month	Air Quality Permit Standard (g/m^2)	30-day Fixed Dustfall (g/m^2)[1]				
		D1	D2B	D3	D4B	D5B
January	7.0	<0.33	4.68	0.45	0.63	0.36
February		0.35[3]	0.69	1.2	0.69	0.69
March		0.17	0.99	5.7	1.83	0.72
April		<0.101	2.64	5.31	2.7	2.4
May		0.33	1.68	5.37	2.76	0.87
June		0.33	2.46	5.01	3.24	1.68
July		0.33	1.2	1.26	1.26	0.42
August		0.42	0.45	0.3	0.3	0.3
September		0.33	0.6	0.33	0.33	0.33
October		0.33	0.33	0.36	0.48	0.33
November		0.33	0.48	**7.23**	0.42	0.33
December		0.33	0.33	2.25	0.63	0.33
Annual	4.6	0.31	1.38	2.90	1.27	0.73

NOTE:
1. Calculated 30-day and annual values assume the Method Detection Limit (MDL) value for results that were below MDL.
2. Values in bold indicate standard exceedance.
3. AQ1 result is for a period of 14 days of sampling time due to replacement of a canister disturbed by high winds

3.8.2.3 SO_2, NO_2 and NH_3

A network of five Passive Air Sampling System (PASS) stations were launched on January 1, 2020. The PASS units monitor for trace levels of SO_2, NO_2 and NH_3 in ambient air based on a 30-day average. The results for 2022 are provided below in Table 3.8-6. PASS results are reported in parts per billion (ppb) by the laboratory. The monthly values have been converted below to ug/m^3.

There is no specific air quality objective for NH_3 specified in the Project's air quality permit (Permit No: 60-060) or in the Yukon Ambient Air Quality Standards. The 1-hour and 24-hour SO_2 standards in Project air quality permit are 183 µg/m^3 and 13 µg/m^3, respectively. The 1-hour and 24-hour NO_2 standards in Project air quality permit are 113 µg/m^3 and 32 µg/m^3, respectively. As the samplers are collected over 30 days, it is not possible to directly infer a maximum 1-hour or 24-hour level from the measurement results. However, results were either below instrument detection limits or well below the highest similar Yukon Ambient Air Quality Standards.

Table 3.8-6: SO_2, NO_2 and NH_3 Monitoring Results – 2022

Month	Constituent	Concentration (µg/m³, 30-day)				
		AQ1	AQ2	AQ3	AQ4B	AQ5B
January	NH_3 by Passive Sampler	<0.07	<0.07	<0.07	<0.07	<0.07
	Calculated NO_2	0.56	14.66	2.26	8.27	5.26
	Calculated SO_2	<0.26	<0.26	<0.26	<0.26	<0.26
February	NH_3 by Passive Sampler	0.28	0.21	0.21	<0.03	<0.03
	Calculated NO_2	0.09	12.78	1.50	6.77	3.76
	Calculated SO_2	0.52	0.13	0.26	0.13	0.13
March	NH_3 by Passive Sampler	0.03	0.14	0.03	0.14	0.03
	Calculated NO_2	0.09	6.77	1.13	3.95	0.75
	Calculated SO_2	0.13	0.26	0.13	0.13	0.13
April	NH_3 by Passive Sampler	<0.03	0.07	0.21	0.07	<0.03
	Calculated NO_2	<0.09	1.13	<0.09	<0.09	<0.09
	Calculated SO_2	<0.13	<0.13	<0.13	<0.13	<0.13
May	NH_3 by Passive Sampler	0.56	0.49	0.21	0.03	0.21
	Calculated NO_2	0.09	1.50	1.50	0.75	0.09
	Calculated SO_2	0.13	0.13	0.13	0.13	0.13
June	NH_3 by Passive Sampler	0.07	0.07	0.07	0.07	0.07
	Calculated NO_2	0.19	0.94	1.50	0.38	0.56
	Calculated SO_2	0.26	0.26	0.26	0.26	0.52
July	NH_3 by Passive Sampler	2.09	0.49	2.02	0.76	0.49
	Calculated NO_2	0.75	1.13	1.88	0.75	0.38
	Calculated SO_2	0.26	0.26	0.26	0.26	0.26
August	NH_3 by Passive Sampler	2.15	0.35	0.97	2.15	3.34
	Calculated NO_2	0.19	0.56	0.56	0.38	0.19
	Calculated SO_2	0.26	0.26	0.26	0.26	0.26
September	NH_3 by Passive Sampler	0.07	0.07	0.07	0.07	0.07
	Calculated NO_2	0.38	2.26	0.56	0.19	0.19
	Calculated SO_2	0.26	0.26	0.26	0.26	0.26
October	NH_3 by Passive Sampler	0.07	0.07	0.07	0.07	0.07
	Calculated NO_2	0.19	4.14	1.13	2.26	1.13
	Calculated SO_2	0.26	0.26	0.26	0.26	0.26
November	NH_3 by Passive Sampler	0.07	0.28	0.07	0.07	0.07
	Calculated NO_2	0.38	9.96	3.01	5.64	4.70
	Calculated SO_2	0.26	0.26	0.26	0.26	0.26
December	NH_3 by Passive Sampler	0.07	0.07	0.42	0.42	0.14
	Calculated NO_2	0.94	11.09	3.57	10.34	7.90
	Calculated SO_2	0.26	0.26	0.26	0.26	0.26

NOTE:

Laboratory data is reported in units of ppb. The following formula was used for conversion (µg/m³) = (ppb)*(12.187)*(M) / (273.15 + 25°C), where M is the molecular weight of the gaseous pollutant. M of NH_3 = 17 g/mol. M of NO_2 = 46 g/mol. M of SO_2 = 64 g/mol.

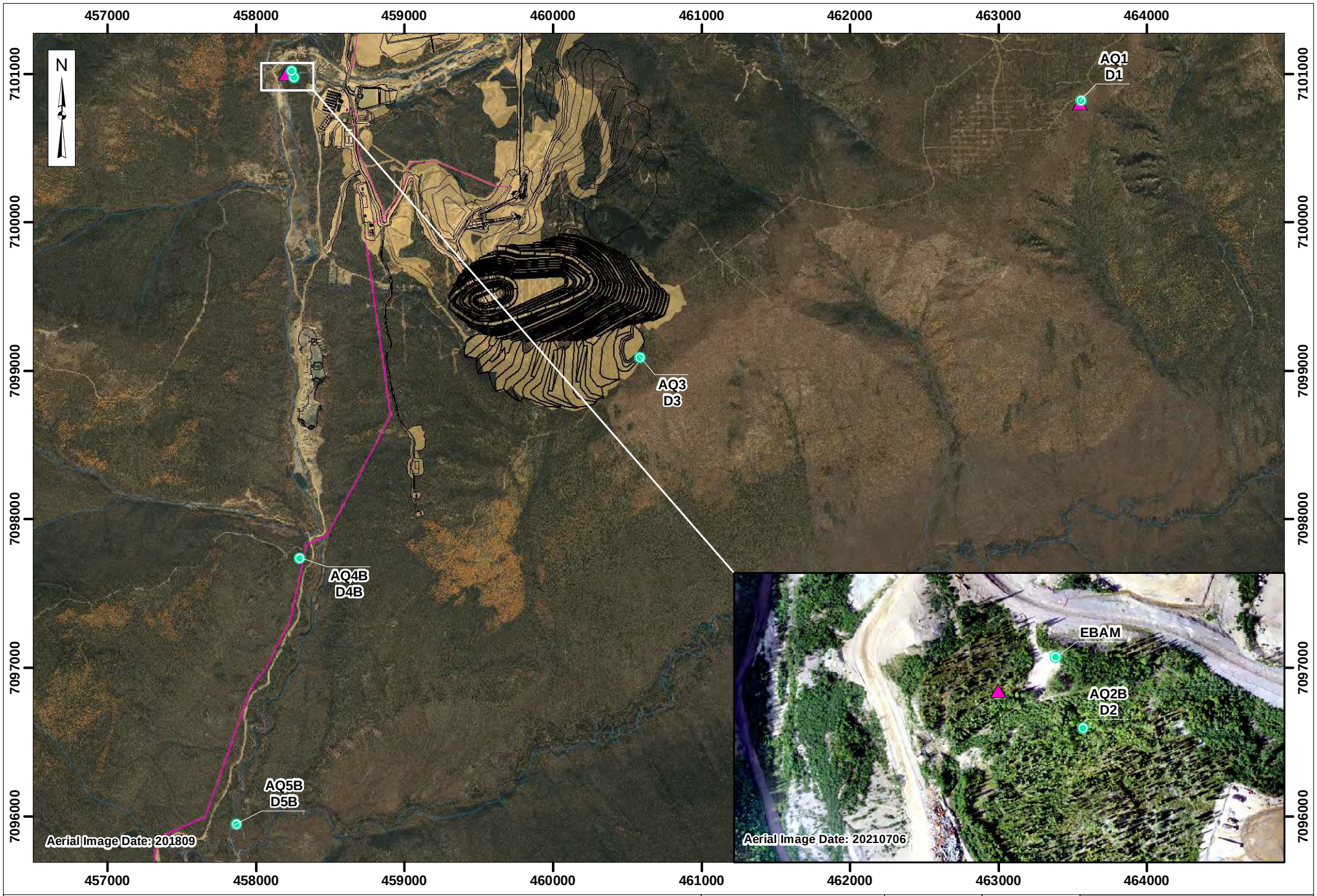
3.8.2.4 Metals

An active Partisol™ 2000i Air Sampler was installed adjacent to the EBAM air quality monitoring location and the metals analysis component of this monitoring method was initiated for the 2021 program with quarterly metals analysis. Metal analysis results for 2022 are presented in Table 3.8-7. All results were below the 24-hour standards.

Table 3.8-7: Metals Monitoring Results – 2022

Metal	24-hour Standard (µg/m³)	Concentration (µg/m³)			
		Q1	Q2	Q3	Q4
Total Arsenic (As)	0.3	ND	0.004	0.022	ND
Total Cadmium (Cd)	0.025	*	ND	*	ND
Total Chromium (Cr)	0.5	0.003	0.004	0.006	0.086
Total Copper (Cu)	50	ND	0.002	0.003	0.040
Total Lead (Pb)	2	ND	0.003	0.004	ND
Acid Extractable Mercury (Hg)	0.2	ND	ND	<0.0025	ND
Total Nickel (Ni)	0.5	ND	ND	<0.050	ND
Total Zinc (Zn)	120	ND	0.04	<0.50	ND

NOTE:
* The laboratory engaged for analysis inadvertently reported total calcium rather than total cadmium. Corrected results have been requested but have not been received at the time of this report.
ND – Value from laboratory analysis below detection limit for total sample volume so conversion to concentration per cubic meter not made.



Legend:

- Active AQ Station
- Climate Station
- Major Facility
- Site Power
- Current Construction and Mining Impacted Areas
- Watercourse - Perennial
- Watercourse - Ephemeral
- Watercourse - Intermittent

VICTORIA GOLD CORP

0 250 500 1,000
Metres

Projection:	Drawn By:
NAD 83 UTM Zone 8N	HC
Date:	Figure:
2022/03/31	3.8-1

EAGLE GOLD MINE
YUKON TERRITORY

Climate and Air Quality Monitoring Locations - 2022

3.9 Terrestrial

3.9.1 Vegetation Monitoring Program

As outlined in the EMSAMP, four vegetation plots were established in 2018 to monitor potential changes in vegetation during the life of the Project. The vegetation monitoring plots consist of two sites in the Subalpine Zone with elevations greater than 1225 masl and two sites at lower elevation in the Forested Zone. These vegetation plots are monitored annually, and soil is monitored annually during the growing season. Data collected will help determine if there are potential changes associated with metals in and on plant tissue due to Project activities.

2022 was the fifth year of the program and the five sample plots were visited between July 20th and 21st. Due to operations some of the plots have been relocated due to various disturbances and new locations have been denoted with a 'B'.

The location and description of the vegetation monitoring sites are presented in Table 3.9-1. The coordinates of each site represent the center point of that site. Four corner points were then established in cardinal directions 10 meters from the center.

Monitoring and sampling of sites was conducted July 20th and 21st 2022.

Table 3.9-1: Location and Description of Vegetation Monitoring Sites

Sites #	NAD 83 Zone 8N		Aspect	Elevation (m asl)	Site Description
	Easting	Northing			
D1B	463,530	7,100,794	Level	1,437	Potato Hills near climate station, 40 m south of original site D1.
D2B	458,256	7,100,972	West	791	Upslope of the air quality station and the camp climate station, south side of Eagle Creek within influence. Established in 2019 approximately 70 m from original site D2.
D3	460,598	7,099,079	South west	1,356	Top of Eagle Pup/Platinum Gulch drainages near the over-the-top road.
D4B	458,279	7,097,731	East	751	On the west side of the access road south of the Haggart Creek culverts and the power line. Established in 2019 approximately 300 m south of the original site D4.
D5	457,857	7,095,962	Level	720	Near surface water quality site W5, Haggart Creek upstream of Lynx Creek.

The focal species for this assessment was willow (Salix spp.), sedge (Carex spp.), bluejoint (Calamagrositis canadensis) and northern rough rescue (Festuca altaica). As all of these species were not available at all stations, substitutions were made where applicable. Table 3.9 2 lists the species and sites where the sample biomass was large enough to run analyses. Samples were analyzed for a suite of 36 metals, with a focus on metals of concern related to mining activities (arsenic, cadmium, chromium, lead, and mercury).

Salix spp. leaves and twigs are a preferred browse for moose. Moose will browse on dwarf birch although willow is preferred. Bear and snowshoe hare will also browse on the leaves and twigs of dwarf birch, and ptarmigan and grouse will eat the buds and catkins. Bears and moose will eat horsetail (Equisetum sp.).

Willows were the most collected species from all the sites and present at most of the individual plots, followed by dwarf birch. There was insufficient biomass for the collection of fescues (Festuca altaica) except at site D1B where

the grass was gathered throughout the site. A total of 68 tissue samples were collected for analysis. The analytical tissue reports for monitoring vegetation species and plots are presented in Appendix J.

For most of the metals, concentration in the 2022 foliar samples were well below MTL. Manganese exceeded the MTL (2000mg/kg) in Dwarf Birch Leaves at plot D1B (2364mg/kg) and D3B (2030mg/kg). Exceedances in the MTL for selenium (5mg/kg) were found in Salix leaves (20.9 mg/kg) and Horsetail (26.5 mg/kg) at plot D2B North. A high concentration of selenium was similarly found in Horsetail tissue in plot D2B North in 2019 (26.7 mg/kg), 2020 (29.2 mg/kg) and 2021 (31.1 mg/kg). 2022 being the lowest concentration recorded over the 5-year study. Horsetail has been shown to naturally have high accumulations of selenium in other studies where concentrations are typically greater than that of other vegetation tissues (Ozkutlu et al, 2011, Patorczyk-Pytlik, B. 2009, Shawl and Reynolds, 1985).

There was no visible sign of stress in any of the vegetation in the plots. Full results of the 2022 Vegetation Monitoring program can be found in Appendix J.

3.9.2 Invasive Plants Management Program

The Invasive Plant Management Program is used to develop strategies that help prevent the introduction and spread of invasive species and noxious weeds on the Project site. VGC has taken measures that help reduce the likelihood of plant infestations from occurring. If any significant infestations are identified they will be actively managed, including removals within mine operations areas. This section provides a summary of monitoring and measures taken on site to control invasive plants.

The Yukon Invasive Species Council (YISC) defines invasive species as:

"…an organism (plant, animal, fungus, or bacterium) that is introduced and has effects on our economy, our environment, or our health. Not all introduced species are invasive. The term "invasive" is reserved for the most aggressive species that reproduce rapidly and cause major changes to the areas where they become established."

The YISC has documented approximately 160 introduced plant species in the Yukon, with 17 species currently on there watch list. These are species that are highly invasive and found throughout the Yukon Table 3.9-2 (YISC 2020). This categorization is used as a guide for VGC in prioritizing its management efforts to control invasive plants. Management activities will focus on the highest ranked plant species for invasiveness; however, activities also include other species if they become established on the Project footprint.

Table 3.9-2: Highly Invasive Plant Species Documented in Yukon

SCIENTIFIC NAME	COMMON NAME	ORIGIN
Agropyron cristatum	Crested Wheatgrass	Exotic
Bromus inermis	Smooth Brome	Exotic
Caragana arborescens	Siberian Peashrub	Exotic
Centaurea stoebe	Spotted Knapweed	Exotic
Cirsium arvense	Creeping Thistle	Exotic
Crepis tectorum	Narrow-leaved Hawksbeard	Exotic
Elymus repens	Quack Grass	Exotic
Euphorbia virgata	Russian Leafy Spurge	Exotic
Hieracium piloselloides	Tall Hawkweed	Exotic
Leucanthemum vulgare	Oxeye Daisy	Exotic

SCIENTIFIC NAME	COMMON NAME	ORIGIN
Medicago falcata	Yellow Lucerne	Exotic
Medicago sativa	Alfalfa	Exotic
Melilotus albus	White Sweet-Clover	Exotic
Melilotus officinalis	Yellow Sweet-Clover	Exotic
Sonchus arvensis	Perennial Sow-thistle	Exotic
Tanacetum vulgare	Common Tansy	Exotic
Vicia cracca	Tufted Vetch	Exotic

3.9.2.1 Prevention

The main objective in managing invasive plant infestations on the Project footprint is to conduct mining activities in a manner that prevents the introduction or spread of invasive plants. Prevention is the most effective means of controlling invasive species, and helps to avoid significant long-term economic, environmental, and social costs (YISC, 2020). Invasive species are opportunistic in nature, taking advantage of a lack of competition from other species. Thus, in natural conditions with biodiversity and a dense population of native species, invasive species are less likely to establish.

VGC's ongoing prevention strategies include the following:

- Minimizing soil disturbance during construction and operations to limit availability of exposed soils to invasive plant seeding.
- Establishing a vegetation cover as soon as possible after ground disturbance, by seeding areas that will be inactive with interim reclamation indigenous seed mixtures.
- Minimizing invasive plant seed introduction to disturbed sites by:
  - Keeping equipment clean on site and ensuring contractors are bringing clean equipment into the Project site.
  - Keeping equipment laydowns and storage areas free of invasive plants.
  - Retaining vegetated areas along the site access and haul roads during maintenance where possible.

During the period of this report, vegetation removal and soil disturbance was minimized to the extent practicable by adhering to construction plans and leaving vegetation strips where possible. When clearing was required, the humus layer and vegetation root mat was retained to the greatest extent practicable and stored in predetermined soil stockpile areas.

In 2022, a combination of revegetation and bioengineering of activities took place on exposed slopes to control runoff, stabilize slopes, and prevent establishment of invasive species. Revegetation focused on fast stabilization crops such as Fall Rye in conjunction with a custom native grass seed mix for long term stability. Seed selection was based upon the baseline vegetation survey inventory, suitability for site characteristics and commercial availability. Bioengineering structures and on-site seeding programs were monitored by a third-party consultant during a July 21st site visit, the report is available in Appendix K.

3.9.2.2 Control

Throughout the field season invasive species were removed ad hoc by hand, but no large-scale control or mass removal methods were required to manage invasive plants on the Project site in 2022.

3.9.2.3 Assessment and Monitoring

During the July 2022 vegetation monitoring program, hawksbeard, dandelion and white clover were identified in the native seed trial plots. Plots will continue to be monitored on an annual basis and mitigation will be used when necessary (Appendix L). Disturbed lands in the Project footprint will continue to be monitored to detect the establishment of invasive plants and noxious weed species on both revegetated and unvegetated areas.

In the event that invasive plant populations do become established on the mine site or associated disturbances, VGC will utilize one or a combination of the listed methods to control these infestations. VGC will undertake control efforts on species that are listed for Yukon as noxious weeds or invasive plant species that pose a threat to humans, animals, or ecosystems.

3.9.3 Soils

The soils monitoring program is designed to provide data to assess whether there are changes to metal and nutrient levels in soils adjacent to the mine as a result of dust deposition occurring during Project activities. Soil samplings were collected in conjunction with the vegetation monitoring program. Soil samples were collected from each of the five sites and analyzed for physical tests (pH, particles size), nutrients (nitrogen, nitrate, nitrite, phosphate) and a suite of metals, including mercury. There are no territorial or federal guidelines regarding metal concentrations in soil with respect to effects on vegetation and subsequent wildlife consumption, but graphical results of the laboratory analysis of the soil samples were completed by CoreGeo are presented in Appendix J.

3.9.4 Wildlife

Wildlife mitigation measures are implemented through mandatory project site orientation, traffic control policies, and training and implementation of the Project's management plans including bear awareness and the wildlife observation reporting program.

Personnel record wildlife sightings and encounters on wildlife observation cards available at a variety of locations throughout the site. The wildlife observation cards are used as a tool to track and evaluate the frequency of animal encounters. These cards help monitor; species at risk, nuisance wildlife and to notify site personnel of potentially dangerous animals around work areas. Observations of wildlife and indicators of wildlife such as tracks, scat or auditory observations are also recorded (even in the absence of visual confirmation). Wildlife observations recorded through 2022 are compiled on a quarterly basis and submitted to the Department of Energy, Mines and Resources in accordance with QML-0011.

3.9.4.1 Nesting Songbird Surveys

Nesting songbird bird surveys were completed for clearing activities that took place within the breeding bird window (May 1-August 15). On May 26th an excavator was working on the Heap Leach Facility and the finished work created a vertical bank. Shortly after this work was completed cavities in the vertical bank were identified and were suspected to be nesting site of bank swallows. Operations were stopped in the area and on June 3rd VGC contacted EDI for guidance. EDI was on site June 6th and 7th to conduct a survey of the property and identify any additional nesting areas. Three areas were identified as actively being used by nesting swallows: HLF ADR Header Pipe Site, Pregnant Leach Solution (PLS)/Pump and Bank near Eagle Pup drainage water monitoring station W9.

Through a site tour and discussion with EDI regarding operational requirements, advice was given to VGC by EDI. This activity and monitoring advice was used and adhered to for the duration of the nesting season. VGC

environmental monitors observed the cavities in the area of the HLF ADR header and Pregnant Pumps site on June 12-14, 16, 18, 21, 25, 26-28, July 10 and September 6-8. The monitoring ranged from 10 minutes to two hours, depending on construction and bird activity.

Additionally, the Bank Swallow nests were not physically disturbed through the nesting period. A 50 m no-disturbance buffer around the nest burrows was not practical due to the location of the burrows and ongoing industrial activity; however, EDI provided recommendations to minimize disturbance during the necessary pipe fitting work.

Based on the advice provided, the pipe fitting work was completed with minimal daily disturbance over two days (or as much time needed to maintain minimal stress or disturbance). It was also completed without additional excavation work. No work was completed on rainy days. Environmental monitor was present to ensure there was no physical disturbance to the burrows.

Options for an alternate nesting site during the 2023 or future nesting seasons may be provided in a near-vertical slope of similar materials in an area that will be active.

The full report from EDI can be found in Appendix M.

3.9.4.2 Pre-clearing Wildlife and Wildlife Habitat Surveys

Outside of the nesting songbird breeding window for the Project area, pre-clearing survey are completed for wildlife habitat features for potential salvage if possible (mineral licks, dens, nest trees, snags, rocky outcrops, small ponds/seepages). One wildlife habitat pre-clearing surveys took place during 2021 prior to clearing land for the truck shop and no habitats of note were reported.

3.9.4.3 Wildlife Incidents

Outside of the nesting songbird breeding window for the Project area, pre-clearing surveys are completed for wildlife habitat features for potential salvage if possible (mineral licks, dens, nest trees, snags, rocky outcrops, small ponds/seepages). A pre-clearing Wildlife survey was completed June 6, 2022 prior to expanding a laydown on the lower access road. No wildlife or nesting birds were found in the area. The surveyed area was flagged, and work was completed over two days.

Throughout 2022 there were observations of several animals in close proximity to the camp and areas of mining activity, but no deterrents were required. During the month of March 2022 an American Martin was frequently observed around camp. VGC Environmental Staff considered that there was a potential risk of injury to the animal due to the frequency of observations and proximity to ongoing mine activity. A live trap was set with the intention of relocating the animal. The trap was checked on a regular basis by VGC Environmental Staff, but the animal was not captured. By April the animal had moved on and there were no further issues.

On July 2nd, 2022, a raven was found dead on the road between camp and the security check in office. The suspected cause of death was a collision with a vehicle. The incident was reported to CO Services in Dawson who decided no further autopsy was required and the carcass was disposed of in the on-site incinerator.

On July 9, 2022, as Whisky Jack was observed inside the warehouse, On July 10th the bird was found dead in the area, and the cause of death was unclear. The carcass was disposed of through the incinerator.

The Environmental Department continues to provide ongoing education for site personnel through site-wide bulletins, collaborations with department heads, and presentations in toolbox meetings.

3.9.4.4 Annual Moose Survey

Three late-winter moose surveys were completed during pre-construction and are considered as a baseline (2011-2013). Surveys were subsequently conducted in 2018 and 2019, representing the construction phase. A survey was completed in 2020 and represented the operations phase.

Overall moose distribution throughout all surveys has been variable between years, and an association exists between moose distribution and the moderate elevation burns. While moose densities during 2019 construction within 1 km of the Project footprint were moderate, so were densities observed in 2018 during a cessation of construction activities. Moose densities were high within 1 km of the project in 2020 during mining operations. This suggests a natural variability in distributions, as well as expected variability in survey results given the methodology. It is likely that moose distribution is more associated with annual snow depths, winter habitat distribution than Project activities.

The methodology utilized for previous Project related surveys was based on that proposed by Yukon Government Department of Environment staff. A revised methodology was trialed by Yukon Government in 2021 (not associated with the Victoria Gold site). While a new methodology was being trialed on other project sites, no aerial moose surveys were completed by Victoria Gold in 2022. The appropriateness of the new methodology for general use remains under review to determine if it can be utilized for other project areas. Once a determination is made (expected to be completed by Yukon Government late 2022), it is anticipated that the Project related methodology will be revised and used in 2023.

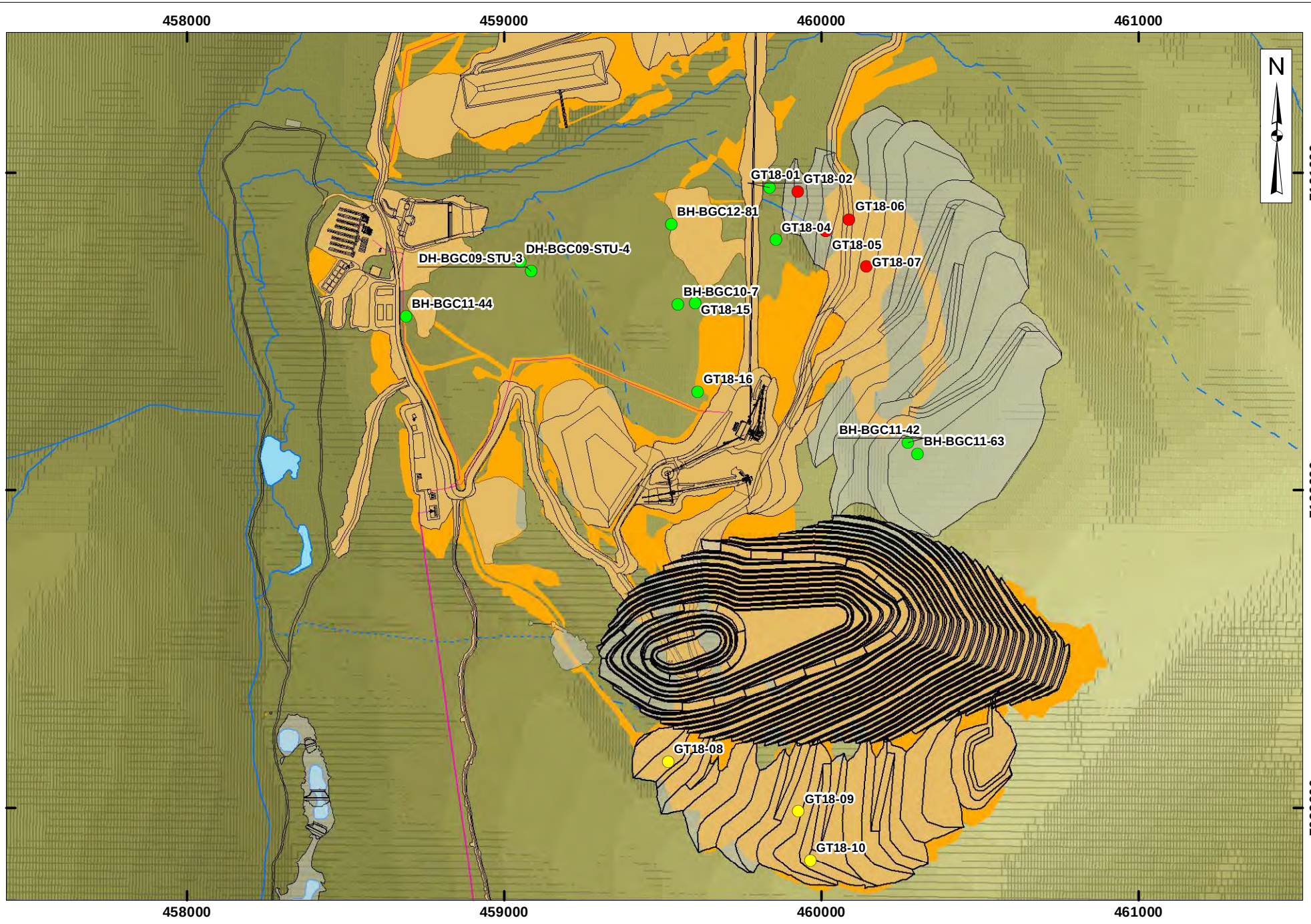
3.10 Permafrost

Permafrost monitoring at VGC in 2022 consisted of quarterly subsurface temperature monitoring via thermistors at the locations shown in Figure 3.10-1 and Table 3.10-1.

Monitoring occurred at 11 thermistor locations in 2022, due to station issues only partial readings were retrieved from BH-BGC-12-81.

Table 3.10-1: Thermistor Monitoring Locations – 2022

Thermistor	Status	Facility	Coordinates (Zone 8)	
			North	East
GT18-01	Active	EP WRSA	7,100,952	459,831
GT18-04	Active	EP WRSA	7,100,787	459,854
BH-BGC11-42	Active	EP WRSA	7,100,150	460,272
BH-BGC11-63	Active	EP WRSA	7,100,114	460,303
BH-BGC10-7	Active	EP WRSA	7,100,585	459,547
BH-BGC11-44	Active	Camp Facilities	7,100,547	458,690
DH-BGC09-STU-3	Active	Above camp and LDSP	7,100,691	459,083
DH-BGC09-STU-4	Active	Above camp and LDSP	7,100,720	459,050
GT18-15	Active	Below crushing facilities	7,100,583	459,597
GT18-16	Active	Below crushing facilities	7,100,308	459,607
BH-BGC12-81	Active	Reclamation Material stockpile	7,100,838	459,527



Legend:

- Thermistor
- Thermistor - Decommissioned 2021
- Thermistor - Decommissioned 2020
- Perennial Watercourse
- Ephemeral Watercourse
- Intermittent Watercourse
- Major Facility
- Site Power

VICTORIA GOLD CORP

0 100 200 400
Meters

Projection:	Drawn By:	EAGLE GOLD PROJECT YUKON TERRITORY
NAD 83 Zone 8N	HC	
Date:	Figure:	Thermistor Monitoring Locations - 2022
2022/04/01	3.10-1	

3.10.1 Data Analysis

3.10.1.1 Eagle Pup WRSA Multi Bead Thermistors

Four multi bead thermistors were monitored in the area of the Eagle Pup WRSA, as shown in Table 3.10-2. Multi bead thermistors documented subsurface temperatures up to 20 m below the surface. The majority of thermistors recorded temperatures above zero degrees with the exception of sporadic subzero readings during first and fourth quarter winter conditions; which were attributed to general seasonal temperature changes. The two thermistors that recorded consistent subzero temperatures were BH-BGC11-42 and BH-BGC11-63, which are installed in the interior of the Eagle Pup WRSA. The presence of only two thermistors with consistent subzero temperatures throughout multiple bead depths supports the presence of a local discontinuous permafrost zone.

Table 3.10-2: Eagle Pup WRSA Multi Bead Thermistor Temperatures – 2022

Thermistor	Date	Bead Temperature ºC															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
GT18-01	1st Quarter	-1.94	-0.24	0.20	0.56	1.00	1.25	1.52	1.63	1.87	1.76	1.74	1.70	1.66	1.61	1.46	1.40
	2nd Quarter	-0.65	-0.31	-0.10	0.14	0.47	0.68	0.93	1.07	1.38	1.45	1.51	1.56	1.54	1.56	1.46	1.41
	3rd Quarter	10.25	10.27	9.31	7.81	6.32	5.13	4.19	3.27	2.14	1.72	1.60	1.56	1.52	1.51	1.40	1.41
	4th Quarter	1.56	3.88	4.61	5.06	5.18	4.86	4.42	3.65	2.52	2.24	0.07	0.99	1.10	0.92	1.45	1.40
BH-BGC11-42	1st Quarter	-2.71	-1.75	-0.72	0.03	-0.02	-0.15	-0.29	-0.21								
	2nd Quarter	-2.40	-1.55	-0.80	-0.08	-0.02	-0.14	-0.29	-0.21								
	3rd Quarter	4.64	8.05	7.40	4.63	-0.01	-0.14	-0.29	-0.21								
	4th Quarter	-1.26	-0.76	0.13	0.49	0.00	-0.14	-0.29	-0.21								
BH-BGC11-63	1st Quarter	-1.74	-0.59	-0.14	-3.59	-1.40	-1.27	-0.19	-0.03								
	2nd Quarter	-0.92	-0.03	0.35	-3.49	-1.18	-0.99	0.06	0.12								
	3rd Quarter	5.30	7.40	5.37	-2.37	-1.37	-1.15	0.05	0.02								
	4th Quarter	-0.80	-0.12	0.52	-3.56	-1.57	-1.26	0.00	0.62								
BH-BGC10-7	1st Quarter	-0.96	0.25	1.14	1.67	1.58	0.25										
	2nd Quarter	-0.90	-0.38	0.29	0.57	0.86	0.13										
	3rd Quarter	12.60	10.26	8.30	4.77	1.00	-0.04										
	4th Quarter	2.84	4.77	5.78	5.24	2.20	0.18										

3.10.1.2 Overland Conveyor Multi Bead Thermistor

GT18-15 was installed to the west of the Eagle Pup WRSA and the overland conveyor. The thermistor documented subzero temperatures throughout all seasons with the exception of depths above 11.5 meters (bead 11). The results indicate a relatively thick but warm permafrost zone below a cover of deposited organics and material.

Table 3.10-3: Overland Conveyor Multi Bead Thermistor Temperatures – 2022

Thermistor	Date	Bead Temperature ºC															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
GT18-15	1st Quarter	-1.94	-0.24	0.20	0.56	1.00	1.25	1.52	1.63	1.87	1.76	1.74	1.70	1.66	1.61	1.46	1.40
	2nd Quarter	-0.65	-0.31	-0.10	0.14	0.47	0.68	0.93	1.07	1.38	1.45	1.51	1.56	1.54	1.56	1.46	1.41
	3rd Quarter	10.25	10.27	9.31	7.81	6.32	5.13	4.19	3.27	2.14	1.72	1.60	1.56	1.52	1.51	1.40	1.41
	4th Quarter	1.56	3.88	4.61	5.06	5.18	4.86	4.42	3.65	2.52	2.24	0.07	0.99	1.10	0.92	1.45	1.40

3.10.1.3 Upgradient of LDSP Facility Multi Bead Thermistor

DH-BGC09-STU-3 and DH-BGC-STU-4 are multi bead thermistors installed upgradient of the LDSP. Both datasets documented zero or subzero temperatures below the active layer of surficial organics (bead 2-3), indicating the presence of warm permafrost at depth. Temperatures were consistent across all seasons suggesting stable permafrost.

Table 3.10-4: LDSP Multi Bead Thermistor Temperatures – 2022

Thermistor	Date	Bead Temperature ºC					
		1	2	3	4	5	6
DH-BGC09-STU-3	1st Quarter	0.08	-0.11	-3.51	0.46	-2.25	-0.08
	2nd Quarter	-0.04	-0.46	-3.59	0.08	-2.41	-0.13
	3rd Quarter	7.99	4.90	-2.05	1.73	-2.58	-0.12
	4th Quarter	3.76	3.43	-2.19	2.17	-2.64	-0.01
DH-BGC09-STU-4	1st Quarter	-0.92	0.07	0.15	-3.37	-0.02	-0.08
	2nd Quarter	-0.93	-0.02	-0.02	-3.26	-0.01	-0.11
	3rd Quarter	7.84	5.64	3.65	-3.61	-0.01	-0.11
	4th Quarter	2.68	3.31	3.01	-3.62	-0.02	-0.11

3.10.1.4 Camp Facility Multi Bead Thermistor

BH-BGC11-44 is a multi-bead thermistor installed near camp support facilities and just above Ditch A. The documented temperatures in Bead 8 suggest the presence of permafrost at depth, while the near-surface beads registered temperatures consistent with seasonal temperatures changes and a thick organic active zone.

Table 3.10-5: Camp Facility Multi Bead Thermistor Temperatures – 2022

Thermistor	Date	Bead Temperature ºC							
		1	2	3	4	5	6	7	8
BH-BGC11-44	1st Quarter	-2.58	-0.72	0.04	0.16	0.49	1.09	0.08	-0.32
	2nd Quarter	-0.03	-0.14	-0.08	-0.07	0.07	0.11	0.03	-0.32
	3rd Quarter	12.47	9.99	8.18	6.41	3.96	1.21	0.05	-0.34
	4th Quarter	-0.54	1.58	3.03	3.52	3.52	1.89	0.11	-0.34

3.10.1.5 Reclamation Material Stockpile Multi Bead Thermistor

BH-BGC12-81 is a multi-bead thermistor that is installed west of the main ore conveyor to the HLF, situated near reclamation material stockpiles. There were issues with retrieving data and the equipment used was replaced, but the issue persisted and it is believed there is damage to the temperature cables. The dataset showed subzero temperatures beginning at bead depth 6m supporting the presence of permafrost at depth protected by a thick surficial organic active zone. The subzero temperatures at depth were consistent across seasonal changes indicating stable permafrost.

Table 3.10-6: Reclamation Material Stockpile Multi Bead Thermistor Temperatures – 2022

Thermistor	Date	Bead Temperature ºC					
		1	2	3	4	5	6
BH-BGC12-81	1st Quarter		-0.65	0.07	NM	NM	-0.09
	2nd Quarter		-0.32	OL	NM	NM	NM
	3rd Quarter		8.79	OL	NM	NM	NM
	4th Quarter		0.78	OL	NM	NM	NM

NOTES:
NM - Not measured due to equipment issues

3.10.1.6 Ground Temperatures of Single Bead Thermistors

Ground temperature data collected at the single bead thermistors installed across the Eagle Gold site are provided below in Table 3.10-7. One single bead thermistor was monitored in 2022. GT18-04 is situated within the Eagle Pup WRSA, exhibited above zero temperatures which indicated a lack permafrost within the installation area.

Table 3.10-7: Single Bead Thermistor Temperatures – 2022

Thermistor	Q1	Q2	Q3	Q4
	Temp			
GT18-04	2.0	1.7	1.4	1.9

3.10.1.7 HLF Embankment Piezometers and Temperatures

Three standpipes with Vibrating Wire Piezometers are installed through the HLF dam crest. Piezometer P1 was installed into the dam foundation bedrock and Piezometers P2 and P3 were installed in the dam fill just above the western and eastern underdrains, respectively. The piezometer readings for P1, P2, and P3 are provided in the Forte Annual HLF Inspection Report in Appendix N. Temperature values observed in 2022 were similar to that of 2021 showing gradual seasonal fluctuation. No concerns resultant of temperature monitoring was noted within the Forte Annual HLF inspection Report.

3.11 Noise

The objective of the noise monitoring program was to ensure that public users of the Haggart Creek/South McQuesten Road adjacent to the Project site were not at risk of exposure to high sound levels associated with blasting.

3.11.1 Sounds Levels Related to Blasting

In accordance with terms and conditions (#121) of the Decision Document, VGC monitored sound levels related to blasting activities in 2018 and 2019 confirming that operational noise thresholds remained below the cautionary limit of 120 db. Based on this information, sound monitoring was discontinued until warranted by a significant change in mining activity or a noise complaint related to Project activities is received.

The Yukon currently has no specific regulatory guidance related to environmental noise effects on the general public.

3.12 Spills and Accidents

3.12.1 Spill Contingency Overview

The VGC Spill Response Plan continues to inform procedural approaches to accidental releases on the mine site. In accordance with Clause 128 of QZ14-041-1, the Spill Response Plan is reviewed annually to confirm its accuracy and updates are incorporated as warranted. Based on the most recent review, Version 2022-01 was determined to be appropriate and no changes were undertaken.

Ongoing audits continue to ensure availability of adequate spill response equipment and verify preventative measures and industry best practice initiatives are being implemented to reduce the likelihood of incidental releases. Non-conformances, as identified, are logged in a tracking spreadsheet to ensure follow up by responsible departments.

A lined Land Treatment Facility (LTF) to effectively treat and remediate hydrocarbon-contaminated soils in accordance with approvals under the Environment Act. Soils undergo pre- and post-treatment testing for hydrocarbons, following the standards set by the Yukon Contaminated Sites Regulation (CSR).

3.12.2 Reportable Spills Summary

In 2022, there were five reportable spills at the Project site, as listed in Table 3.12-1. These spills were reported to the Yukon Spill Report Line and uploaded to the Yukon Water Board's Waterline platform in compliance with the Spills Regulations outlined in the Yukon Environment Act. The remediation of all spills followed the CSR standards and guidelines established by the Yukon Government Department of Environment, and for grey and black water releases, assistance was provided by the Department of Health and Social Services. Non-reportable spills were also handled and resolved in the same manner. For more information about each reportable spill, including Spill Response Forms and photos, please refer to Appendix O.

Table 3.12-1: 2022 Reportable Spills

Date (mm/dd/yyyy)	Spill Line Tracker	Volume (L)	Substance	Spill Details and Remediation
04/08/2022		300	Hydraulic Oil	An operator punctured a new tote of oil with a loader fork in a warehouse laydown. The operator quickly stopped the release by turning the tote upside down and called their supervisor, who notified the environment department. Absorbent pads and socks were used to contain the spill, and snow and ice were used to keep it in one area. The remaining oil was pumped out and the

Date (mm/dd/yyyy)	Spill Line Tracker	Volume (L)	Substance	Spill Details and Remediation
				contaminated snow was scraped into labeled bags and taken to the LTF.
05/07/2022	YG22-030	1200	HLF Solution	Process solution and runoff water migrated along the eastern edge of the Heap Leach liner over frozen material. This impacted the engineered drainage and caused the surficial flow to build up outside of containment. The solution flow was quickly shut down and two interceptor ditches were cut to prevent further leakage. An excavated ditching system was installed to maintain proper drainage, and a vacuum truck was used to remove the solution outside of containment.
06/05/2022	YG22-042	15	HLF Solution	Pooled within lined area at the tail end of CV25 and was directed towards the leachate pumps for recirculation. Some solution evacuated intended drainage and flowed onto the edge of the roadway. Contaminated material was recovered and placed back onto the HLF, while standing solution was directed (pumped or ditched) into containment.
09/17/2022	YG22-090	40	Coolant	A fan hub failed which damaged the adjacent cooler on a haul truck, which resulted in a release onto the ground directly below. Supervisor was notified – absorbent pads and spill trays were utilised to capture the majority of the release and free product from the surface. Excavation of the contaminated ground material was performed.
10/11/2022	YG22-098	10	Coolant	Hose failed on a coolant line of a haul truck. Spill tray was placed underneath the vehicle to capture release and standing product was evacuated by a fuel truck. Residual product was retained by absorbent material and subsequently placed into the special waste area.

3.13 Traffic and Access, Upcoming Maintenance

3.13.1 Level of Traffic

The project site is located approximately 85 km from Mayo, accessible via a combination of paved and gravel roads, including the Silver Trail (Highway 11) and the South McQuesten and Haggart Creek Roads. The Silver Trail and South McQuesten Road are both maintained by the government, while the Haggart Creek Road is not. VGC Health, Safety and Security staff keep a record of vehicle traffic that arrives at the main entrance.

To support aspects of moose distribution study in the Project area, Yukon Government Department of Environment requested additional accuracy of access road trip counts to distinguish between full and partial uses. The updated methodology allowed for more accurate tracking of vehicle traffic using the time in/time out, locations visited, and type of vehicles recorded at the security gate. The additional information has allowed for a quantitative assessment of how the access road is used (full length vs. partial travel) by Mine related vehicles. These changes

have increased the perceived number of uses of the access road from 2021 due to the updated methodology accounting for the same vehicle potentially making multiple trips of the road based on one check-in/check-out entry (Figure 3.13-1)

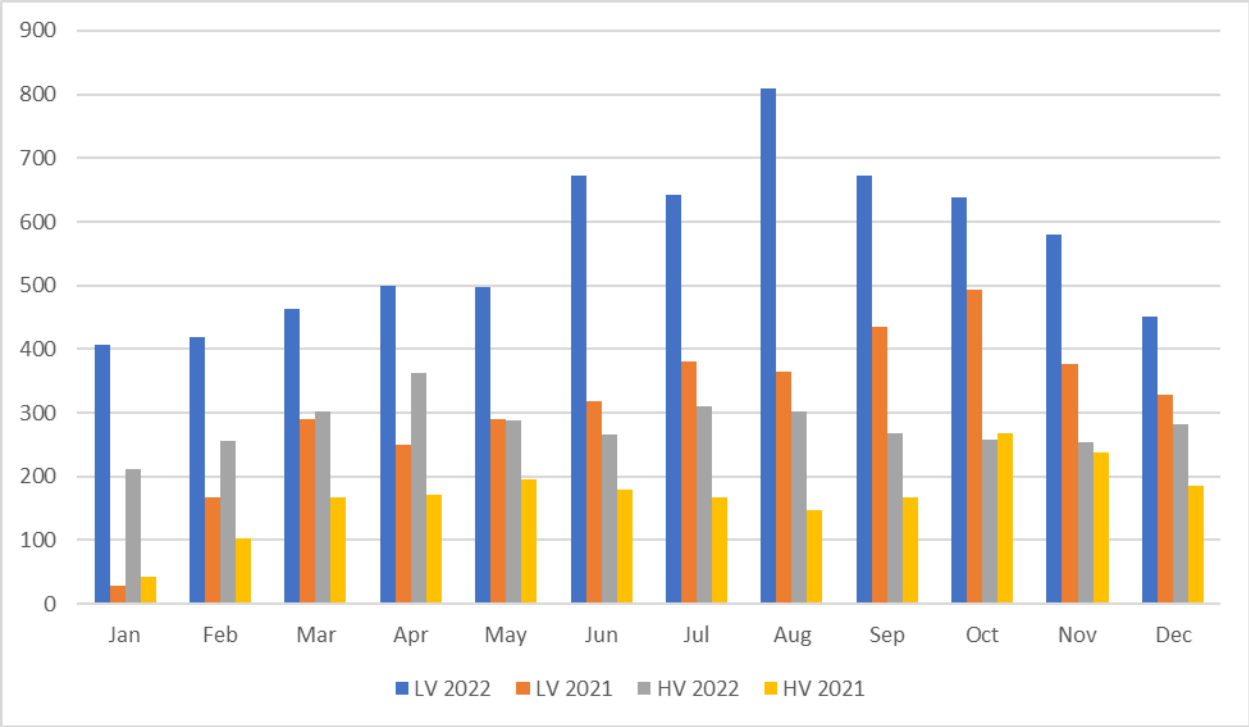


Figure 3.13-1: Comparison of 2022/2021 Counts of Heavy Vehicle (HV) and Light Vehicle (LV) Full Trips

Using this new methodology, it was found that there were approximately 6,755 light vehicle full trips, 1,872 light vehicle partial trips, 3,361 heavy vehicle full trips, and 565 heavy vehicle partial trips to/from the project site (refer to Table 3.13-1).

Table 3.13-1: 2022 Access Road Usage by Type

Date	LV Partial Trips	LV Full Trips	HV Partial Trips	HV Full Trips
Jan	26	407	17	211
Feb	14	419	15	256
Mar	27	463	17	302
Apr	17	500	27	363
May	6	498	24	288
Jun	219	673	104	265
Jul	206	643	59	311
Aug	290	809	68	303
Sep	239	673	68	268
Oct	237	639	51	258
Nov	339	580	65	253
Dec	252	451	50	283

Date	LV Partial Trips	LV Full Trips	HV Partial Trips	HV Full Trips
Grand Total	**1,872**	**6,755**	**565**	**3,361**

There is a noticeable increase in the amount of traffic on the access road in June and continues for the rest of the year. This has been attributed to an increased amount of construction on the mine site during that portion of the year, and a change in check-in/check-out procedures at the security gate.

3.13.2 Access Control Issues

Access to the Project is regulated by a staffed gatehouse located at the edge of the VGCX property. The gatehouse was established during the construction phase to ensure the safety of road users from potential hazards such as heavy equipment, blasting, noise, and hazardous material storage and use, in accordance with VGC's commitment during the Yukon Environmental and Socio-economic Assessment Act assessment. VGC obtained a Work Within Right-of-Way permit from the Department of Highways and Public Works to authorize the established gate house which is intended to ensure the safety of everyone traveling through the property.

No access control issues were documented during the period of this report.

3.13.3 Incidents

The Project has an Emergency Response Plan in place, backed by a team of trained and certified emergency response personnel who are equipped to handle all types of incidents, including advanced first aid, firefighting, and mine rescue. Reporting and investigating incidents is a standard procedure on the site.

One incident was documented along the public access portion of the mine access road in 2022:

- A truck fire at KM 11 occurred on May 4th at 10:30. The fire was extinguished by Victoria Gold's emergency response team. An environmental clean-up was performed shortly after, and the remains of the vehicle were removed from the access road.

3.13.4 Planned Access Road Work

In 2022, VGC remained dedicated to ensuring the safety of all visitors, employees, and contractors who visited the project site. To achieve this, regular snow clearing was performed on the South McQuesten and Haggart Creek Roads, extending from the Silver Trail (Yukon Highway 11) to the Eagle Gold camp. Routine maintenance was also carried out on the Haggart Creek Road, including maintaining culverts and ditches, and fixing potholes. All roadway improvements were carried out in accordance with VVGC's current Work Within Right of Way Permit, Permit #U0206, which was issued by the Department of Highways and Public Works. This permit outlines the specific requirements and regulations governing road maintenance and construction within the right of way..

3.14 Water Management & Sediment and Erosion Control

3.14.1 Major Water Management Infrastructure

As with previous years, VGC's water management strategy continued to focus on keeping clean water clean and managing mine contact waters (i.e., either water considered sediment-laden due to contact with mine roads and water considered to be contact water due to interaction with the pit, waste rock or the HLF) appropriately. Mine contact water continues to be collected and conveyed by infrastructure comprised of ponds, sediment basins, and

interceptor ditches with clean water conveyed by diversions. The operation, maintenance and surveillance of the water management infrastructure is detailed in the Water Management Plan Version 2020-01. Inspections were conducted prior to and during Freshet and rain events to determine further water management infrastructure installation opportunities in 2022. A series of swales, ditches, sumps and collection ponds were installed along Dublin Gulch to mitigate potential sediment laden runoff from historical disturbances from entering receiving environments. Evaporators were installed and utilized during the Freshet period of 2022 to mitigate water storage within Project containment ponds. In addition to this, a discharge pipe was installed within Ditch C in June to eliminate interaction of discharge water with sediment entrained within Ditch C. Further water conveyance piping was installed to source water from the LDSP to the Mine Water Treatment Plant (MWTP).

Photo 3.14-1: Ditch C Pipe Installation to Eliminate Discharge Water Interaction with Sediment - June 25 2022.

Photo 3.14-2: Evaporators Installed Adjacent to the Events Pond – May 17, 2022

3.14.1.1 Lower Dublin South Pond

The LDSP is managed as a retention pond that collects water from the southern portion of the Project which currently includes runoff and mine water routed from the PG and EP WRSAs, the crusher area, the 90-day stockpile, and the open pit. The primary water management ditches, Ditch A and Ditch B, route the collected water to the LDSP where it is stored and either used for process makeup water needs or discharged if effluent quality standards align with the EQS from QZ14-041-1 and the MDMER effluent standards for deleterious substances. As discussed within this report, final liner installation within the LDSP was completed in early 2021 with final ballasting and installation of intake structures. The LDSP Forebay was de-mucked and the liner was replaced in early 2022 to ensure that it continues to function as intended. There were no releases of contact water from the LDSP above the EQS or MDMER criteria in 2022.

3.14.1.2 Ditches and Pipes

Water conveyance infrastructure continues to be constructed in accordance with the conditions of QZ14-041-1, the Water Management Plan and the Issued for Construction designs. Engineered structures are designed to

allow access for maintenance activities as necessary and by March 31 of each year, ditches and culverts are cleared of ice, snow and debris that might affect their operational capacity and are maintained free of such obstructions until at least October 31 of each year.

Ditches A, B and C were fully operational during the reporting period with final sections of armoring and liner being completed on Ditch B in the second quarter.

3.14.1.3 Mine Water Treatment Plant

Construction of the MWTP was ongoing in 2022. The MWTP is designed to treat contact water before discharge to the environment. The MWTP is primarily designed to remove arsenic but is capable of removing other metals as needed with chemical adjustments. The MWTP process includes pH adjustment and metals removal by oxidation and ferric coagulation. Lamella Clarifiers remove the majority of solids and microfiltration removes the remainder of precipitated solids prior to plant discharge. The maximum flowrate through the inlet and outlet of the plant was designed for 14,500 m^3/day; The MWTP was not used in 2022 however is expected to be running efficiently in early 2023.

Photo 3.14-3: Microfiltration Skids Installed in the MWTP

3.14.2 Erosion and Sediment Control Infrastructure

Monitoring of the effectiveness of erosion and sediment control was ongoing throughout the reporting period to support the overall water management objectives for the Project and to ensure compliance with regulatory approvals. Revegetation and reseeding work were undertaken in areas adjacent to the LDSP, Overburden Stockpiles, the RoM Road stream crossings, sections of Ditch A and B, and at various locations along Dublin Gulch. Further to this, helicopter seeding was performed on overburden stockpile adjacent to the HLF that had previously experienced sediment transport on steep slopes. The seeding worked in conjunction with check dams and sumps to mitigate sediment transport. Independent evaluations of seeding and vegetation regrowth and bioengineering initiatives were conducted in 2022.

A series of swales, ditches, and sumps were installed along Dublin Gulch to mitigate potential sediment laden runoff related to historical disturbances and mine work areas from entering receiving environments. The sumps and ditching focused on managing runoff from historical exploration roads and disturbance within the Dublin Gulch valley. The infrastructure was installed during and following Freshet in 2022. Road grading projects occurred throughout the Project and specifically in between the LDSP and Ditch C to support the ongoing direction of contact water away from the receiving environment to wetland areas that would naturally settle out suspended solids.

Photo 3.14-4: Settling Sumps Constructed Along Historic Exploration in Dublin Gulch Valley – May 19, 2022

Photo 3.14-5: Settling Sumps Constructed Along Historic Exploration in Dublin Gulch Valley – May 19, 2022

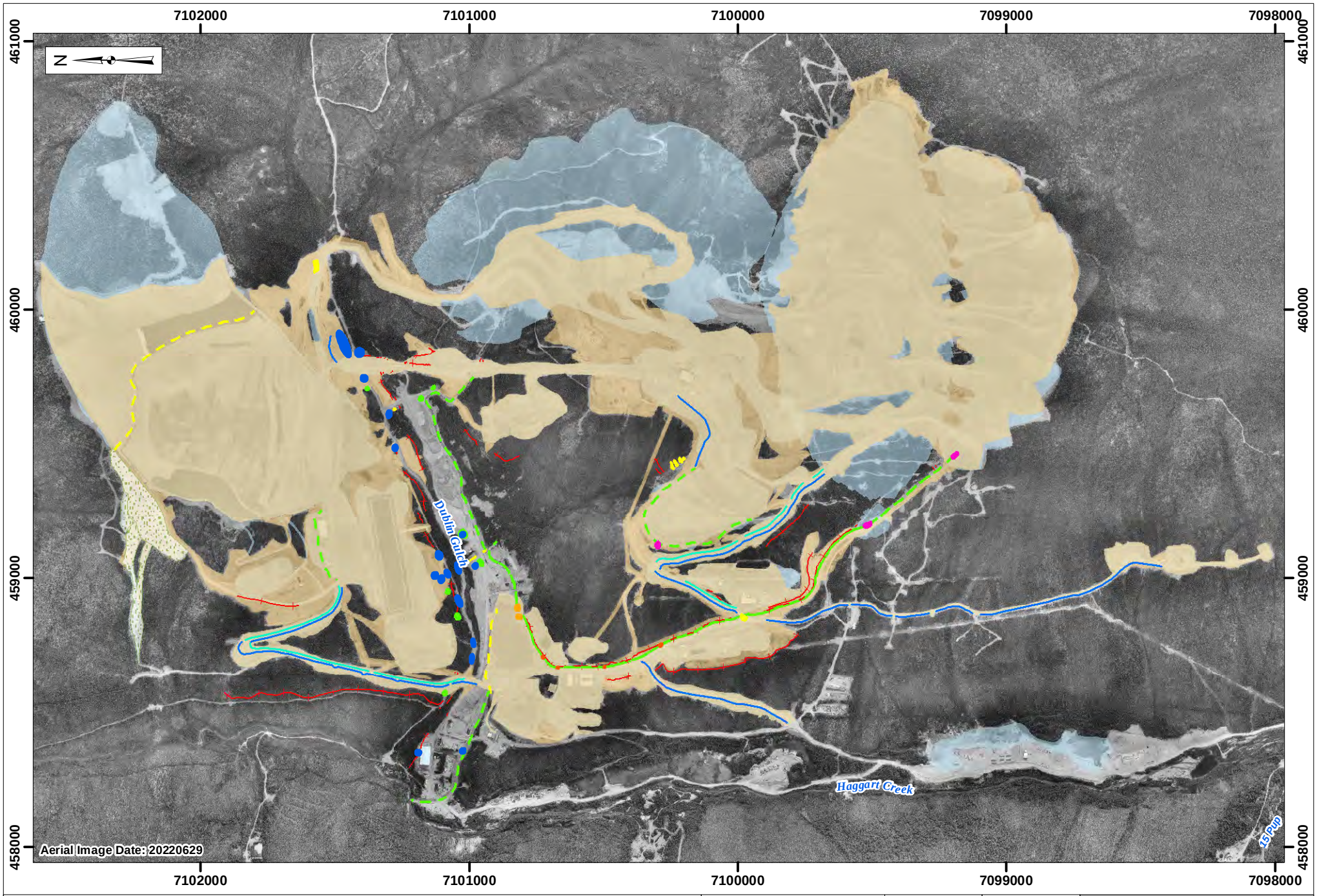
Photo 3.14-6: Settling Sumps Constructed Along Historic Exploration in Dublin Gulch Valley – May 19, 2022

Further to the targeted 2022 management program, construction and operations activities continued to be supported by the implementation of sediment and erosion control measures, in accordance with the Water Management Plan, which included:

- Installation of berms at the top of fill slopes to protect newly formed slopes from erosion.
- Application of bioengineering techniques for slope stabilization and channel protection as necessary in the sediment basins, ditches, and on any unstable and/or disturbed slopes and surfaces.
- Application of additional BMPs for slope stabilization and channel protection as necessary in the sediment basins, ditches, and on any unstable and/or disturbed slopes and surfaces.
- Installation of silt fences around the downslope perimeter of material cutbanks and disturbances at stream crossings.
- Installation of flocculant within primary ditching structures to mitigate sediment transport.
- Installation of hay bales within primary water management conveyance structures to mitigate sediment transport.
- Installation of swales and ditches to direct surface water runoff away from roads

- Installation of check dams and sumps directly below overburden stockpiles
- Monitoring, maintenance, repair, or replacement the mitigating measures listed above to ensure BMP effectiveness and efficiency.

Figure 3.14-1 shows the currently installed erosion and sediment control infrastructure.



Legend:

- Collection Ditch
- Diversion Ditch
- Road Berm
- Road Ditch
- Silt Fence
- Check Dam/Sump
- Energy Dissipator
- Exfiltration Basin
- Hay Bale
- Inlet Basin
- Sediment Basin
- Current Construction and Mining Impacted Areas
- Facility Footprint
- Heliseeding Zone

VICTORIA GOLD CORP

0 125 250 500
Metres

Projection:	Drawn By:
NAD 83 UTM Zone 8N	HC
Date:	Figure:
2023/03/31	3.14-1

EAGLE GOLD MINE
YUKON TERRITORY

Installed Erosion and Sediment Control Measures

3.15 Independent Environmental Audit

Clause 12.0 of QML-0011 requires the undertaking of an environmental audit every two years by an independent contractor acceptable to the Director of the Mineral Resources Branch of EMR. Stantec Consulting Ltd. (Stantec) was deemed acceptable by the Director and subsequently contracted by VGC to complete this Environmental Audit. The audit was completed and considered information inclusive of monitoring and surveillance activities undertaken at the site from July 1, 2020 to June 30, 2022.

The audit evaluated:

- The implementation of plans and associated monitoring programs, as well as associated reporting
- The monitoring (surface water quality and quantity, groundwater, and aquatics and fish and fish habitat), terrestrial environment and physical stability assessments were completed to the specifications in the approved plans and licences.

Stantec's audit indicated that overall, the implementation of VGC's environmental management system can be described as adequate and no immediate concerns for water quality and quantity, aquatic habitat, air quality, soils, vegetation, wildlife and wildlife habitat, stability of physical structures and waste management have been identified.

Stantec's key findings are provided within the report (Appendix P). VGC's response to recommendations was provided with the environmental audit to EMR, and specifically addressed each recommendation or perceived gap. The response document is provided in Appendix P.

4 PHYSICAL MONITORING

4.1 Eagle Pit

Mining in the Eagle Pit has been ongoing since initial development in 2019. There are three pit phases, which are described in Table 4.1-1 below.

Table 4.1-1: Eagle Pit Phase Descriptions

Pit Phase	2022 Year End Bottom Elevation (m asl)	2022 Year End Top Elevation (m asl)	2022 Operational Status	Bench Design Description
1	1055	1135	Complete	Single bench – 10 m height 6.5 m catch bench width
2	1135	1275	Ongoing	Single bench – 10 m height 6.5 m catch bench width (E Wall) 6.0 m catch bench width (N and S Walls)
3	1275	1410	Ongoing	Double bench – 20 m height 14 m catch bench width (E Wall) 10 m catch bench width (N and S Walls)

The lithology exposed in Phase 2 is predominantly granodiorite rock and bounded by metasediment rock. Phase 3 is completely metasediment rock except for a small portion of the granodiorite contact encountered on the North end of the pit. Most of the rock within Phase 2 is soft, oxidized, weathered, and blocky, and a majority of the rock in Phase 3 is hard rock with the exception of varying fault and contact zones surrounding the lithological boundary.

During 2022, physical monitoring of the pit walls was actively conducted during regular pit inspections. Geotechnical instrument monitoring is comprised of the following:

- Sentry Trailer Continuous Monitoring currently positioned in Phase 2;
- Prism Monitoring on final walls, and temporary walls where additional monitoring is deemed necessary;
- Piezometers strategically placed around and within pit limits targeting different pit phases; and
- Extensometers on known areas of cracking or subsidence.

The Sentry Continuous Monitoring system is analyzed every day and alarms are set to automatically alert/email if alarm thresholds are breached. Prism readings are completed and reviewed every day, and extensometers are read on a set frequency depending on the hazard they are monitoring. Piezometer readings are set on a datalogger to read twice a day, and the data is collected weekly when access is available and monthly during winter when vehicle access is not always available. Pit tours are completed daily to observe active working areas and any particular areas of interest. A full inspection of the pit walls and dumps are completed on a weekly basis using both visual observations and UAV drone photography (Photo 4.1-1) to support geotechnical stability monitoring.

Photo 4.1-1: Example of UAV Photography Used to Support Geotechnical Inspections

Monthly surveys of the open pit and dump are completed using UAV drone photogrammetry to produce georeferenced surfaces. These surfaces are utilized to track dump progression and aid in pit wall analysis.

In addition to completing monthly drone surveys, scans of the pit walls are completed using a handheld XR3 scanner to complete as-built surfaces of the walls post mining and scaling. An example of the scanner being used in 2022 and the output of the scanned surface rendered in PointStudio software can be seen in Figure 4.1-1.

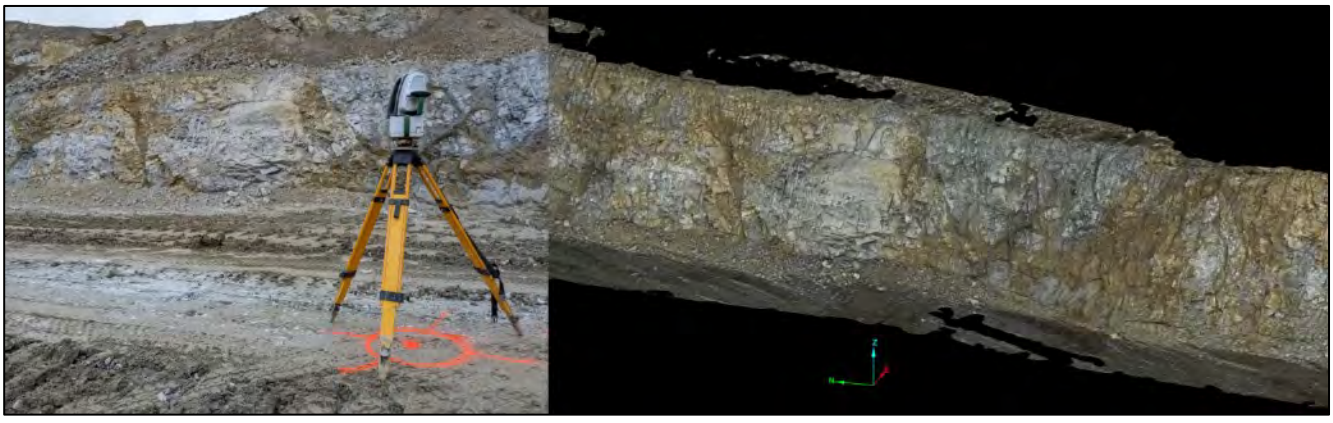


Figure 4.1-1: Scanner in the Field and Surface Rendered in PointStudio

4.1.1 Stability Incidents

A few stability incidents occurred in 2022 in the Eagle Pit and have either been mitigated or are currently being managed.

4.1.1.1 South Wall Instability

In February 2021, the original South Wall Instability was discovered and the initial round of pushback was completed by end of 2021. The second stage of pushback was started in September 2022 with the development of an access road to the required 1295 Elevation bench (Photo 4.1-2). By the end of 2022 the pushback was well underway and is expected to be completed by Q1 2023 (Photo 4.1-3).

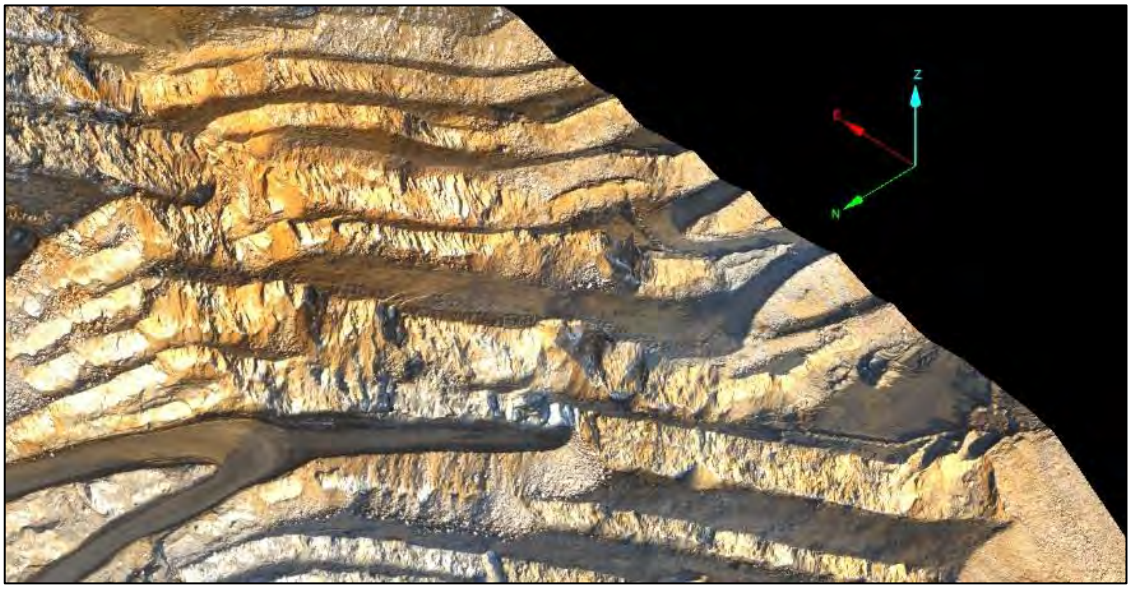


Photo 4.1-2: September 2022 South Wall Pushback Ramp Construction

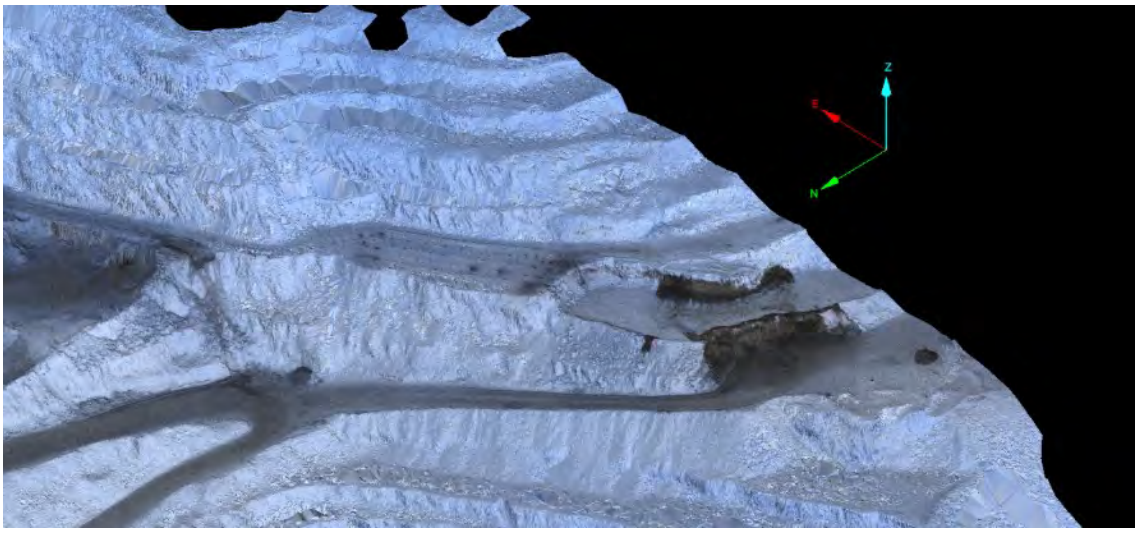


Photo 4.1-3: South Wall Pushback as of 2022 Year End

Prism data on the instability has been analyzed since the development of the cracks on the 1295 in 2021, through to the construction of the ramp, and leading up to the first pushback blast in 2022 (Figure 4.1-2).

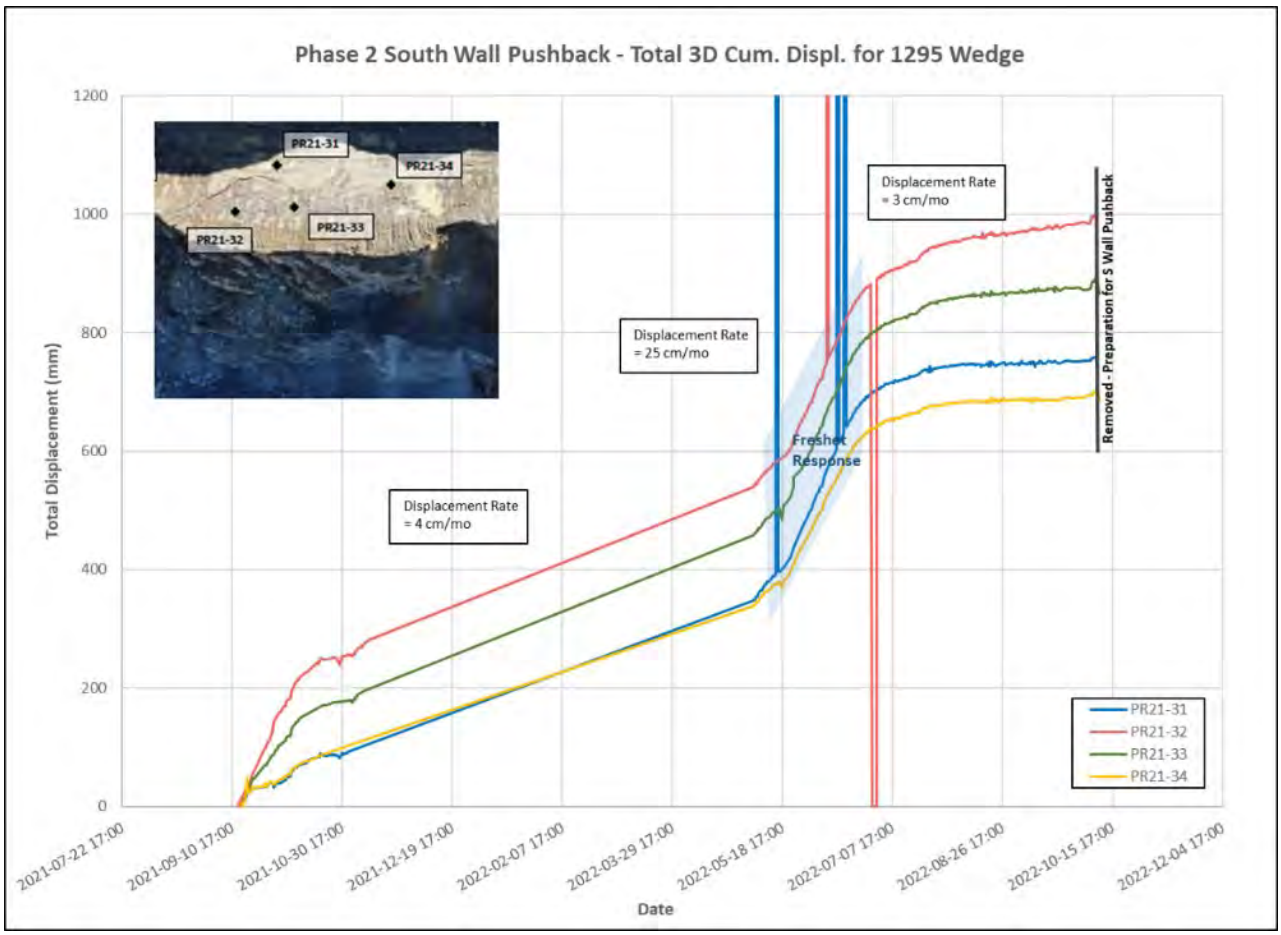


Figure 4.1-2: South Wall 1295 Instability Prism Data

4.1.1.2 SB5 Instability

In February 2022, cracking was discovered on the Phase 2 Eagle Pit main haul road between Switchback 4 and Switchback 5. The cracks were initially managed operationally, however within a two-day period the cracking had increased and haul road subsidence was observed. A multi-bench wedge failure had developed involving four benches (40 m height) and was approximately 75 m wide (Photo 4.1-4). The area was bermed off above the instability and single lane access was established. The Engineer of Record (EOR) for the open pit was also informed and regularly updated on the evolving situation.

Photo 4.1-4: SB5 Instability

An extensometer was installed at the top of the instability and was measured every four hours. Extensometer data can be seen below in Figure 4.1-3. Monitoring was completed for approximately two months; the instability had trended to stability after one month (March 2022).

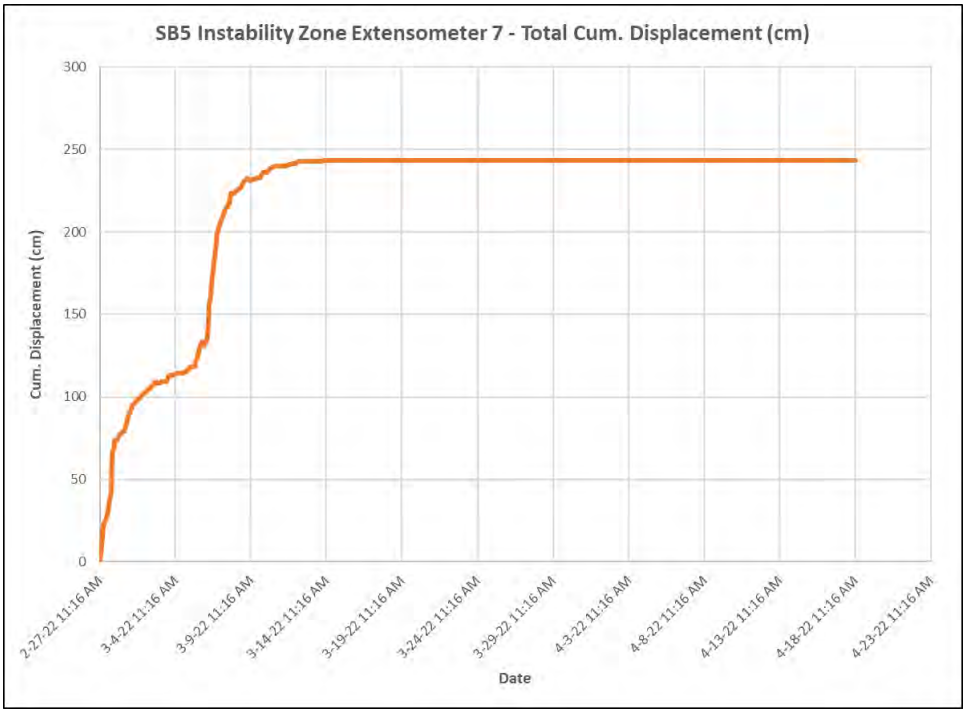


Figure 4.1-3: Extensometer Data for SB5 Instability

To mitigate the instability, a temporary Phase 2 pit wall design change, approved by the EOR, was executed that involved an ~20 m step-in below the instability to buttress the wall (Figure 4.1-4). The instability has remained largely unchanged for the remainder of 2022.

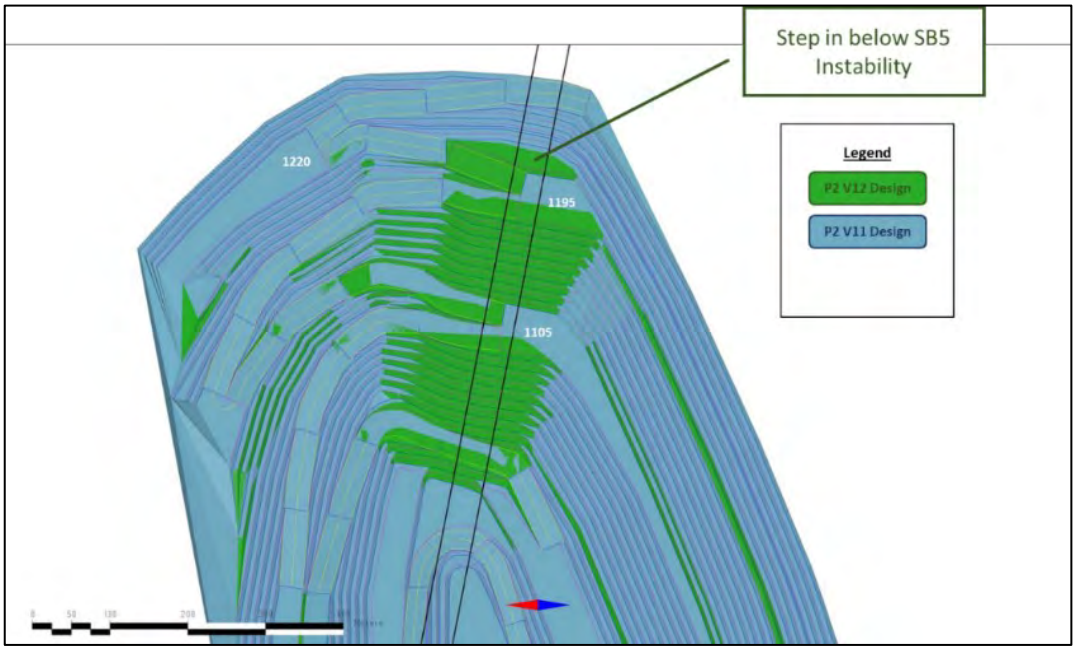


Figure 4.1-4: Phase 2 V12 Design Change

4.1.1.3 Phase 3 North Wall Series of Ground Fall Events

The development of the North Wall of Eagle Pit Phase 3 began in February 2022.

The first ground fall event occurred in May 2022 when a planar feature released along a double bench (see Photo 4.1-5 below). This failure developed along known pervasive joint sets, and was later deemed to be related to an ore stringer that trends through the NE corner of Eagle Pit.

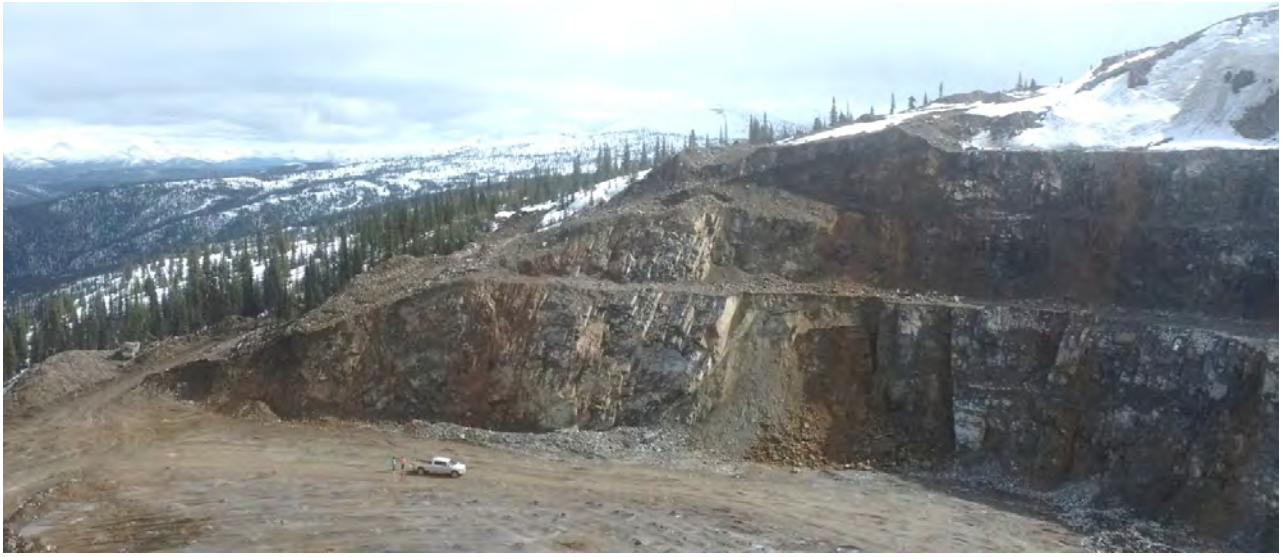


Photo 4.1-5: NE Ore Stringer Planar Failure (May 2022)

On the same wall orientation, in June 2022, a second ground fall occurrence was observed (Photo 4.1-6). The wedge that failed involved similar joint sets to those making up the first occurrence, and the area of interest was in close proximity to regional scale faulting. This occurrence prompted a small-scale pushback to address a few overhanging hazards that resulted from the rockfall, as well as eliminating a number of adverse joint sets visible in the upper benches (Photo 4.1-7).

Photo 4.1-6: 1335 North Wall Wedge Failure (June 2022)

Photo 4.1-7: Completed North Wall Remediation (August 2022)

A few additional small bench scale wedge failures occurred on the North Wall in the last half of the year. Supplementary work is ongoing to define the rock mass and regional scale faults that impact the North Wall, and will be a focus for 2023.

4.1.2 Eagle Pit Monitoring

4.1.2.1 Sentry Continuous Monitoring Trailer

In July 2022 the Sentry Continuous Monitoring Trailer was commissioned in the Eagle Pit (Photo 4.1-8). The trailer was stationed on Switchback 4 in Phase 2 to monitor the South Wall Pushback (an example visual of data can be seen in Figure 4.1-5). Due to the Eagle Pit geometry, the continuous monitoring trailer is unable to gain line of sight of both active Phase 2 and Phase 3 mining areas. However, due to its mobile nature, it can be moved depending on priorities for monitoring.

Photo 4.1-8: Sentry Continuous Monitoring Trailer Deployed In Pit

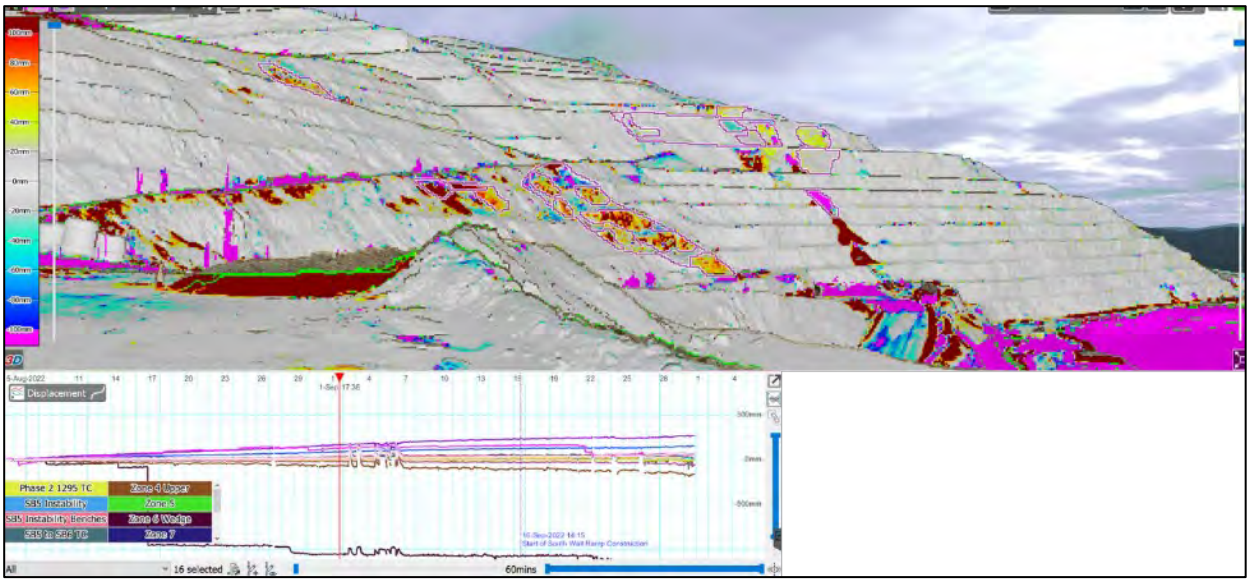


Figure 4.1-5: Example Visual of Sentry Monitoring Data (August 2022 Month End)

The trailer continues to be positioned at Switchback 4 at end of year. It will continue to monitor the South Wall Pushback to completion in 2023 and is then planned to move to a strategic position to monitor the final Phase 3 walls, with an emphasis on monitoring the North Wall.

4.1.2.2 Prisms

Prisms are currently installed on final highwalls or on temporary highwalls that are deemed necessary. Table 4.1-2 summarizes the status of all prisms, historic and newly installed, in the Eagle Pit as of 2022 year-end. Figure 4.1-6 is a plan view of all the prisms that were active in 2022.

Table 4.1-2: Eagle Pit Year End 2022 Prism Status

Prism	Year Installed	Status	Location	Bench Elevation (m asl)	Purpose
PR21-01	2021	Retired	Phase 2	1315	South Wall Instability
PR21-02	2021	Retired	Phase 2	1295	South Wall Instability
PR21-03	2021	Retired	Phase 2	1295	South Wall Instability
PR21-04	2021	Retired	Phase 2	1295	South Wall Instability
PR21-05	2021	Retired	Phase 2	1360	South Wall Instability
PR21-06	2021	Retired	Phase 2	1355	South Wall Instability
PR21-07	2021	Retired	Phase 2	1315	South Wall Instability
PR21-08	2021	Retired	Phase 2	1325	South Wall Instability
PR21-09	2021	Retired	Phase 2	1335	South Wall Instability
PR21-10	2021	Retired	Phase 2	1365	South Wall Instability
PR21-11	2021	Retired	Phase 2	1355	South Wall Instability
PR21-13	2021	Retired	Phase 2	1295	South Wall Instability
PR21-15	2021	Retired	Phase 2	1275	South Wall Instability
PR21-16	2021	Retired	Phase 2	1275	South Wall Instability

Prism	Year Installed	Status	Location	Bench Elevation (m asl)	Purpose
PR21-17	2021	Retired	Phase 2	1275	South Wall Instability
PR21-18	2021	Active	Phase 3	1350	South Wall Pushback
PR21-19	2021	Active	Phase 3	1345	South Wall Pushback
PR21-20	2021	Active	Phase 3	1345	South Wall Pushback
PR21-21	2021	Active	Phase 3	1335	South Wall Pushback
PR21-22	2021	Retired	Phase 3	1335	South Wall Pushback
PR21-23	2021	Active	Phase 3	1335	South Wall Pushback
PR21-25	2021	Active	Phase 3	1335	South Wall Pushback
PR21-26	2021	Active	Phase 3	1335	South Wall Pushback
PR21-27	2021	Retired	Phase 3	1295	South Wall Pushback
PR21-28	2021	Active	Phase 3	1295	South Wall Pushback
PR21-29	2021	Retired	Phase 3	1295	South Wall Pushback
PR21-31	2021	Retired	Phase 3	1295	1295 Cracking
PR21-32	2021	Retired	Phase 3	1295	1295 Cracking
PR21-33	2021	Retired	Phase 3	1295	1295 Cracking
PR21-34	2021	Retired	Phase 3	1295	1295 Cracking
PR21-40	2021	Active	Phase 2	1235	Phase 2 Lower Stack
PR21-41	2021	Retired	Phase 2	1235	Phase 2 Lower Stack
PR21-42	2021	Retired	Phase 2	1235	Phase 2 Lower Stack
PR21-43	2021	Retired	Phase 2	1235	Phase 2 Lower Stack
PR21-44	2021	Retired	Phase 2	1235	Phase 2 Lower Stack
PR21-45	2021	Retired	Phase 2	1235	Phase 2 Lower Stack
PR22-01	2022	Active	Phase 3	1325	Phase 3 Final Wall
PR22-02	2022	Active	Phase 3	1325	Phase 3 Final Wall
PR22-03	2022	Active	Phase 3	1345	Phase 3 Final Wall
PR22-04	2022	Active	Phase 3	1345	Phase 3 Final Wall
PR22-05	2022	Active	Phase 3	1315	Phase 3 Final Wall
PR22-06	2022	Active	Phase 3	1315	Phase 3 Final Wall
PR22-07	2022	Active	Phase 3	1315	Phase 3 Final Wall
PR22-08	2022	Active	Phase 3	1315	Phase 3 Final Wall
PR22-09	2022	Active	Phase 3	1315	Phase 3 Final Wall
PR22-10	2022	Active	Phase 3	1315	Phase 3 Final Wall

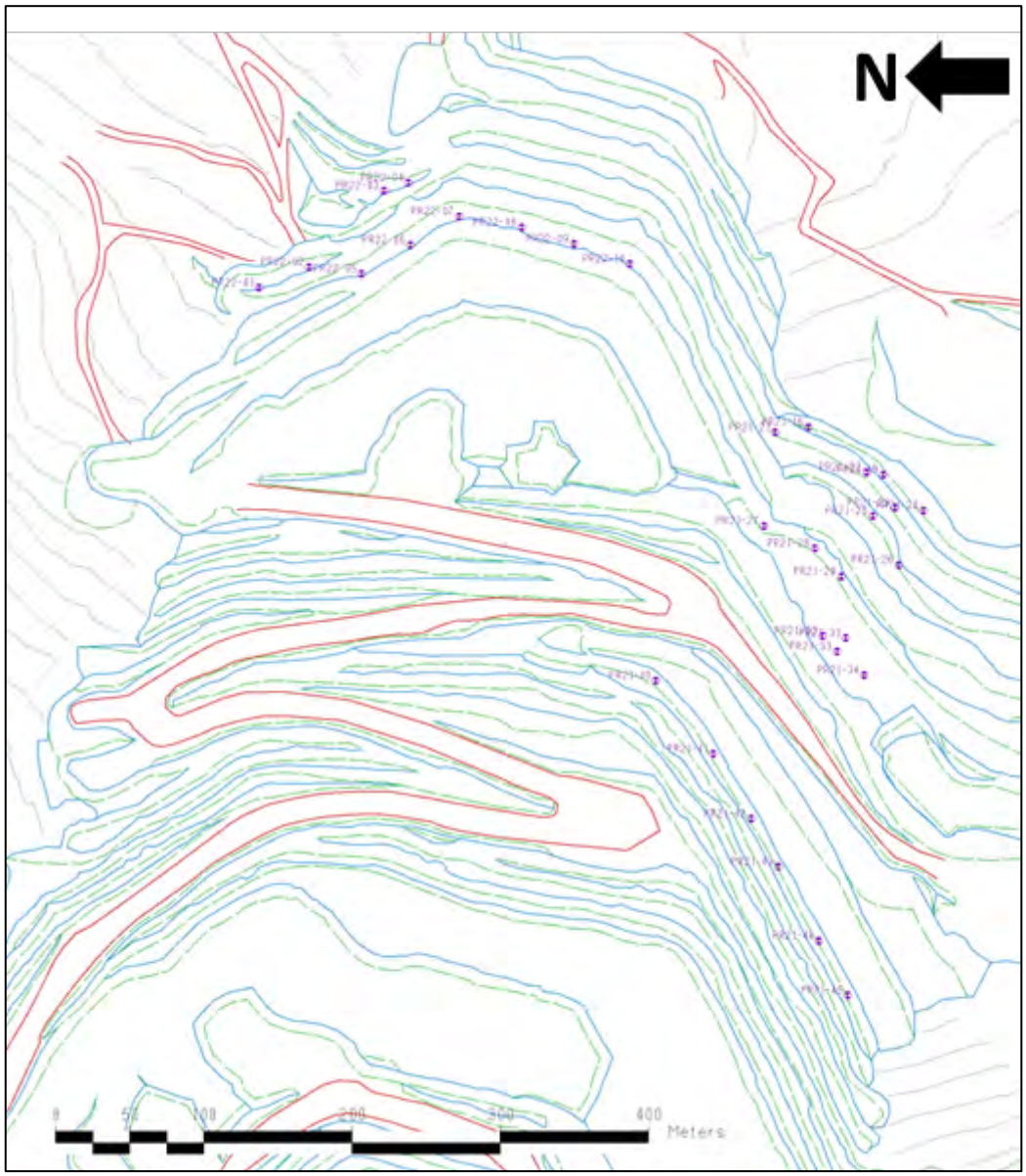


Figure 4.1-6: Active Prisms During 2022

The following graphs show data associated with all installed prisms in the Eagle Pit for 2022 and any prisms still collecting data from the year prior. All new prisms installed in 2022 were placed to monitor final Phase 3 highwalls.

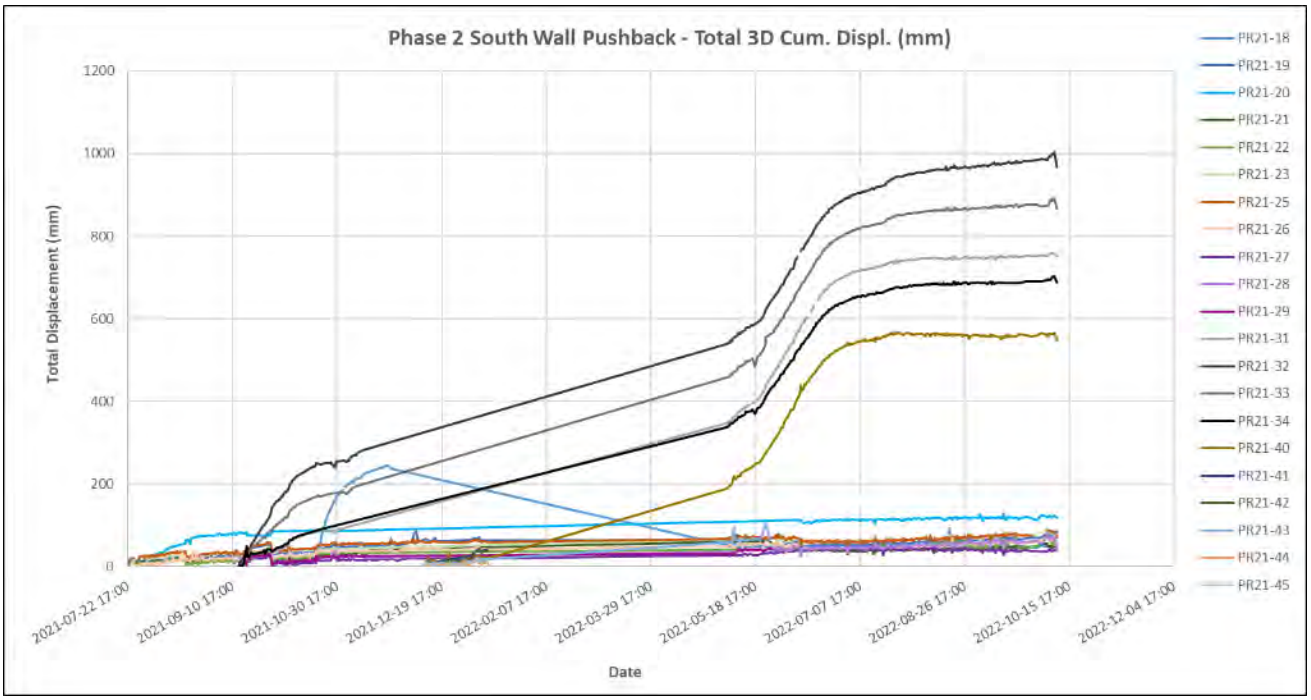


Figure 4.1-7: South Wall Pushback Cumulative Displacement Prism Data

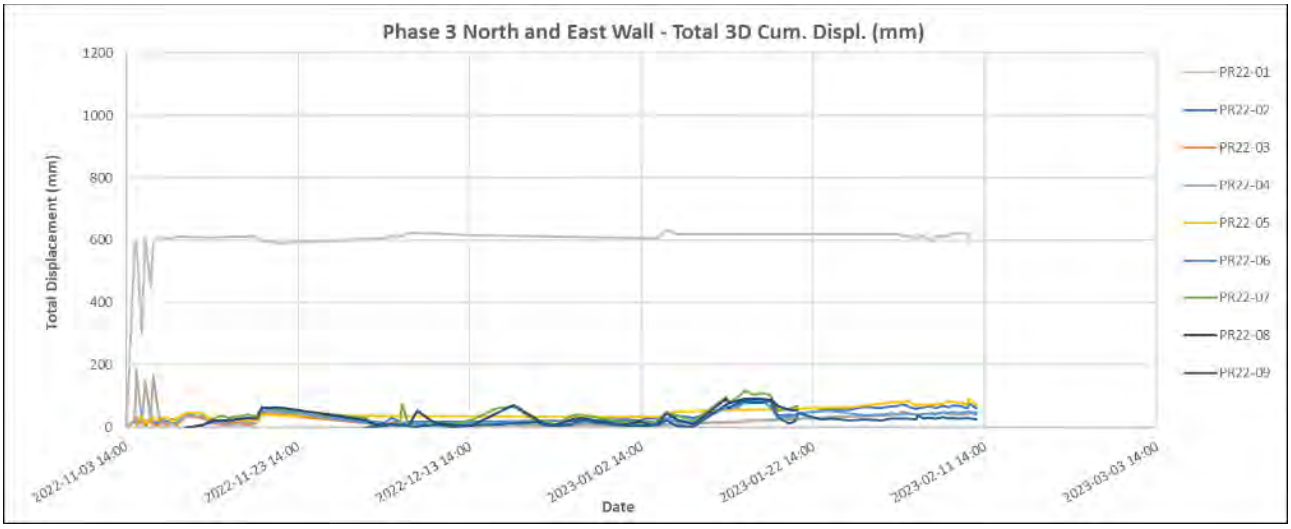


Figure 4.1-8: Phase 3 North and East Wall Cumulative Displacement Prism Data

4.1.2.3 Extensometers

The following graph shows data associated with installed extensometers in the Eagle Pit for 2022.

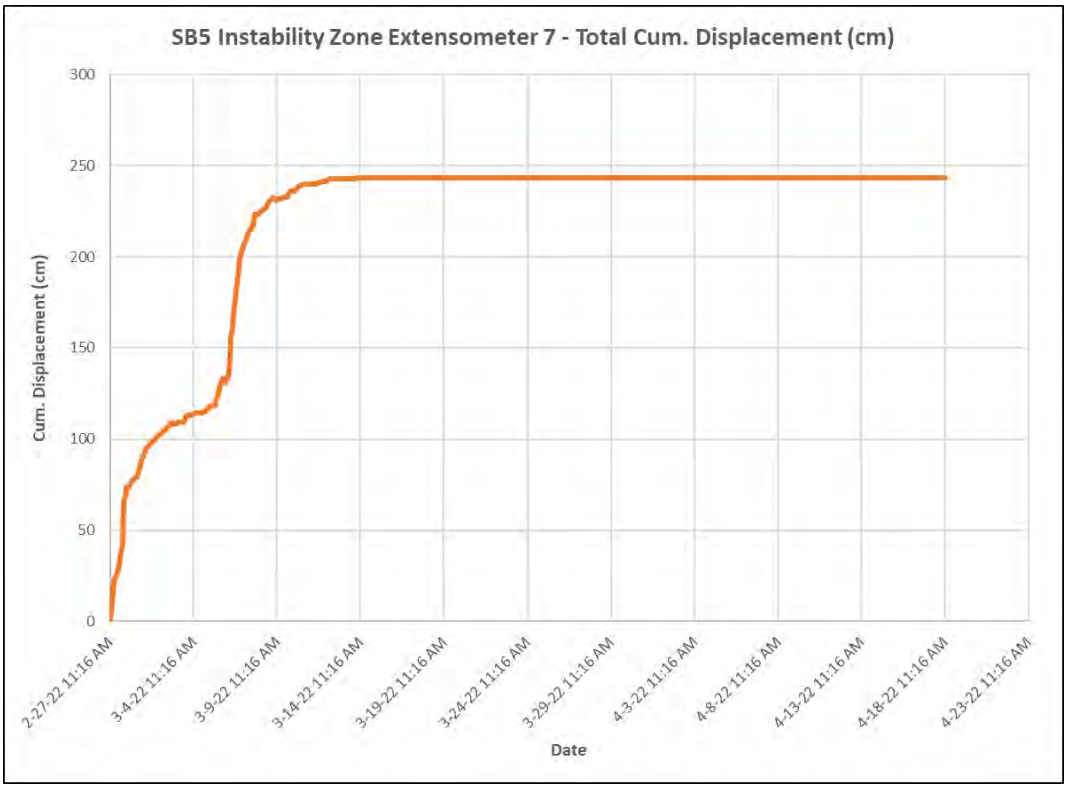


Figure 4.1-9: SB5 Instability Cumulative Displacement Extensometer Data

4.1.2.4 Piezometers

The following Table 4.1-3 summarizes the status of all piezometers in and around the Eagle Pit in 2022. Figure 4.1-10 is a plan view of all the piezometers that were active in 2022.

Table 4.1-3: Eagle Pit Year End 2022 Piezometer Status

Piezometer	Year Installed	Status	Location	Tip Elevation (m asl)	Purpose
DEEP-08 – VW1	2020	Active	Ex-pit	879.5	Future Phase 3 Monitoring
DEEP-08 – VW2	2020	Active	Ex-pit	931.4	Future Phase 3 Monitoring
DEEP-08 – VW3	2020	Active	Ex-pit	987.7	Future Phase 3 Monitoring
DEEP-06 – VW1	2021	Retired	In-Pit – Phase 2	1049.5	Phase 2 Wall Monitoring
DEEP-06 – VW2	2021	Retired	In-Pit – Phase 2	1134.0	Phase 2 Wall Monitoring
DEEP-06 – VW3	2021	Retired	In-Pit – Phase 2	1213.9	Phase 2 Wall Monitoring
DEEP-04 – VW1	2021	Retired	In-Pit – Phase 2	975.1	Phase 1 Wall Monitoring
DEEP-04 – VW2	2021	Retired	In-Pit – Phase 2	1038.6	Phase 1 Wall Monitoring
DEEP-04 – VW3	2021	Retired	In-Pit – Phase 2	1102.0	Phase 1 Wall Monitoring
BH21-05A – VW1	2021	Active	Ex-Pit	1186.1	Phase 3 South Wall Monitoring
BH21-05A – VW2	2021	Active	Ex-Pit	1236.3	Phase 3 South Wall Monitoring
BH21-05A – VW3	2021	Active	Ex-Pit	1268.9	Phase 3 South Wall Monitoring
BH22-06B – VW1	2022	Active	Ex-Pit	1236.7	Phase 3 East Wall Monitoring

Piezometer	Year Installed	Status	Location	Tip Elevation (m asl)	Purpose
BH22-06B – VW2	2022	Active	Ex-Pit	1272.0	Phase 3 East Wall Monitoring
BH22-06B – VW3	2022	Active	Ex-Pit	1356.9	Phase 3 East Wall Monitoring

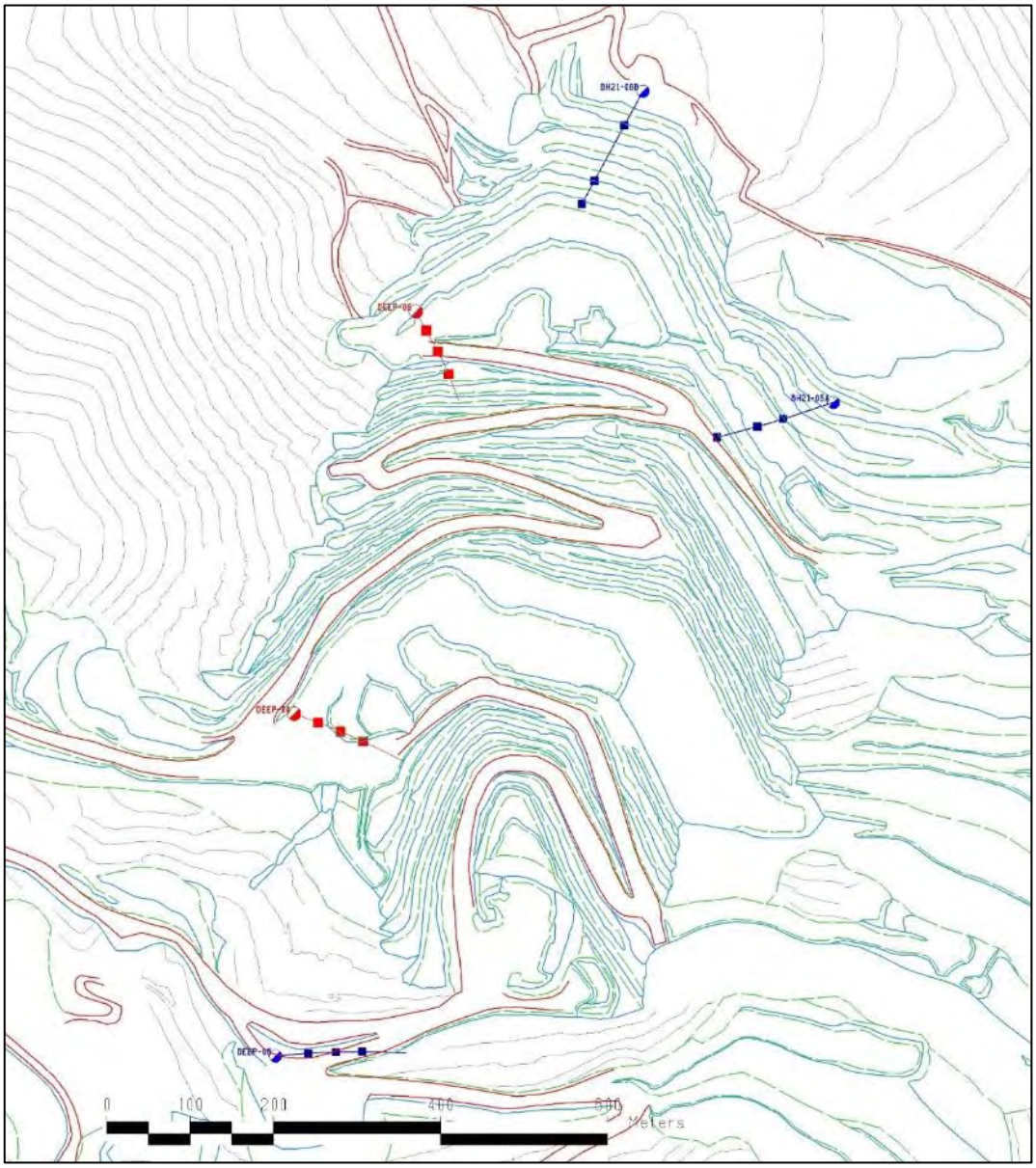


Figure 4.1-10: Active Piezometers During 2022

The following graphs show data associated with all installed piezometers in the Eagle Pit for 2022 and any piezometers still collecting data from the year prior.

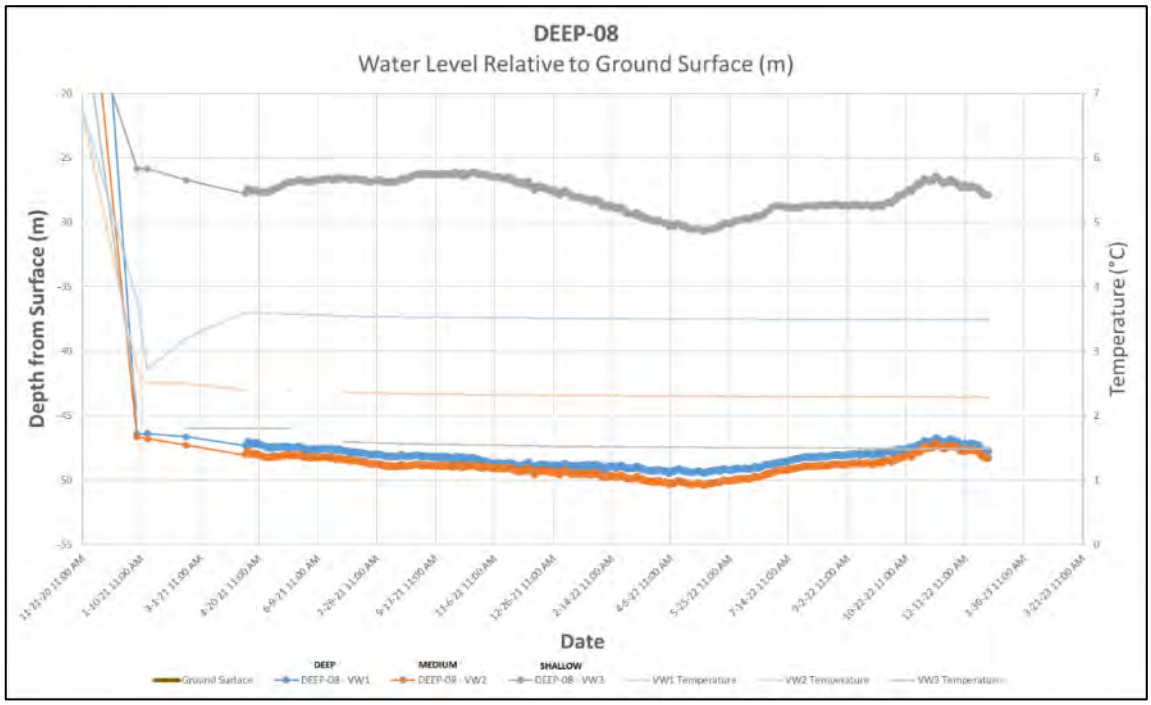


Figure 4.1-11: Hydraulic Head Measurements over Time for Piezometer DEEP-08 Located on 1050 Laydown

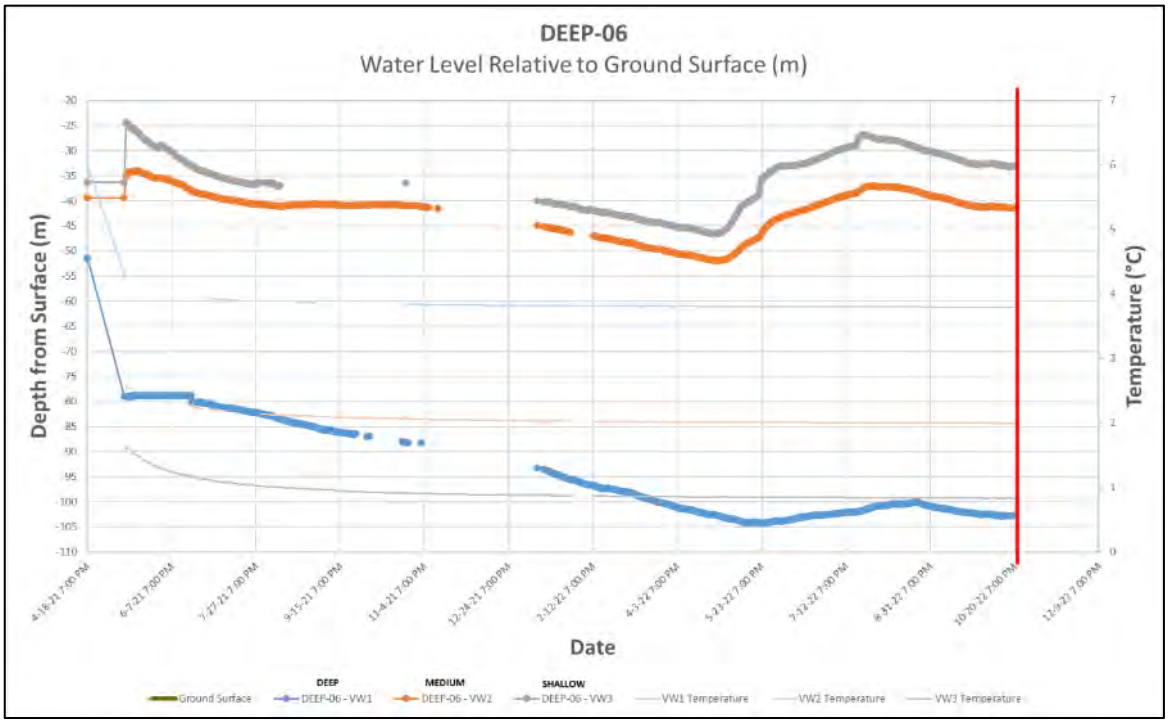


Figure 4.1-12: Hydraulic Head Measurements over Time for Piezometer DEEP-06 Located at Elevation 1285 in Eagle Pit

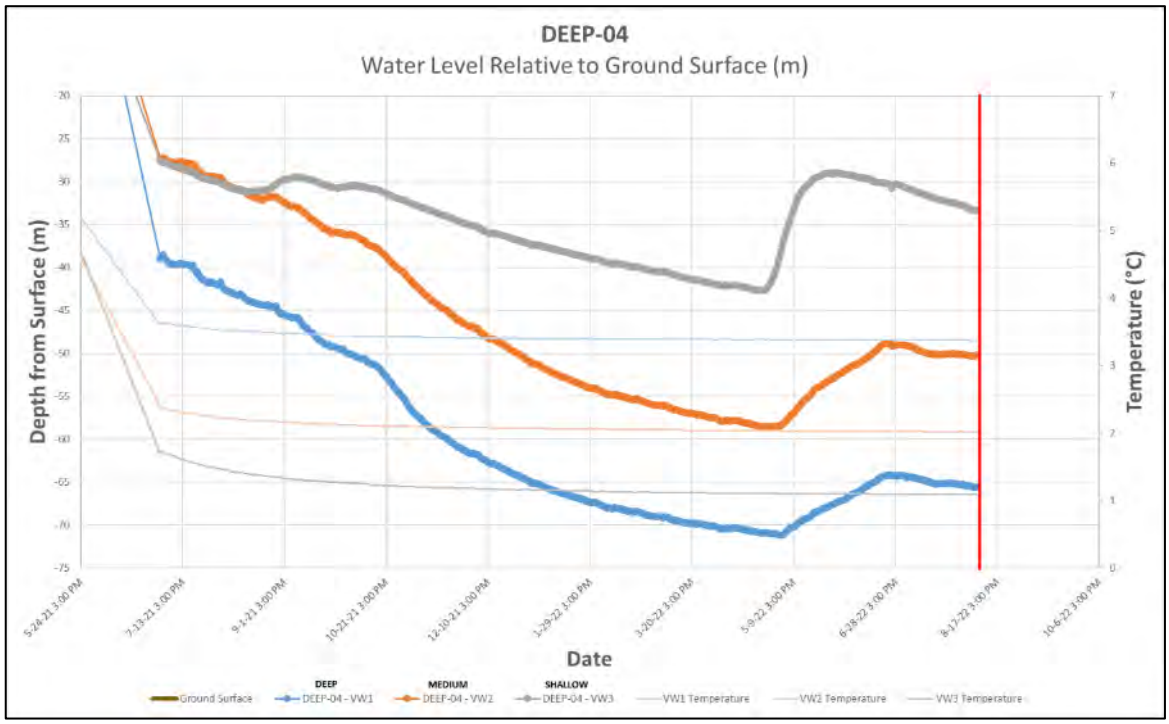


Figure 4.1-13: Hydraulic Head Measurements over Time for Piezometer DEEP-04 Located at Elevation 1170 outside of Eagle Pit Phase 1

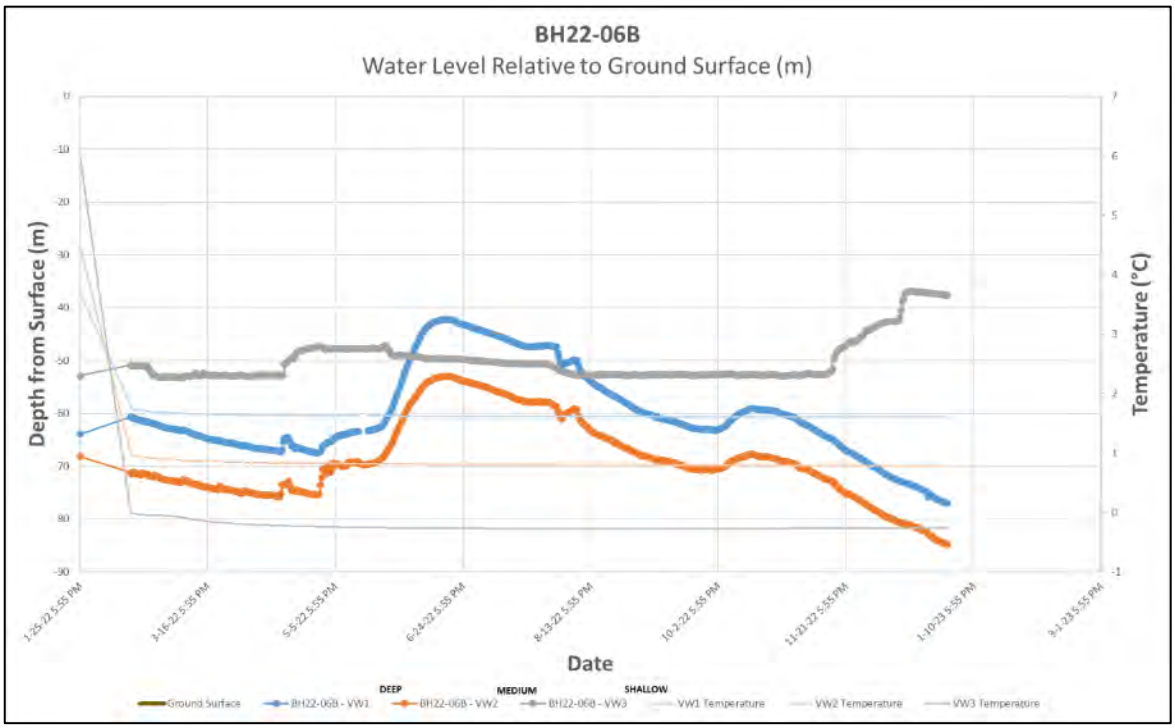


Figure 4.1-14: Hydraulic Head Measurements over Time for Piezometer BH22-06B Located at Elevation 1410 outside of Eagle Pit

4.2 Waste Rock Storage Areas

4.2.1 2022 WRSA Development

Waste rock generated from 2022 production was dispatched to both the PG WRSA and the EP WRSA. The PG WRSA, located South of the Pit in the Platinum Gulch drainage, contains the majority of waste from the first three years of production. The dump was constructed using bottom-up construction with 40-60 m lift heights, to an overall height of 420 m. During the reporting period only 150kt was sent to the PG WRSA, as of year-end, a total capacity of approximately 1,000 kt remains in the lower two lifts, with 378 kt and 647 kt capacity available for the 1060 and 960 lifts, respectively. Waste material dispatched to the PG WRSA in 2022 is depicted in plan below as Figure 4.2-1, and as a section as Figure 4.2-2. The remaining capacity of the 960 and 1060 lifts is illustrated as Figure 4.2-3.

Figure 4.2-1: Waste Material Placed in the PG WRSA in 2022

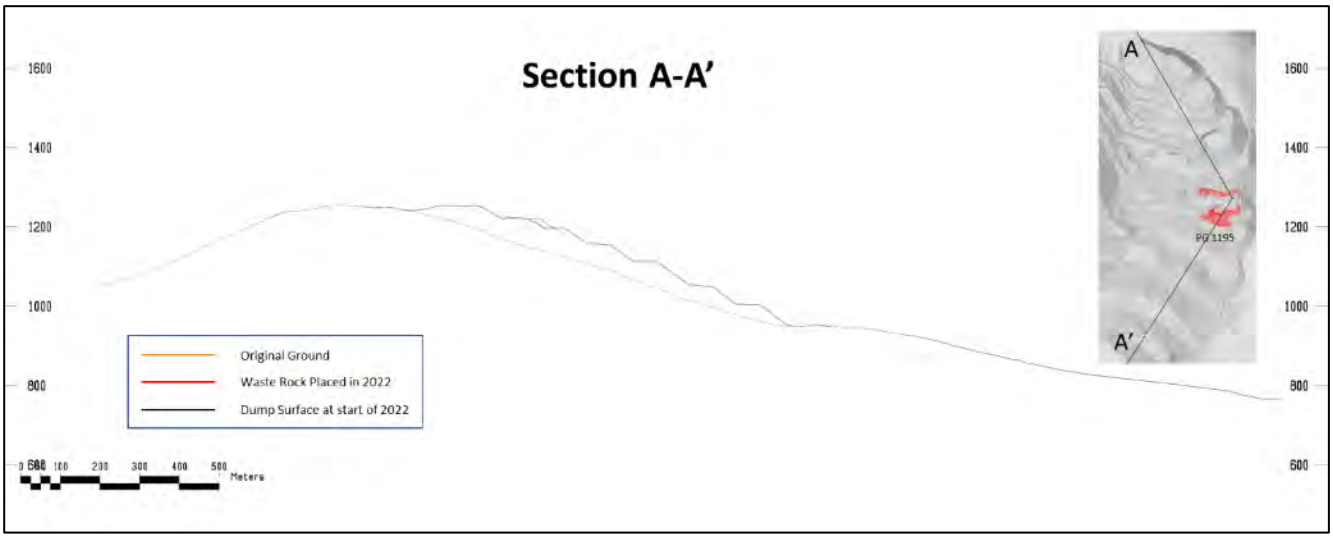


Figure 4.2-2: Cross Section of Material Placed in the PG WRSA in 2022

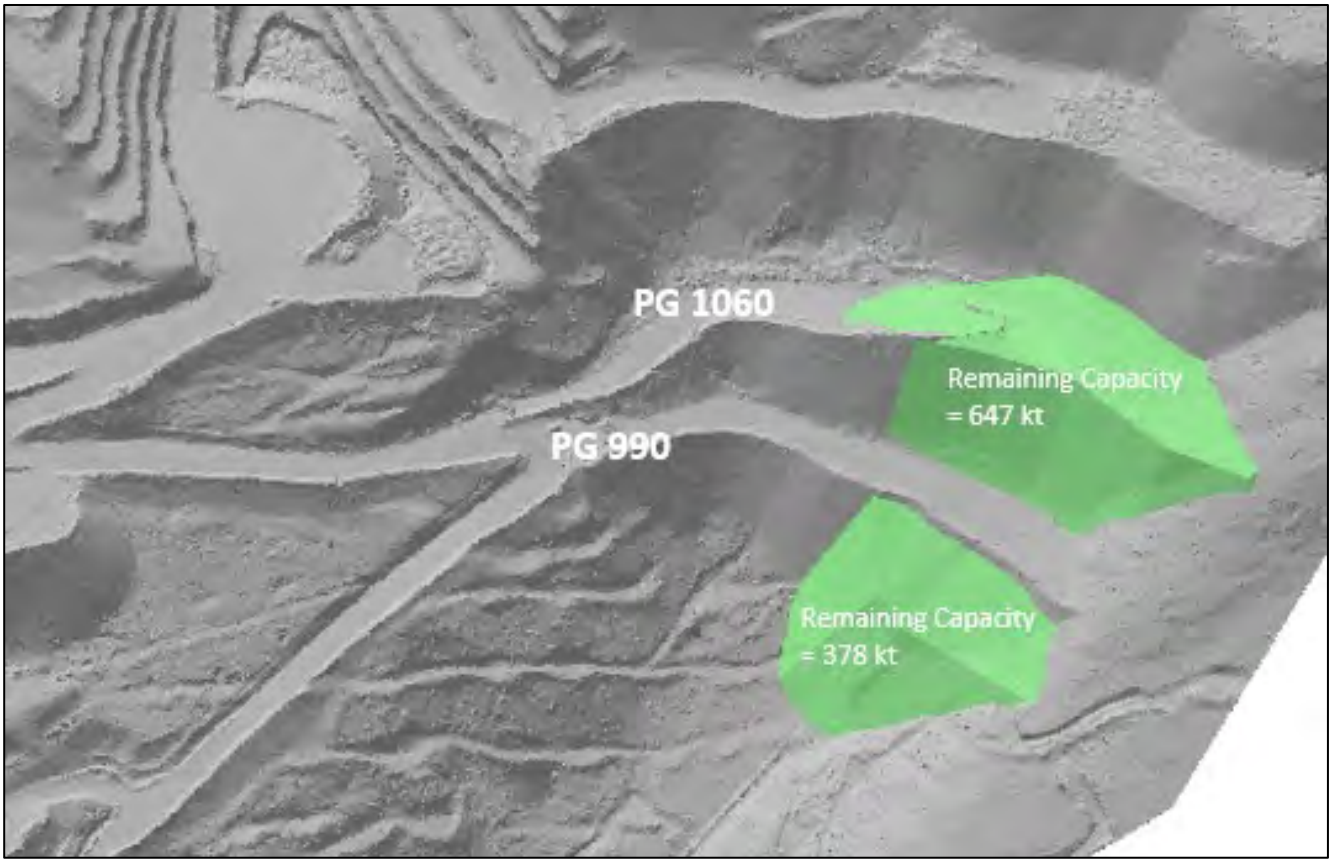


Figure 4.2-3: Remaining Capacity in the PG WRSA

The EP WRSA, located North and Northeast of the Pit in the Eagle Pup Drainage, will contain the majority of waste for the remaining LOM. The EP WRSA was initiated part way up the drainage, above 985 m elevation, and will be advanced up drainage using bottom-up construction. Primary sequence and lift design considerations

include ensuring lower lifts are buttressed or toed into ice-poor or ice-barren material with construction of advancing dump face remaining square to topography and the identified ice rich lobate (located at 1020 masl), to ensure each lift is adequately buttressed prior to advancing lifts above.

Dispatching of waste to the EP WRSA during the reporting period commenced on the 995 lift to buttress the causeway developed in 2021. Construction of a subset of the WRSA continued throughout 2022, developing the upstream rock drain, and buttressing the ice rich lobate. Looking forward into 2023, construction of the downstream buttress will be completed and the full extents of the EP WRSA will be developed.

Waste material dispatched to EP WRSA in 2022 is depicted in plan and section below.

Figure 4.2-4: Waste Material Placed in the EP WRSA in 2022

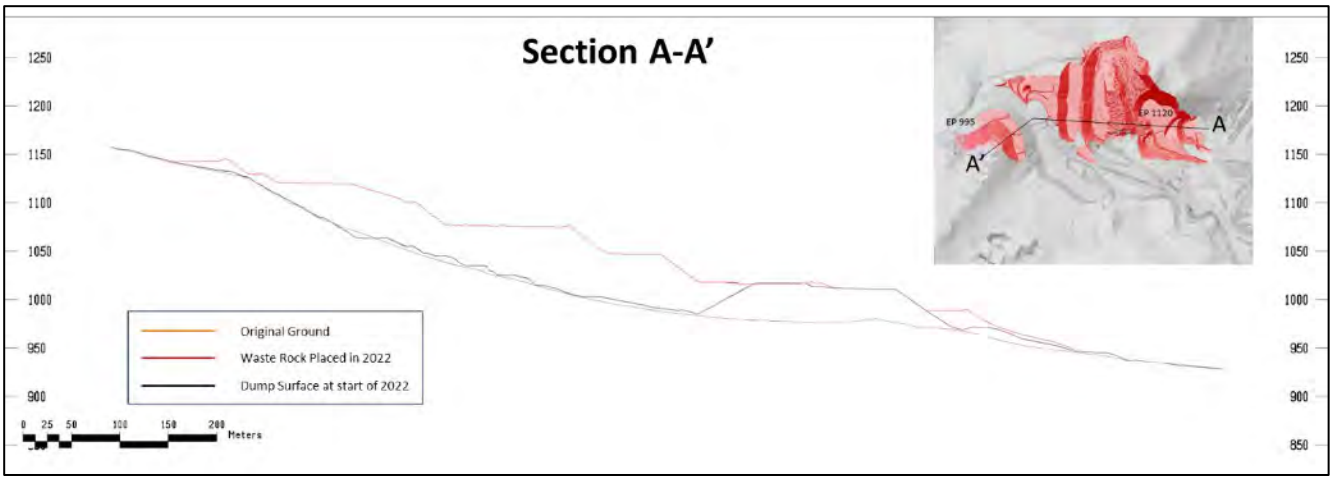


Figure 4.2-5: Cross Section of Material Placed in the EP WRSA in 2022

4.2.2 WRSA Monitoring

All active and inactive dumps are inspected and monitored regularly to provide operational safety and ensure long-term stability of the EP and PG WRSAs. All sequencing and WRSA designs are reviewed by the EoR and deviations from recommendations and/or anticipated site conditions are communicated back to the EoR, as required, for comment.

All active and inactive EP and PG dumps are inspected once a week, at a minimum by Site Geotechnical personnel. Inspections are completed by foot and/or through review of drone photos looking for indications of deformation, such as cracking and bulging, seepage and over-steepening of the crest. Where significant cracking is observed on an inactive dump surface, cracks are surveyed and a wireline extensometer set up to provide a means of measuring displacement over time. The data is used to determine possible failure mechanism and assess the short- and long-term dump stability, and is reported to Operations to allow for use in strategic planning.

A typical extensometer set up is shown below as Photo 4.2-1.

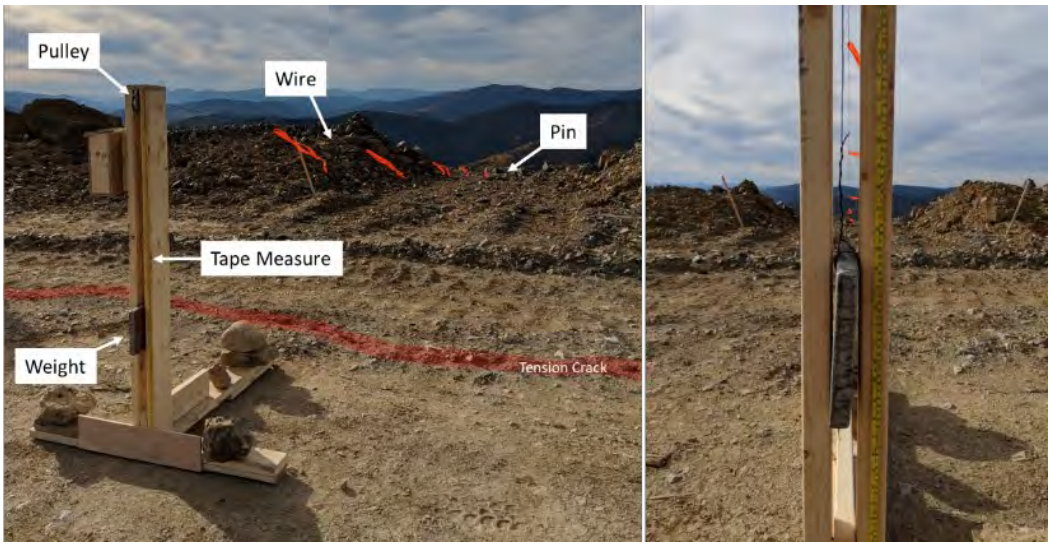


Photo 4.2-1: Extensometer Deployed on an Active WRSA Lift

Displacement thresholds guiding monitoring activities for the WRSAs at the Mine are provided in Table 4.2-1.

Table 4.2-1: Movement Rate Threshold for Extensometer Monitoring

Alert	Green	Yellow	Orange	Red
Platform Condition	No new tension cracks; no recent movement on old tension cracks.	Existing cracks opening and new tension cracks developing close to the crest.	Cracking extends well behind the crest; obvious differential settlement and/or development of steps or grabens on the platform.	**Rapidly** coalescing, cracks that extend well behind the crest; deep, open tension cracks and/or grabens; platform not trafficable.
Crest, face and toe condition	Normal toe, face and crest geometry; no toe spreading or heaving, face bulging, crest over-steepening or excessive raveling.	Minor changes in dump geometry (minor toe spreading/heaving, face bulging, crest over-steepening); minor face and crest raveling.	Pronounced toe spreading/heaving, and/or face bulging; substantial over-steeping of the crest; small sliver failures; active face and crest raveling/break back.	Extensive toe spreading/heaving and/or face bulging; active face and crest slumping/raveling; frequent sliver failures; active instability.
Deformation rate	Rate of movement <1cm/hr, extensometer monitoring frequency every 4 hours.	Rate of movement >1cm/hr and <1.5cm/hr, rate increasing; extensometer reading every 2 hours.	Rate of movement >1.5cm/hr and <3cm/hr, rate increasing; extensometer reading every 2 hours.	Rate of movement >3cm/hr. Cease readings on extensometer due to potential safety issues.

The majority of monitoring for the WRSAs in 2022 was completed visually by drone inspection or on foot. Due to the inaccessibility of the PG WRSA lifts, extensometers were not a reliable source of monitoring. The EP WRSA lifts were largely accessible and were inspected on daily tours.

Developing more reliable access to PG WRSA is ongoing and a priority for 2023.

To date the PG and EP WRSAs have been stable and displacement is surficial.

4.3 Heap Leach Facility and Process Facilities

Surface preparation of Phase 2 began in Summer of 2021. Construction of Phase 2A was completed in August of 2022 extending the liner from the 1,050m elevation to the approximate elevation 1,070m. Construction of Phase 2A included installation of the HLF overliner drain fill (ODF) and collection pipe, as well as installation of the horizontal pad cell piezometers in Phase 2A. The HLF Phase 2A Record of Construction completed by Forte Dynamics Inc. documenting the ODF, piping and instrumentation installation is provided as Appendix A to this report.

An annual inspection was completed in October 2022 by Mr. Barry Carlson, P. Eng. of Forte Dynamics. Figure 4.3-1 presents a drone shot that is representative of the site during 2022 nearing completion of construction activities in Phase 2A (see Section 4.3.1).

Figure 4.3-1: Drone Photo Map of HLF and Process Facilities June 29, 2022

Three standpipes with vibrating wire piezometers are installed through the HLF embankment. Piezometer P1 was installed into the dam foundation bedrock and Piezometers P2 and P3 were installed in the dam fill just above the western and eastern underdrains, respectively. The P1 level data appears to have remained relatively static when compared to previous readings taken during the 2020 and 2021 annual inspections. The P2 and P3 sensors still appear to be dry and small fluctuations are likely attributed to the changes in barometric pressure. The water levels are presented in Figure 4.3-2 to Figure 4.3-4.

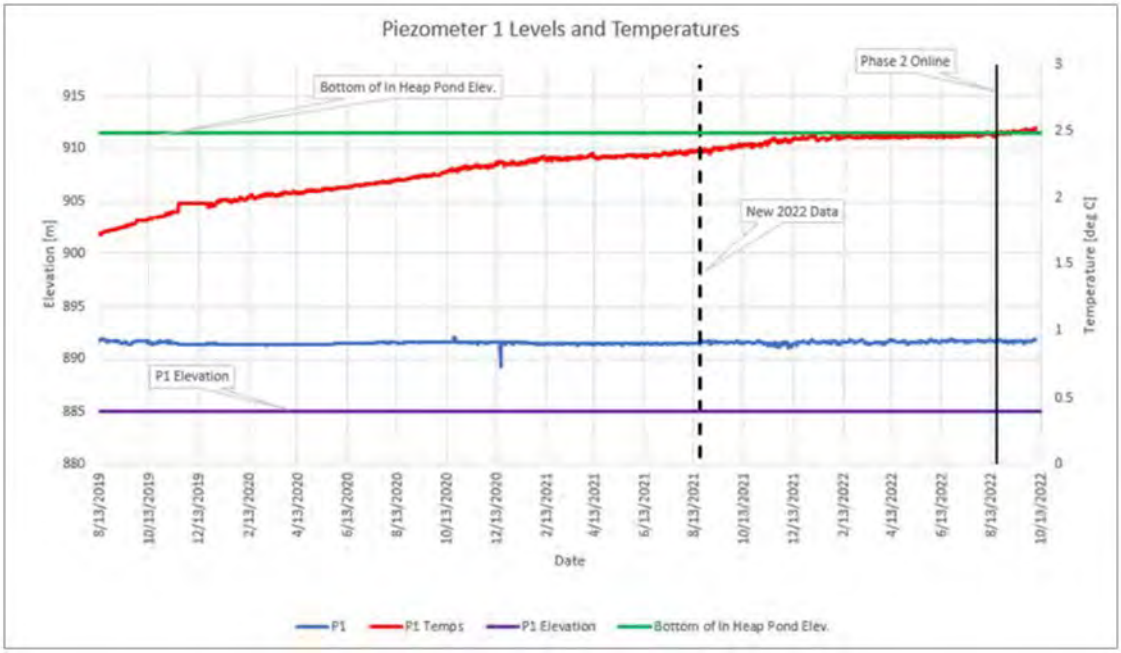


Figure 4.3-2: Piezometer P1 Readings

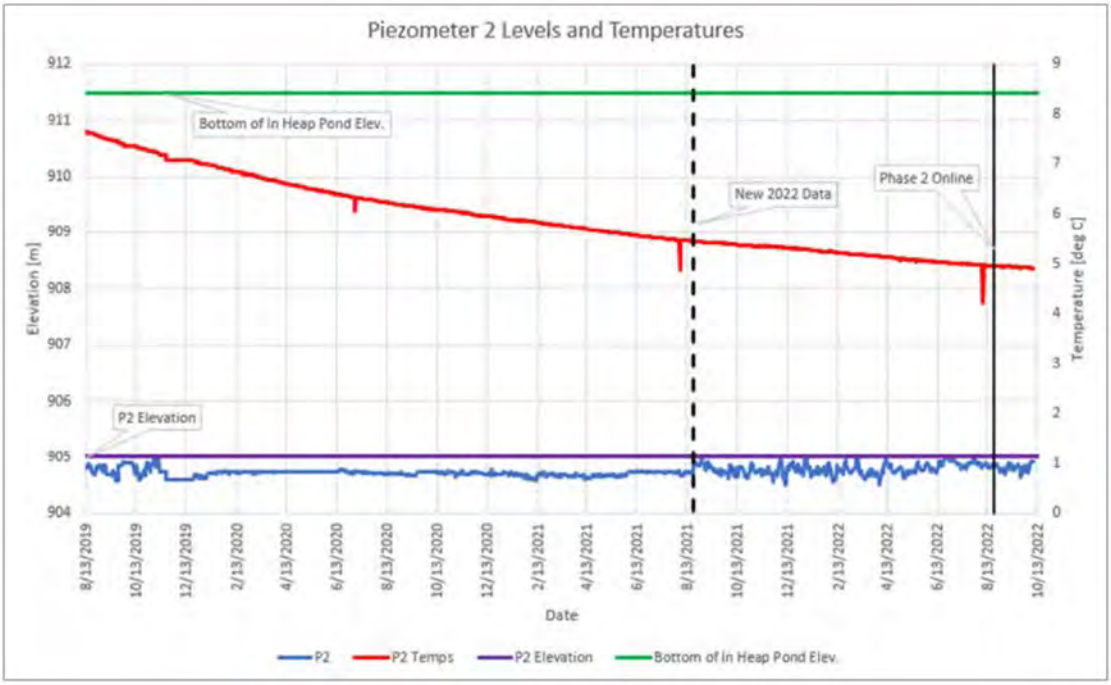


Figure 4.3-3: Piezometer P2 Readings

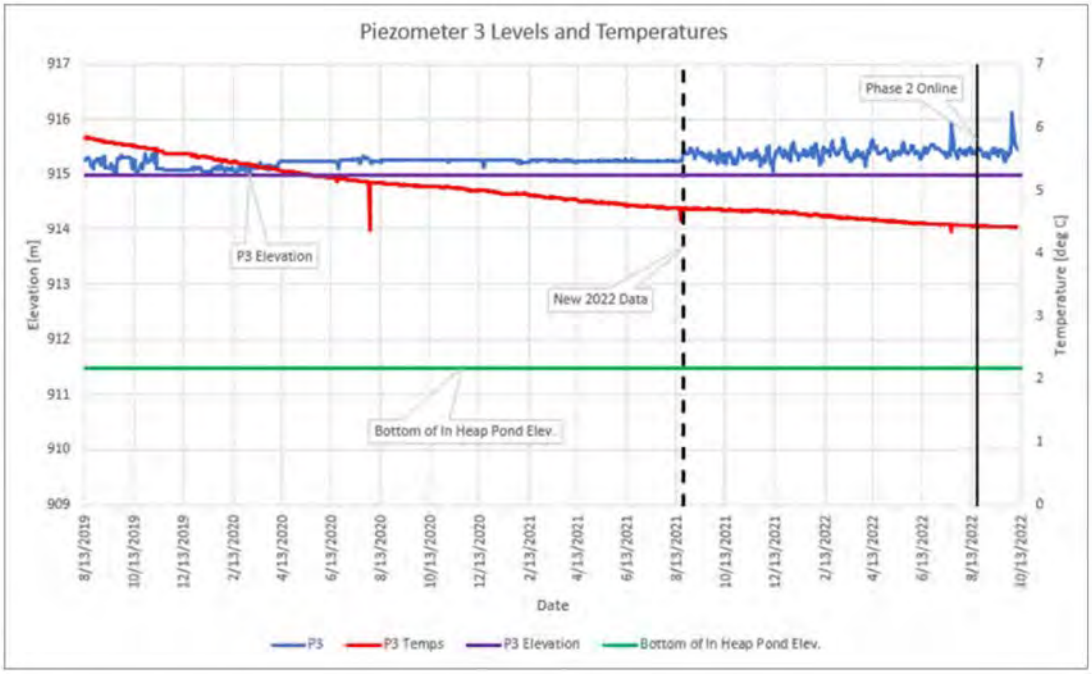


Figure 4.3-4: Piezometer P3 Readings

An inclinometer casing was also installed through the HLF dam crest and installation details are presented in BGC (2018). Results from an RST MEMS Digital inclinometer System are presented in Appendix N. The amount of cumulative displacement observed is considered minor. The displacement pattern observed is typical of embankment settlement.

Three vibrating wire piezometers were installed in conduit pipes on July 19, 2021 through the Phase 1 leach pad overliner layer upgradient of the In-Heap Pond. These three piezometers were installed horizontally atop the pad geomembrane and extend 25 m, 50 m, and 100 m from the heap toe limit. The purpose of these piezometers is to monitor phreatic head above liner. The phreatic head levels of all three piezometers had correlating levels and fluctuations throughout the monitoring period, showing a maximum phreatic head level of 0.46 m and a minimum of -0.16 m (Figure 4.3-5). Thermistor data shows that temperatures never dipped below 4 degrees Celsius during the monitoring period. Thermistor data was not provided by VGC after October 14th, 2021. It should be noted that piezometer data was not recorded from October 14th, 2021, to December 18th, 2021, and thermistor data was not recorded after December 18th, 2021. At this moment it is unclear why this data was not reported. Aside from the apparent data gap, it appears that the piezometers are functioning properly, and the measured phreatic head level is within the design criteria.

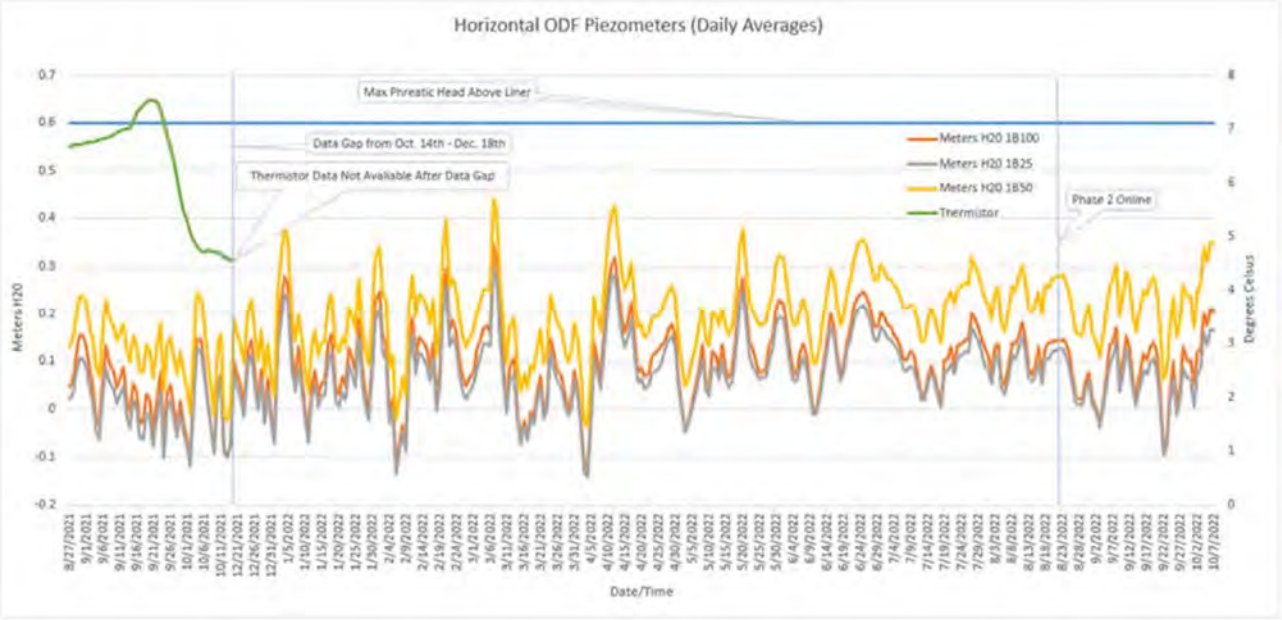


Figure 4.3-5: Phase 1B Horizontal ODF Piezometer Levels

4.3.1 Stability Inspection

4.3.1.1 Engineer of Record Physical Stability Inspection

Heap Leach Facility

The 2022 inspection was completed by Mr. Barry Carlson, P.Eng. of Forte Dynamics in October 2022 as the HLF Engineer of Record, and the report has been prepared with the assistance of Mr. Burke and Mr. Morlan P.G of Forte Dynamics. The full inspection report is provided as Appendix N and the general site layout of the HLF facility is shown in Figure 4.3-1.

The inspection took place on site and was in general conformance with the VGC HLF Operations, Maintenance, and Surveillance (OMS) Manual. The scope of this annual dam inspection work was limited to:

- Visual inspection of the HLF and dam by the EoR, including taking appropriate photographs of the observed conditions;
- Review of routine inspection records prepared by operating personnel in the past year;
- Review whether or not recommendations from previous year's inspection had been addressed, and any incidents or actions arising from those previous recommendations;
- Review of instrumentation and monitoring data;
- Review of the previous year's operations including reports of any incidents (and remedial measures) that may have occurred;
- Evaluation of the structural performance of the embankment and related components and identify any potential safety deficiencies or recommended items that need to be addressed in the coming year;

- Review of construction records, quality assurance and quality control (QA/QC) data and as-built information on facility construction; and
- Evaluation of the OMS Manual to assess the need for updating.

Based on the findings of the annual inspection, the EOR provided a summary of recommended maintenance and monitoring action items for the HLF. Each action item was assigned a priority ranking level from 1 to 3 with 1 indicating the highest priority and 3 indicating the lowest. A ranking of 3 was generally assigned to items that would be considered routine inspection or monitoring. A summary of recommended maintenance and monitoring action items are presented in Table 4.3 1. VGC response to the recommendations provided by the EOR will be completed as part of the implementation plan coming out of the YG review of the Cyanide Management Plan and HLF operations (see Section 5.5).

Table 4.3-1: Recommended Maintenance and Monitoring Action Items from 2021 EOR Inspection

Name of Structures	Maintenance/Monitoring Actions Required				
	Routine Monitoring/ Maintenance	Increased Monitoring/ Maintenance	Remediation and Engineering Review Necessary	Priority Level[1]	Recommendations
Heap Leach Facility (HLF)	Yes	Yes	Yes	3	Continue documentation using routine inspection forms all unusual/adverse conditions observed, as well as maintenance work undertaken as per the current OMS manual.
				3	Continue the inspection and documentation of the embankment erosion, cracking, settlement or subsidence, bulging, vegetation, and animal burrows **weekly** as per the current OMS manual.
				3	Continue the inspection and monitoring of embankment geotechnical instrumentation that has been set up for **continuous** wireless relays including: in-heap pond piezometers, ODF piezometers, and LDRS piezometer as per the current OMS manual. **Note:** Currently, the In-heap pond piezometer relays data **daily (manual readings)**, ODF piezometers relay data approximately every **20 minutes (continuous readings)**, LDRS piezometer relays data **daily (manual readings)**. Forte recommends the implementation of continuous relay for the ODF and LDRS piezometers as per the OMS manual.
				3	Recommend taking out piezometer 2 and 3, cleaning them, and hanging both about 0.25 m from the bottom. Verify the tip depth when lowering it back down and updated the depth of subsequent readings.
				3	Evacuate the LDRS sump based on water level readings (no greater than 0.5m above bottom end of LDRS pipe should be allowed). **Note:** As per the current OMS manual, the LDRS sump should be checked **daily** for the presence of solution. If solutions are present, they will be sampled an analyzed. Solutions contained will be evacuated, measured for volume, and recorded. As per Forte discussion with VGC, this requirement is unfeasible. Forte recommends an update to the OMS manual to reflect the operating procedure currently in place.
				3	Continue the inspection and collection of inclinometer readings **quarterly** as per the current OMS manual.
				3	Continue the inspection and collection of measured pumped seepage at monitoring vault **weekly** as per the current OMS manual. **Note:** Currently, the measured pumped seepage is being relayed **daily**.

Name of Structures	Maintenance/Monitoring Actions Required				
	Routine Monitoring/ Maintenance	Increased Monitoring/ Maintenance	Remediation and Engineering Review Necessary	Priority Level[1]	Recommendations
				3	Inspection and survey of embankment survey monuments **monthly** (until November, 2023) per Forte recommendations to provide a baseline. Survey of the monuments after November, 2023 can revert back to **quarterly** readings as per the current OMS manual.
				3	Continue the routine inspection and monitoring of pad liner, PLS and barren pipes, and spillway **weekly** as per the current OMS manual.
				3	Buttress toe recommended to prevent ODF washout. Do not extend ODF up slope higher than 1 lift height in advance of ore being stacked on steep slopes. Have spotters visually observing haul trucks as they dump ODF to prevent damage to the liner.
				3	Continue monitoring on the improvements made to area near CV-023. Ongoing maintenance will be required for the continued performance of the stormwater control, and to maintain setback from perimeter berm to toe of ore. VGC should continue this approach as the heap advances further up the hillside.
				3	Install signage to clearly mark the HLF east underdrain outlet. – Primary outlet for underdrain seepage as water is pumped back to process, however the underdrain outlet still requires marking.
				3	Continue to monitor the stormwater management infrastructure that has been completed at toe of the embankment (upstream of the UMV area), and in the groins of the embankment to assure effectiveness.
				3	Install wireless relays for data collection and source from ADR waterline to event pond.
				1	Barren pipe, PLS pipe, and ore creates impasse for flows along west side to reach spillway. The current culvert under the crossing is insufficient to accommodate large meteoric events. At a minimum a drainage pathway/larger culvert required under crossing.
				3	Extend vegetation to toe of embankment where currently barren.
				2	PLS pipe on the upstream side of the embankment crest provides a barrier area where material from grading operations collects and prevents surface drainage. Placement of road base material, proper grading, and potential relocation of the PLS pipe should be completed to promote proper drainage.
				2	Additional secondary containment around process area is recommended to protect carbon supersack storage.

Name of Structures	Maintenance/Monitoring Actions Required				
	Routine Monitoring/ Maintenance	Increased Monitoring/ Maintenance	Remediation and Engineering Review Necessary	Priority Level[1]	Recommendations
				2	Remediate erosion on Heap face. Solutions can include a combination of periodic ripping of the compacted road surface, sloping of benches back into the heap and excavation of channels to direct water away from access roadways, and installation of sumps periodically to allow exfiltration of water into the ore pile.
Events Pond (EP)	Yes	Yes	-	3	Continue documentation using routine **inspection forms** all unusual/adverse conditions observed, as well as maintenance work undertaken as per the current OMS manual.
				3	Continue the measurement of event pond fluid levels **daily** if the desired available storage level has been reached, and **weekly** otherwise as per the current OMS manual.
				3	Continue the inspection and monitoring of the event pond LDRS that has been set up for **continuous** wireless relays as per the current OMS manual. Note: Currently, the event pond LDRS is set up for data relays every **20 minutes**. However, from November 2021 to December 2022, the battery for the LDRS piezometer was dead. Forte recommends inspection of the event pond LDRS piezometer's functionality **weekly**.
				3	Evacuate the event pond LDRS sump based on water level readings (no greater than 0.5m above bottom end of LDRS pipe should be allowed). **Note:** As per the current OMS manual, the event pond LDRS sump should be checked **daily** for the presence of solution. If solutions are present, they will be sampled an analyzed. Solutions contained will be evacuated, measured for volume, and recorded. As per Forte discussion with VGC, this requirement is unfeasible. Forte recommends an update to the OMS manual to reflect the operating procedure currently in place.
				3	Routine inspection and monitoring of event pond liner, and emergency spillway **weekly** as per the current OMS manual.
HLF Spillway	Yes	Yes	Yes	3	Continue documentation using routine **inspection forms** all unusual/adverse conditions observed, as well as maintenance work undertaken as per the current OMS manual.
				3	Continue the routine inspection and monitoring of the spillway armoring, adjacent access road, and seepage collection pipe outlet as per the current OMS manual.
				1	A significant amount of debris has accumulated within the HLF spillway. Cleanout of the debris is required to prevent further damage. Cleanout should be completed an documented once complete.

Name of Structures	Maintenance/Monitoring Actions Required				
	Routine Monitoring/ Maintenance	Increased Monitoring/ Maintenance	Remediation and Engineering Review Necessary	Priority Level[1]	Recommendations
				1	Minor damage has occurred to the HLF spillway due to material cleanouts and snow removal. Remediation of the damage should be completed and documented once complete.
Emergency Spillway	Yes	No	Yes	3	Continue documentation using routine **inspection forms** all unusual/adverse conditions observed, as well as maintenance work undertaken as per the current OMS manual.
				3	Continue the routine inspection and monitoring of the spillway armoring, adjacent access road, seepage collection pipe outlet as per the **weekly** current OMS manual.

Notes:

1 Priority Levels are assigned from 1 to 3. 1 indicating highest priority and 3 indicating lowest priority. A ranking of 3 was generally assigned to items that would be considered routine inspection or monitoring.

4.3.2 Status Report on Backup Equipment and Supplies for Emergency Management

A range of backup equipment and supplies are maintained at site to ensure that solution within the HLF can be managed effectively in the event of an emergency. At the time of this report, equipment necessary for the emergency management of the HLF was available and operational.

The key backup equipment for management of solution for the HLF are all related to the pumping system (i.e., the pump components and equipment to power the pump components).

4.3.2.1 PLS Pumps

The HLF includes five inclined steel casings that terminate in the In-Heap Pond Pregnant Leach Solution (PLS) Sump. The casings house the PLS pumps for transferring gold bearing solution to the ADR Plant (Photo 4.3-1). There are currently five SAER Elettropompe 6S-302 pumps installed within the casings which includes an installed spare as only 4 pumps are operated at once (to provide installed n+1 redundancy).

Photo 4.3-1: PLS Casings and Pump Configuration – April 26, 2020

Manufacturer recommenced maintenance activities and schedules are programmed into the Project resource planning software to alert maintenance personnel when routine maintenance is required. Additionally, any

observations of performance issues by process and maintenance personnel are logged in the resources planning system to allow for the tracking of work order requests from entry through to completion. Planned preventative and routine maintenance was completed by the maintenance personnel and the installed pumps are all operating as intended. Maintenance records for the PLS pumps is provided as Appendix Q.

4.3.2.2 Barren Solution Pumps

PLS is pumped from the In-Heap Pond to the ADR Plant for gold recovery and amendment of cyanide and then recycled to the HLF as barren solution by the barren solution pumps. Under an emergency scenario, solution pumped from the In-Heap Pond would only need to be recirculated back to the HLF thus the barren solution pumps represent a critical component for emergency management. The ADR Plant includes five barren solution pumps that are operated in an n+1 configuration.

As with all fixed and mobile equipment, maintenance of the barren solution pumps is tracked through the Enterprise Resource Planning (ERP) software platform. The ERP allows for the management of maintenance work orders and work flows, planning, scheduling through completion, close-out and record keeping. Records of any routine or follow-up maintenance activities for the barren solution pumps are kept by the ERP software on the Project site. Maintenance records for the barren solution pumps is provided as Appendix Q.

Photo 4.3-2: Barren Solution Pump Maintenance – December 7, 2020

4.3.2.3 Power Supply

Primary power for operations on the site is provided by the Yukon Energy Corporation electrical grid. There are also three diesel generators on the site, each rated for 1650 KW output (Photo 4.3-3). Each generator has weekly work orders inputted in the ERP software that details the daily checks to be conducted to complete the weekly work order. The daily checks, conducted by qualified maintenance staff, include logging engine hours, checking oil, coolant and other fluid levels, and general observations (including inspection for leaks). In addition to the daily checks required to complete the weekly work orders, routine service is conducted in accordance with manufacturer's instructions and the maintenance department standards. The ERP software shows the completion of weekly checks and 500 hours preventative maintenance (sample provided as Appendix Q), service and inspection for each generator.

Photo 4.3-3: Project Substation and Back-Up Generators - 2019

4.4 Material Storage and Stockpile Management Areas

During construction and operational activities to date, various material types have been encountered that have not met construction specifications but would likely prove suitable for cover materials for facility closure. These materials have been either relocated to dedicated topsoil and overburden storage areas or have been stored locally to support future reclamation activities. The location and volumes of these materials are depicted in Figure 4.4-1.

Legend:

- Material Stockpile
- Stockpile used for soil cover
- Current Construction and Mining Impacted Areas
- Facility Footprint
- Reserved
- Watercourse - Perennial
- Watercourse - Ephemeral
- Watercourse - Intermittent

VICTORIA GOLD CORP

0 125 250 500
Metres

Projection:	Drawn By:
NAD 83 UTM Zone 8N	HC
Date:	Figure:
2022/03/30	4.4-1

EAGLE GOLD MINE
YUKON TERRITORY

Volume and Location of Material Stockpiles

No stability incidents in stockpiles have been noted. Monitoring equipment to determine the stability of other stockpiles have not been employed to date due to their relatively small sizes. VGC will continue to work with the independent third-party geotechnical reviewers (discussed in section 4.5) to ensure that, if evidence of movement is observed, the stability of the stockpiles are addressed appropriately.

4.5 Engineer's Physical Stability Annual Inspection

As required by Section 13.2 of QML-0011, a physical stability assessment of all engineered structures, works and installations at the Project was undertaken by an independent engineer on September 13th and 15th, 2022. The findings of the assessment are provided in Appendix R.

The assessment undertaken in 2022 included the following facilities and structures:

- Lower Dublin South (Control) Pond and outfall,
- Secondary Stockpile (also known as 90 Day Stockpile),
- Heap Leach Facility,
- Heap Leach Overburden Stockpile,
- Open Pit,
- Platinum Gulch Dump,
- Eagle Pup Dump,
- Cut and fill slopes of the Primary, Secondary, and Tertiary Crushers including MSE walls,
- Cut and fill slopes of the Adsorption, Desorption and Recovery Plant,
- Event Pond,
- Emergency Pond,
- Ditches A, B, and C,
- Heavy Duty Truck Shop,
- Warehouse Pad,
- ADR Plant,
- Water Treatment Plant,
- Orica Laydown,
- Various un-named stockpiles.

The Engineer's report included recommendations for the fourteen of the specific areas inspected, and in the opinion of the independent engineer required further consideration. Table 4.5-1 provides the recommendations per area, VGC's response and the schedule to complete the response.

Table 4.5-1: Recommendations from Independent Engineer and Site Response

AllNorth Report - Observations	AllNorth Recommendations	VGC Response	Schedule to Complete
General Report Comment	**23.1 - General** **1.** VGC should assign a qualified, on site, individual to be responsible for monitoring and documentation of any mass earth structures that have significant risks in the case of a failure. The individual should develop a standard operating procedure for the monitoring and risk management of these structures. This individual should be responsible for coordination with a qualified professional to review monitoring data for concerns and trends if they are not qualified themselves.	Monitoring of structures is completed by the Technical Services Department under the direction of the Technical Services Superintendent working closely with the EOR for the areas while following standard operating procedures. The results of monitoring and the documentation developed are provided with VGC's annual reports as required by the Quartz Mining Licence (QML-0011) and Water Use License (QZ14-041-1). Since the 2021 inspection, VGC has established a geotechnical monitoring plan and developed procedures to inspect, monitor, document, review and quantify potential displacement in mine structures such as pit highwalls, waste rock and overburden dumps and site infrastructure such as the HLF embankment and MSE Walls that have elevated consequences, should a failure occur. Monitoring consists of regular visual inspections and a combination of laser scans and displacement heat maps generated with point clouds produced by the scanners, prism monitoring and continuous monitoring using Maptek's Sentry software and XR3 scanner.	Ongoing
	2. VGC should continue to assign individuals to document and be responsible for the monitoring and construction of any structures to determine if the structures are constructed in accordance with design. Any variations between design documents and final construction should be included in final record drawings.	Monitoring of the majority of structures including construction review to meet design specifications is done by the Technical Services department under the direction of the Technical Services Superintendent, while working closely with the EOR for the areas. The ongoing construction of the HLF and specialized construction projects (e.g., the Mine Water Treatment Plan) are overseen by the Process Department or Corporate office representatives with support by external qualified engineering firms. Construction reports and as-built drawings document variations or minor modification from IFC designs.	Ongoing
	3. Any finalized construction of mass earth structures should include a final construction report that includes any operational and maintenance requirements (if any) to ensure stability of the structure.	As per both QML-0011 and QZ14-041-1, the EOR provides final construction reports for Engineered Structures, which includes requirements for maintenance as needed, once the structures are complete.	Ongoing
	4. VGC should consider a monitoring program to assist in early warning and detection of any movements in mass earth structures. Such a program might use permanent survey points, slope inclinometers, piezometers, or other tools to measure internal/external movements and pore water pressures. Such a monitoring program should be developed with the assistance of and be implemented with the oversight of a	Monitoring programs have been developed, are in use, and undergoing further refinement by the Technical Services and Process departments with the oversight of a qualified professional. In addition to routine visual inspection, monitoring for physical stability include the following: • Continuous pit wall monitoring utilizing a self-contained trailer	Ongoing

AllNorth Report - Observations	AllNorth Recommendations	VGC Response	Schedule to Complete
	qualified professional.	housed XR3 LiDAR scanner; • Pit wall and waste rock dump weekly survey using unmanned aerial vehicle or drone; • Pit wall monitoring using survey prisms; • Piezometer water level readings in the pit area; • Extensometer installation on active lifts of the waste rock storage areas with regular movement calculations conducted; • Systematic scanning of highwalls and select structure systematic displacement heat map production using point cloud data; • Vibrating wire piezometer water level readings in the HLF dam foundation bedrock and dam fill just above the western and eastern underdrains to determine pore water pressures; and, • Slope inclinometer readings in the HLF dam crest.	
	5. For any stockpiles, cut slopes, and/or fill slopes with over-steepened slopes that do not require immediate rectification (due to proximity to structures, roadways, active work areas, etc) VGC should still cordon off the area above and/or below the over- steepened slope depending on what would be accessible to site staff.	As noted in the audit report, some over-steepened sections at the secondary stockpile perimeter ditch identified in previous years were addressed in 2021. Other locations with over-steepened slopes are in locations with little to no risk to other infrastructure and are mostly unused with little risk to staff. Management of other over-steepened slopes will continue in 2023 as deemed necessary by the Technical Services department.	On-going
	6. VGC should consider a ditch and culvert monitoring program to ensure ditches and culverts are cleared of sediment build-up before full blockage occurs. Culvert installation should include a flag/post at either end of the culverts to help identify culvert locations in case material build-up obscures culvert locations.	Site ditches and culverts are routinely inspected by site personnel and maintenance of these areas is undertaken as necessary. As required by QZ14-04-1, ditches and culverts are cleared of ice, snow and debris that would affect their operational capacity by March 31 of each year. The locations identified in the report will be prioritized for additional maintenance in 2023. During this program, culverts that are currently not flagged will be identified and identification markers installed as necessary.	Q1 2023
3 Lower Dublin South (Control) Pond	**23.2 - LDSP (Control Pond)** **1.** Monitor cut slopes above Ditch A for further erosion, sloughing and cracking.	The concern with respect to erosion below the culvert located within the cut slope above the LDSP was addressed in 2022 with the installation of a liner. To address concerns with potential further erosion on the cut slope, a series of seeding programs have been conducted over the past few years with the most recent campaign completed in September 2022. The area will continue to be monitored and additional reseeding to stabilize the area will take place as necessary.	Q2/Q3 2023
4	**23.3 - Secondary Stockpile** **1.** Monitor over-steepened slopes, cordon off if accessible by site staff.	Periodic assessments of the stockpile have not indicated a risk to personnel or infrastructure in the vicinity. Monitoring of the area will	Ongoing

AllNorth Report - Observations	AllNorth Recommendations	VGC Response	Schedule to Complete
Secondary Stockpile		continue to ensure that a risk does not develop. Geotechnical inspection will be completed prior to onset of freshet and barricades/signage put in place if a hazard identified.	
	2. Tie the perimeter ditch into the collection sump.	The section identified had been connected in response to the prior audit; however, it is acknowledged that clean out and maintenance is required. This work is currently contemplated to take place in Q2, 2022.	Q2 2023
5 Heap Leach Facility	**23.4 – Heap Leach Facility (HLF)** **1.** Continue to monitor the toe slope below the HLF for rill erosion	Remediation of this area was scheduled for Q2 2022; however, the presence of breeding birds in close proximity led to the deferral of the work. It is currently anticipated that work in accordance with specifications provided by the HLF EOR (i.e., back filling with coarse fill) will be undertaken in Q2 2023. As shown in Figure 24 of the report, the reseeding completed in prior years has continued to establish and support the stabilization of the surficial materials on the embankment face.	Q2 2023
	2. Check HLF Interception Ditch and monitor sediment collection. Clear sediment collection at culverts.	The HLF Phase 2 interceptor ditch will be inspected prior to March 31, 2023 to ensure that it is able to convey overland flows from snow melt and rainfall events.	Q1 2023
6 Heap Leach Overburden Stockpile	**23.5 - Heap Leach Overburden Stockpile** **1.** Continue to monitor pile for further movement.	The area will continue to be monitored to ensure that the measures taken to date remain effective. Monthly drone flights encompass the failure scarp and are used to monitor changing conditions.	Ongoing
7 Open Pit	**23.6 - Open Pit** **1.** Monitor pooled water at base of pit, remove water via trash pump or other solution as needed.	To date, the water accumulations are managed on an as needed basis. If volumes are observed to increase in the near term, a trash pump will be installed to transfer water to Ditch A. Management of pit wall seepage and precipitation accumulation is being discussed by the Technical Services Superintendent and a consulting engineer (i.e., the EoR for the pit) to ensure that long term management strategies are appropriate.	Ongoing
8 Platinum Gulch Dump	**23.7 - Platinum Gulch Dump** **1.** Monitor pooled water and cracking on first bench.	The area identified remains an operational area of the PG Dump as capacity for additional waste rock placement remains. The dump surface is regraded following melt and managed through freshet. Following winter months, once access has been re- established, extensometers will be re-deployed at locations where cracks have been historically monitored. To date all cracks have been surficial and the dumps are performing well. The area is, and will continue to be, monitored with systematic weekly inspections to ensure that there are no indications of significant small-scale or large-scale instabilities	Ongoing

AllNorth Report - Observations	AllNorth Recommendations	VGC Response	Schedule to Complete
		developing.	
9 Eagle Pup Dump	**23.8 - Eagle Pup Dump** **1.** No specific recommendations at this time.	N/A	N/A
10 Primary Crusher	**23.9 - Primary Crusher and MSE Wall** **1.** Continue to develop the monitoring program currently in place for the MSE walls.	As noted in the report, prism installation on the MSE wall was completed in 2022 and readings are being collected and reviewed every second day. Scanning continues to be completed at a minimum of once per set, and a displacement heat map created and reviewed to look for small-scale displacement that may occur between the prisms. There has been no measured displacement and no visual indication of destabilization noted since monitoring commenced.	Ongoing
11 Secondary/ Tertiary Crusher	**23.10 - Secondary/Tertiary Crusher and MSE Wall** **1.** Continue to develop the monitoring program currently in place for the MSE walls.	The Secondary/Tertiary MSE Wall is monitored with a displacement heat map created from point cloud generated with the laser scanner at a minimum frequency of once per month. There has been no measured displacement and no visual indication of destabilization noted since monitoring commenced.	Ongoing
	2. Monitor sediment build-up above the MSE wall.	Accumulation of fines will be excavated and loaded out at the end of Q1, 2023 when the material thaws and prior to freshet. The area will be monitored in the interim and mitigated if deemed a risk to personnel and/or infrastructure in immediate vicinity.	Ongoing
12 ADR	**23.11 - ADR** **1.** No specific recommendations at this time.	N/A	N/A
13 Event Pond	**23.12 - Event Pond** **1.** Monitor minor erosion of cut slopes and maintain as required.	The minor erosion on the cut slopes above the Events Pond will continue to be monitoring and will be maintained if deemed necessary by the EoR for the HLF.	As necessary
	2. Monitor pooling water above the North side of the Event Pond and regrade area to prevent pool formation or install a water handling system (sump pumps, etc.).	The area will continue to be monitored on an ongoing basis to determine if the installation of a water handling system or additional grading to improve drainage is warranted.	As necessary
	3. Monitor material deposits on HLF spillway and Event Pond to ensure the spillway and pond designs are not compromised through either blockage of flow or reduced pond capacity.	The spillways for the HLF and Events Pond were inspected by the EOR and it was determined that the minor material deposits would not impact their functionality as the accumulated material would be washed out in a major event and not reduce capacity.	N/A
	4. Repair excavator damage to HLF spillway liner.	As noted in the report, a number of sections of the spillway were repaired in 2022. The additional sections will be addressed in 2023.	Q2/Q3 2023
14 Emergency	**23.13 Emergency Pond** **1.** No specific recommendations at this time.	N/A	N/A

AllNorth Report - Observations	AllNorth Recommendations	VGC Response	Schedule to Complete
Pond			
15 Ditch A	**23.14 - Ditch A** **1.** Clear sediment build-up from culvert at the road crossing near the Truck Shop. Monitor culverts for further sediment build- up.	The sediment accumulation will be removed to ensure the culverts at the crossing of Ditch A function as intended.	Q1 2023
16 Ditch B	**23.15 - Ditch B** **1.** Monitor erosion adjacent to Ditch B near LDSP outflow.	The inlet section of Ditch B to the LDSP will be monitored to ensure that erosion does not present a risk to the stability of Ditch B.	Ongoing
17 Ditch C	**23.16 - Ditch C** **1.** No specific recommendations at this time.	N/A	N/A
18 Heavy Duty Truck Shop	**23.17 – Heavy Duty Truck Shop** **1.** Monitor cut slopes for rilling and erosion.	The slope will be monitored for changing conditions and, if riling worsens significantly, additional stabilization measures such as hydroseeding will be considered and/or catchment will be established.	Ongoing
	2. Connect drain ditch to other main ditches on site (currently does not connect to anything).	The ditching around the truck shop flows into a French drain at the downstream end shown in Figure 72 of the report, which connects to Ditch A. The ditch will be inspected prior to March 31, 2023 to ensure that it is able to convey overland flows from snow melt and rainfall events.	Q1 2023
	3. Monitor over-steepened slopes near the Truck Shop**.**	The over-steepened nose of overburden at the north side of the entrance to the Truck Shop pad will be resloped by Q3, 2023. In the interim, it will be monitored for changing conditions associated with destabilization to minimize potential impact to personnel in the immediate area and adjacent infrastructure.	Ongoing
19 Warehouse Pad	**23.18 – Warehouse Pad** **1.** Monitor cracking behind the warehouse pad. Come up with a solution to re-work slope below warehouse pad to eliminate cracking issue	The warehouse pad will continue to be monitored for indication of rapidly changing conditions. Offices at the west side of the pad will be moved to the East, to reduce loading of the crest and the surface will be regraded as required. If conditions worsen, the rip rap buttress will be continued south and additional surface armoring will be considered.	Ongoing
20 Water Treatment Plant	**23.19 – Water Treatment Plant** **1.** No specific recommendations at this time.	N/A	N/A
21 Orica Laydown	**23.20 - Orica Laydown** **1.** Monitor perimeter sump for flow interruptions/blockages and consider re-trenching if pooled water observed.	This area will be inspected prior to freshet to ensure that there are no blockages and that the sump is performing as expected. If maintenance work is warranted, it will be undertaken as necessary.	Q1/Q2 2023
	2. Consider re-sloping area behind Orica site trailer to prevent further sediment build-up, remove existing build-up.	Geotechnical personnel completed thorough drone inspection of the Orica Pad and cut slope above the pad on September 17, 2022 looking for signs of slope instability and significant erosion. No indication of	Q2 2023

AllNorth Report - Observations	AllNorth Recommendations	VGC Response	Schedule to Complete
		large-scale displacement were observed and the accumulation of sediment was determined to be the result of surficial sloughing. The area will be inspected again post- freshet and drainage and catchment re-established as necessary.	

5 CYANIDE MANAGEMENT

Operations at the Eagle Gold Project follows practices and procedures described in the VGC Cyanide Management Plan (CMP) version 2022-01 and the associated Standard Operating Procedures (SOPs) which govern the procurement, delivery, storage handling, and use of sodium cyanide for mineral extraction purposes. The practices comply with the *International Cyanide Management Code* (ICMC), a globally accepted set of practices applied at international gold mining projects involving cyanide-based mineral extraction (ICMI 2016 and 2018).

In accordance with the requirements of QML-0011 and QZ14-041-1, VGC engaged an independent third-party to complete an audit of the CMP and its execution consistent with the International Cyanide Management Code. Code auditors must meet criteria for experience, expertise and lack of conflict of interest set by the International Cyanide Management Institute (ICMI).

As discussed in section 5.4 and Appendix S, minor items were identified by the third-party auditor which will be addressed through updates to the CMP and SOPs and alterations/improvements to certain site practices. These updates are planned as part of the 2023 CMP audit cycle.

5.1 Transportation and Storage Controls

5.1.1 Transport

VGC continues to sole source cyanide for use on the Project site through a long-term cyanide supply contract with Cyanco Canada Inc. (Cyanco), an experienced ICMC-certified North American supplier. Cyanide supplied to the Project is manufactured at Cyanco's ICMC certified plant at Alvin, Texas. VGC established contractual conditions under which Cyanco assumes responsibility for management of the entire supply chain pursuant to ICMC requirements. The transportation route to the Project is fully certified under the ICMC. During the reporting period there were no spills of cyanide documented during transportation.

5.1.2 Receipt, Handling, and Storage

Cyanide is delivered to the Project site in solid briquette form, in one tonne nylon "supersacks", overpacked in polyethylene-lined plywood pallet crates (known as Intermediate Bulk Containers or IBCs) within standard 20-foot steel intermodal containers.

VGC is responsible for unloading intermodal containers of cyanide upon receipt, and takes formal ownership of the product at that point. The product is received at a designated unloading and storage area adjacent to the ADR plant building. The intermodal containers are configured so that the lockable doors are facing one another such that access to the door is restricted without movement of the entire container. When product is required for barren solution amendment, a single steel intermodal container is moved to the concrete unloading area immediately outside of the ADR Plant. The delivery area is marked with warning signs and spotters are utilized to prevent unauthorised passage of personnel and equipment while the cyanide intermodal containers are being offloaded.

The internal cyanide storage area is located inside the plant area. The plant area includes a HDPE liner underneath the building foundation that was graded such that any seepage would report to the lined barren and pregnant solution pipe trench and ultimately the lined HLF. The internal storage area provides warning signage

at all entry doors, an audible and visual hydrogen cyanide (HCN) alarm and monitoring systems, combination safety shower and eyewash station, and dry powder fire extinguishers for use in an emergency.

5.2 Operational Controls

5.2.1 Facilities Monitoring and Inspections

The HLF infrastructure is monitored regularly according to the CMP and the HLF Operation, Maintenance and Surveillance Manual (HLF OMS). Physical stability and integrity inspections of the Heap Leach Pad and associated infrastructure are completed and recorded through supervisor and operator checklists, records are then filed on site by VGC Process department staff. Specific focus areas for inspections of cyanide related facilities are listed in Table 5.2-1.

Table 5.2-1: Cyanide Related Infrastructure Routine Inspection Areas

Facilities	Inspection Focus Area
Cyanide unloading and storage area	• maintenance of general housekeeping practices, presence of water or debris • proper segregated storage of incompatible materials • integrity and proper positioning and stacking of stored intermodal containers and IBCs • presence of properly rated fire extinguishers • legibility of hazard warning signage • availability of Material Safety Data Sheets (MSDSs) for cyanide briquettes • warning signs and visual barriers in the unloading area operations, and restriction of access by unauthorized personnel during unloading • use of appropriate operator PPE during unloading operations
Cyanide bag cutter arrangement, mixing and storage tanks, and secondary containments	• structural integrity, signs of corrosion, buildup of cyanide salts, or leakage (tanks, valves, pumps, and other piping system components) • structural integrity, cracks, spalling, or deterioration of concrete impoundments • functionality of fixed HCN alarms • functionality of tank level indicators • condition of overhead crane hoist and bag lifter • functionality of eyewashes/emergency showers and water supply line pressure • cleanliness, and condition of first aid storage cabinets • condition of emergency response equipment and PPE • use of appropriate operator PPE during mixing operations • legibility of hazard warning and direction flow signage • integrity of lockout/tag-out mechanisms on major solution or containment drain valves • maintenance of physical separation from chemically incompatible materials • maintenance of general housekeeping practices, presence of spilled solution or debris
Incineration of cyanide packaging materials	• legibility of hazard warning signage • completeness of combustion of packaging residues • control of windblown debris

Facilities	Inspection Focus Area
	• evidence of animal intrusion
ADR plant and secondary containments	• structural integrity, signs of corrosion, buildup of cyanide salts, or leakage involving process solution storage tanks, valves, pumps, and other piping system components • structural integrity, cracks, spalling, or deterioration of concrete impoundments • management of fluids in impoundments • functionality of fixed HCN alarms • functionality of tank level indicators • functionality of eyewashes/emergency showers and water supply line pressure • condition of emergency response equipment and PPE • legibility of hazard warning and direction flow signage • integrity of lockout/tag-out mechanisms on major solution or containment drain valves • maintenance of physical separation from chemically incompatible materials • maintenance of good general housekeeping practices, including routine cleanup of spilled or leaked solution or debris
Pregnant and barren solution pipelines and pumping stations/ containments	• structural integrity, signs of corrosion, buildup of cyanide salts, or leakage (pipelines, valves, pumps, and other components) • structural integrity, cracks, spalling, or deterioration of concrete impoundments • functionality of eyewashes/emergency showers • condition of emergency response equipment and PPE • legibility of hazard warning and direction flow signage • integrity of lockout/tag-out mechanisms on major solution or containment drain valves
HLF earthworks, risers, distribution lines, emitters, internal pond(s), and leak detection system	• signs of erosion, slumps, or cracks in earthworks or the ore pile • signs of pipeline/flange leakage, and associated ponding • signs of ponding on HLF surface; if present, adequacy of avian exclusion devices • signs of animal trails or intrusion • management of fluids in impoundments • functionality of leak detection system and maintenance of associated detection logs • legibility of hazard warning and direction flow signage
External Events Pond and leak detection systems	• adequacy of desired available storage in accordance with the HLF Contingency Water Management Plan • tears or holes in liner material or signs of erosion or slumps in underlying earthworks • signs of pipeline/flange leakage, and associated ponding • adequacy of avian exclusion devices • signs of animal trails or intrusion • functionality of leak detection system and maintenance of associated detection logs • legibility of hazard warning and direction flow signage
Surface water interceptor ditches	• tears or holes in liner material (if lined) or signs of erosion, slumps, or cracks in earthworks • signs of animal trails or intrusion

Facilities	Inspection Focus Area
	• signs of blockage or other surface runoff impediments

5.2.2 Wildlife Monitoring

The documentation and monitoring of wildlife related to cyanide management is conducted according to HLF area and Events Pond monitoring programs detailed in VGC's Wildlife Protection Plan and SOP SGC-CMP-SOP-011 "Wildlife Mortality Reporting/Investigation". The objective of the monitoring is to confirm that wildlife access to process solution is restricted. This was ensured through the Wildlife Records Program that requires that all VGC employees report wildlife observations throughout the Project site and regular inspections completed by VGC Process and Environmental staff of the HLF area and Events Pond. Wildlife observations and incidents are documented and reported quarterly through the Environmental department as per QML-0011.

As an additional mitigation measure, VGC maintains electronic propane sound cannons in the area of Events Pond throughout the summer and fall to deter wildlife, particularly migratory birds and water fowl from the pond.

As outlined in the CMP, a wildlife exclusion fence is considered for installation around the perimeter of the Events Pond to prevent access by larger terrestrial wildlife. To date, the fence has not been installed. Standard of Practice 4.4. from the ICMC contemplates the implementation of wildlife restriction measures for open waters (e.g., the Events Pond) where WAD cyanide concentrations exceed 50 mg/L. Based on ongoing routine sampling of the Events Pond, there have been no occasions where WAD cyanide concentrations have been within three orders of magnitude of this concentration. The Events Pond has not received any direct overflow from the In-Heap Pond (via the spillway) and there has been no detection of cyanide in any laboratory sample for groundwater flow circulated to the Events Pond from the HLF underdrain monitoring vault.

There were no wildlife incidents associated with the Events Pond during the 2022 reporting period.

On June 3, 2022 Bank Swallow nests were identified within two locations on the HLF lower benches, adjacent and east of the ADR Plant, and the other directly north of the Pregnant Leach Solution pumps. The nests were evaluated by an Environmental Dynamics Inc. (EDI) Wildlife Biologist to confirm nesting and provide guidance on mitigations and working near the active nests. As the nests were established in an active disturbance area, where work was ongoing prior to nest establishment, it was deemed acceptable to continue vehicle traffic and works adjacent to the nest site according to several mitigations. The mitigations included ongoing environmental monitoring of the birds to observe for disturbance to the animal's behavior or physical disturbance to the nests, restricting the duration of works to 3-hour lengths, and limiting works during rainy weather. The bird nests and birds were monitoring throughout the summer until fledging occurred in mid-August. The Bank Swallow nests monitoring is described further in Appendix M.

5.2.3 Surface and Groundwater Monitoring

The mine operations do not have direct discharges to surface water from cyanide facilities, and the HLF and ADR are engineered and constructed with measures to protect groundwater from seepage of process solution. In addition to facility monitoring, surface water and groundwater monitoring in the vicinity of the HLF, Events Pond and ADR plant is routinely undertaken to determine if process solution has escaped from these facilities.

The sites monitored, and the frequency of water quality monitoring, to determine if process solution has reached the receiving environment are provided in the EMSAMP.

There were two documented releases of process solution during the period of this report. Both of the releases were from the lined footprint of the HLF.

The incidents were investigated, reported and mitigated as documented in the spill reports provided as Appendix O.

Soil, groundwater, and surface water quality sampling was undertaken to establish the extent of potential impacts to the receiving environment. There were no detections of cyanide in any surface water or groundwater during these sampling events. Soil sampling showed that potentially impacted areas either had no detection of cyanide or, if detections were found, the concentrations were below the applicable industrial soil standards specified in Schedule 1 of the *Contaminated sites Regulations.*

Other than the above-described incident, process solution was not detected at any of the monitoring locations in the receiving environment.

5.2.4 Worker Safety

VGC has developed multiple operating procedures for managing its facilities to limit worker exposure to HCN gas and sodium cyanide. Operational monitoring of cyanide facility worker health and safety is based on managing pH throughout the facilities to mitigate the risk of HCN gas production, use of ambient/personal monitoring devices when working directly with cyanide-related tasks, and ensuring timely investigation and evaluation of exposure incidents.

Fixed HCN monitors are installed in all areas of the ADR plant deemed to have a higher risk of HCN exposure. These areas include the carbon column upper trash screen, carbon column, acid wash, caustic system, strip system, carbon regen, barren solution sump, gold room and cyanide mixing tank area. Monitors are tested and calibrated on a monthly basis by the on-site electrical and instrumentation team, according to scheduled work orders. Maintenance personnel complete a Gas Detector Calibration Report during each scheduled inspection and note the zero gas value desired (i.e., 0.00 ppm), the zero gas reading as found, and the calibrated zero gas value as left upon completion and the span gas value (i.e., 10.00 ppm), the span gas value as found, and the calibrated span gas value as left upon completion. The data from the Gas Detector Calibration Report is then transferred into quarterly calibration logs (Appendix T).

Workers are required to carry portable HCN monitors when performing tasks directly related to cyanide use (e.g., maintenance procedures requiring decontamination of cyanide equipment, mixing, or unloading). VGC continually conducts calibrations and bump tests of the portable monitors with a docking station with plumbed in calibration gases, tracked by an online software platform hosted by the manufacturer. The online dashboard system gathers data from each unit while it is docked and provide the site with details of any alarms and malfunctions that the unit may have encountered. Appendix T provides bump test and calibration certificates for each portable HCN monitor.

All alarms are set to alarm visually with a strobe at 4.7 parts per million (ppm), and to alarm both visually and audibly at 10 ppm. These thresholds are well below the internationally recognized LD50 for gaseous hydrogen cyanide (HCN) of 100-300 ppm (ICMC, 2018), as is consistent with ICMC guidance for fixed and portable HCN monitors.

All site employees, visitors and contractors must receive site hazard training, which includes basic information regarding cyanide safety training (as detailed in Section 5.3). Site employees are required to complete the basic cyanide safety training on an annual basis. Additional detailed cyanide training is provided to employees with a

high potential for exposure to cyanide through work-related activities, such as all Process department personnel, ERT members, and Environmental sampling staff.

During the period of this report there were no first aid, medical aid, or lost time incidents related to an exposure to HCN gas or sodium cyanide salts.

5.2.5 General Signage Requirements

As recommended in the ICMC, warning signs are placed to alert workers that cyanide is present, that smoking, open flames, eating and drinking are not allowed and that the necessary cyanide-specific personal protective equipment must be worn. Tanks and piping containing cyanide are identified by color code, signs, labels, tags, decals or other means to alert workers of their contents. The direction of cyanide flow in pipes are also labeled, marked or otherwise designated according to the American National Standards Institute (ANSI) guidelines *"Scheme for the Identification of Piping Systems"* (ANSI/ASME 2007). Special signage is also placed to identify emergency exits and the location of emergency equipment stations including emergency shower/eyewash stations, dry powder/non-acidic sodium bicarbonate fire extinguishers, cyanide antidote kits, and first aid stations. Safety Data Sheets (SDS), which include first aid procedures and additional information on cyanide safety and exposure, are found in hard copy in the ADR Plant, and available electronically to all employees via the company network. Similar information is posted directly on the cyanide mixing and storage tanks, including exposure symptoms, first aid and emergency response.

5.2.6 Emergency Response

VGC has developed a CMP, HLF OMS, EMSAMP, HLF Contingency Water Management Plan, and Emergency Response Plan (ERP), all of which address responses to the potential release of cyanide. The ERP considers multiple potential failure scenarios involving cyanide and the site-specific environment, operation, and response.

During the reporting period, no cyanide exposure occurred at the Project site or with Project-related cyanide activities, nor did cyanide exceed limits in effluent quality or receiving environment water quality monitoring outlined in WUL QZ14-041-1. As noted in Section 5.2.3, there were two documented short-term releases of Process Solution outside of lined HLF containment. The incidents were investigated, reported and mitigated as documented in Appendix O. During the period of this report, there was two reported evacuations from the ADR Plant. The incidents occurred on the September 22 night shift (at approximately 9pm and again at 2:45 am). These were non-injury high HCN level evacuations due to the failure of a lime addition system resulting in target pH concentrations not being achieved and HCN gas being emitted. The emergency evacuation process, stabilization of solution pH, testing to confirm safe reentry and incident investigation and follow up were all conducted in accordance with standard operating procedures.

5.2.7 Emergency Equipment

VGC maintains emergency equipment and supplies at strategic locations to allow rapid response to emergencies involving cyanide exposure. Potable water is supplied to the safety showers and eyewash stations; as well as oxygen, a resuscitator, and a radio are readily available at the ADR Plant, near the mixing and storage area. In addition to the shower/eyewash stations and dry chemical fire extinguishers, cyanide first aid kits are maintained that include medical oxygen equipment with resuscitator, activated carbon, and antidote. The Project currently utilizes the Cyanokit® containing hydroxocobalamin as the antidote for cyanide exposure with six (6) kits present at site at all times. Cyanokits® are located at the site medical clinic and in the site ambulance (within a heated

bay) as these can only be administered by the site Primary Care Paramedic (PCP). The cyanide emergency response equipment is checked regularly by the site paramedics, while ERT members check other emergency response equipment, including the site ambulance.

All employees that work with cyanide, and are able to respond to a cyanide exposures emergency, are trained in cyanide exposure recognition, first response and basic first aid procedures; a portion of employees are trained in application of medical oxygen, and antidote, as available and as suitably qualified.

5.2.8 Medical Emergency Response

A first aid room is established at the Project site, with the equipment and staff to handle first response of all readily foreseeable types of medical emergencies. The first aid room is staffed 24 hours a day, 7 days a week and able to provide advanced emergency first aid, including first aid to respond to cyanide poisoned patients. On site medical staff include one PCP with IV endorsements and one Registered Nurse (RN) to allow administration of the Cyanokit®. There were no medical emergencies involving cyanide in 2022.

5.2.9 Emergency Response Team

The Project retains an Emergency Response Team (ERT). The VGC Emergency Response Plan provides primary contact details for the incident management team members, including the General Manager who has authority to ensure that sufficient and adequate resources are allocated to carry out the ERP. The ERP describes the roles and responsibilities for those involved in responding to an emergency. ERT members are site personnel that receive training and certification as emergency responders. All ERT responders undergo the same training, which includes fire, highwall, and hazardous materials emergency response and include members trained to Occupational First Aid (OFA) Level 3 medical first aid.

The Project maintains and updates an Emergency Response Plan that details the following:

- Primary and alternate emergency response coordinators who have authority to commit the resources necessary to implement the Plan;
- Current members of the ERT;
- Minimum training requirements for emergency responders;
- Mustering procedures and 24-hour contact information for emergency coordinators and ERT members;
- Duties and responsibilities of the emergency coordinators and ERT members;
- Procedures for periodic inspection of emergency response equipment to ensure its functionality and availability; and,
- Specific roles of external responders, medical facilities, or community organisations in the emergency response process.

5.2.10 Mock Emergency Drills

Mock cyanide exposure drills are to be undertaken by the ERT as part of regular training sessions. The drills are designed to test each of the potential cyanide emergencies scenarios appropriate for the site as considered in the Heap Leach Facility Emergency Response Plan. Should the evaluation of a mock drill identify deficiencies in the

methods and effectiveness of the response, the adequacy of emergency response training will be reviewed, and additional or revised training may be recommended to hone the knowledge and skills of the responders.

A mock exercise was undertaken by the ERT members on August 29, 2020 that simulated a cyanide leak within the ADR Plant. There was no drill undertaken in 2021Two mock drills were conductedundertaken in 2022. AThe drills were conducted on August 22, 2022 and September 11, 2022 so that participants from both shift rotations were put through the drill. Both drills considered a high HCN alarm in the acid wash area triggering evacuation. The scenario included the discovery of one person unaccounted for as identified at the muster station head count following evacuation. was undertaken by the ERT members on August 28, 2022 that simulated a high HCN alarm in acid wash area triggering evacuation with 1 person unaccounted for at muster station following evacuation. Second drill was undertaken on September 11, 2022 for the same scenario by the cross-shift ERT members. The following major scenario activities were successfully undertaken:

- Fixed HCN monitor triggered by high HCN reading;
- ADR Plant fully evacuated;
- Head count at muster station completed;
- Incident Command Center (ICC) activated;
- ERT assembled and dispatched to scene, Emergency Response Coordinator (ERC) assigned, Medical Team dispatched to scene;
- Senior Management notification process activated;
- ADR/ERT search teams (two assigned) entered building to locate missing person;
- Hot, warm and cold zones for HCN gas potential established;
- ICC activated Air Evac process;
- Patient removed from exposure (hot) zone;
- Patient evaluated by Medical Team, HCN gas exposure confirmed, treatment initiated;
- Patient transported to site clinic;
- ERT addressed HCN gas build up;
- ERC confirmed no further hazards after all teams exit building;
- Alarm cleared;
- ERC continued coordination of Air Evac; and,
- Site scene considered safe and emergency status cleared.

5.2.11 Cyanide Emergency Destruction

A supply of hydrogen peroxide is maintained on site as part of the emergency response for neutralizing and decontaminating areas impacted by potential cyanide spills. SGC-CMP-SOP-020 "*Cyanide Emergency Response Procedures*" describes the method for preparing neutralization chemicals for safe use and application to ensure that treatment chemicals and by-products of the neutralization process do not unduly impact surface waters. Additionally, cyanide destruction can be accomplished with the use of lime, soda ash, sodium hypochlorite, or

high pH water for neutralization response to spills on site where the neutralization agents will not come into contact with aquatic systems. Preparation for the construction and installation of a Caro's acid reactor for cyanide destruction commenced with a target for completion in Q1 2023.

There has been no release of cyanide on the Project site requiring emergency cyanide destruction.

5.3 Training

Training programs are implemented to ensure that employees work in compliance with regulations, approved policies, and procedures.

All site employees are required to receive Cyanide Hazard Recognition Training (Level 1) in accordance with the guidance provided in the ICMC. Detailed cyanide training (Level 2 and 3) is further provided to employees with a higher potential for exposure to cyanide through work-related activities, such as all Process department personnel and ERT members. Cyanide specific training is currently tracked through the VGC Training department and all training records are retained on site. Annual refresher training is required and is tracked through the training department. Cyanide workplace safety meetings are ongoing through daily toolboxes to discuss risks and potential issues related to cyanide-related tasks. Additional on-site training includes the following:

- WHMIS;
- Lime Hazard Recognition Training;
- Cyanide Exposure Symptoms; and,
- First Aid.

To ensure relevant and up to date training programs, and in keeping with the VGC Occupational Health and Safety Policy and with maintaining a safe working environment, workers are encouraged to provide input on occupational health and safety issues. VGC considers this input in developing, evaluating and reviewing operating procedures and during the mock drills, formal safety meetings and informal pre-work safety toolbox sessions. Monthly JOHSC meetings and mandatory all staff monthly safety meetings allow for the review of incidents and provision of employee feedback on health and safety issues.

5.4 Annual Cyanide Management Plan Audit

An independent third-party audit of the VGC Cyanide Management Plan and on-site implementation was undertaken for the period of January 2022 to December 2022. A certified technical expert auditor for gold mining under the Code from Paterson & Cooke USA Ltd performed the audit of operational procedures following the guidelines of the International Cyanide Code. The Audit Report is provided as Appendix S.

5.4.1 Audit Review

The audit focused on the nine Principles of the Cyanide Code related to operations and safety aspects considered by the ICMC:

- Production;
- Transportation;
- Handling and Storage;

- Operations;
- Decommissioning;
- Worker Safety;
- Emergency Response;
- Training; and
- Dialogue.

5.4.2 Audit Recommendations

The report identified opportunities for mostly minor improvements in some of the Code Principles, see Table 5.4-1 for recommendations. In response to the audit recommendations, the CMP will be updated prior to the completion of the next annual audit cycle in 2023.

Table 5.4-1: CMP Audit Recommendations and VGC Responses 2022

Principle	Section Description	Audit Recommendation	VGC Response
3	**Standard of Practice 3.1** Design and construct unloading, storage and mixing facilities consistent with sound, accepted engineering practices, quality control/quality assurance procedures, spill prevention and spill containment measures.	The CMP indicates that the cyanide delivery area will be "cordoned off with warning signs and visual barriers to prevent unauthorized passage of personnel and equipment while the cyanide intermodal containers are being offloaded". In practice, signs and barriers are not used for the offloading process; however, spotters are utilized to keep personnel away from the area while the crane is unloading a container from the truck. … The CMP should be updated to reflect the actual operational practices.	CMP will be updated in 2023 to reflect actual operational practices.
		The plan indicates that appropriate warning signs will be placed at all entry doors to the ADR plant. Placement of signs had been previously verified, but at the time of the audit, the signs had come off of the building. Appropriate signage indicating that no eating, drinking, smoking or open flames are permitted must be placed at all entrances to the ADR plant.	Signs will be updated/replaced.
		Modifications to the locations of some equipment, including the addition of a combination safety shower/eyewash station at the CIC trash screens has occurred, and the figure should be updated in the CMP to reflect actual installations.	The figure in the CMP will be updated in 2023 to reflect actual installations.
	Standard of Practice 3.2 Operate unloading, storage and mixing facilities using inspections, preventive maintenance and	According to SOP-PRO-206, the materials for disposal are to be wrapped with purple duct tape and the operators initials and the date are to	The SOP will be updated to reflect the operational practice

Principle	Section Description	Audit Recommendation	VGC Response
	contingency plans to prevent or contain releases and control and respond to worker exposures.	be written on the tape. In practice, the bundles of waste are secured with the waste banding from the IBC. The procedure should be updated to reflect the operational practice.	
		Procedure SOP-PRO-204 – Sodium Cyanide Site Storage indicates that the sea containers are handled using a telehandler to unload the delivery trucks and either to place the containers within the bulk storage area or on the concrete pad near the ADR plant and cyanide mixing area. This procedure also indicates that containers shall not be stacked. This practice was observed, and a single level of containers is maintained. The solid cyanide product inside the IBCs already comes with red colorant dye, as delivered by Cyanco and the red color was observed during the mix. The site also utilizes a mobile crane for offloading the delivery trucks. The procedure should be updated to reflect this option as a means of unloading.	SOP will be updated to reflect both options as means of unloading.
4	**Standard of Practice 4.1** Implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventive maintenance procedures.	Several minor items within the CMP and SOPs were recommended to be updated to reflect the now as-built nature of the facility for consistency with the delivered project and operational practices. These updates should be included as part of the 2023 CMP update cycle.	The CMP and SOPs will be updated as recommended to reflect the as-built nature of facilities and operational practices.
		The HLF OMS Manual should be reviewed, and the trigger elevations [for the in-heap pond] adjusted, if required, to reflect the site operating practices.	The HLF OMS Manual will be reviewed and updated, as needed.
		The CMP also indicates that copper sulfate and ferric sulfate are on hand to aid in detox; however, these reagents are no longer on site and are not intended for use if detox is required. It was explained to the auditor that the site has modified the detox plan from solely hydrogen peroxide to a Caro's acid system. Caro's acid is a very efficient method for detoxifying cyanide and is superior to peroxide alone. The CMP and all other relevant documents should be updated to reflect this change during the 2023 audit cycle.	The CMP and other document will be updated to reflect operational practices.
		The warning signs on the ADR building exterior and at the HLF, as well as on the pregnant and barren	Other sign approaches will be considered and signs will be updated/replaced.

Principle	Section Description	Audit Recommendation	VGC Response
		solution lines, were missing or illegible. The site climate makes the sign life short, especially for sticker type signs. Replacement with more robust signage is recommended for the building and HLF entrances. The stickers for contents and direction of flow for the pipelines will require continued monitoring and replacement when necessary.	
		Generally, the absence of salt buildup was consistently in good order; however, the presence of salts was observed around flange connections on the pump skids. An ADR plant inspection just prior to the site visit did not note the presence of any salts in this area, but the residue was in multiple locations and appeared to have been accumulating for longer than the period between the inspection and audit. The buildup should be addressed according to site procedures and operations personnel should receive additional training on what to look for during their inspections.	Site personnel will be advised of this issue and VGC personnel will be provided with further instruction and training regarding inspection requirements and the noted issues will be addressed.
		The PM [Preventative Maintenance] program for the cyanide mixing and storage tanks follows the American Petroleum Institute (API) 653, Tank Inspection, Repair, Alteration and Reconstruction. Based on the API recommendation of external inspections every five years and the date the tanks were first placed into service in 2019, VGC should ensure that the inspections occur as part of the 2024 audit cycle.	The inspections will be scheduled for 2024 audit cycle.
6	**Standard of Practice 6.2** Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures	The CMP indicates that a pH of between 10 and 10.5 should be maintained in the pregnant and barren solutions. In the CMP, the pH of the solution prior to adding cyanide is indicated to be at least 11 prior to cyanide addition; however, VGC-SOP-PRO-201 – Sodium Cyanide Solution Preparation requires a pH of 10.5. Operator logs documenting the pH of the process solutions every two hours and were found to be maintained above pH 10 for the process plant. The control system continuously monitors and trends for the mix tank pH, indicating that it is being maintained above pH 10.5. Both the operator logs and pH trend were	The CMP and mixing SOP will be updated in 2023 to reflect the operational practices.

Principle	Section Description	Audit Recommendation	VGC Response
		reviewed by the auditor. The CMP should be updated to reflect the operational practices of the site and the mixing SOP.	
		Warning signs advising anyone entering the area that cyanide is present were previously posted at the entrances to the facility. However, as noted above, many of the signs are no longer present, as they were not well suited for the climate. Permanent replacement signs should be placed at the entrances to the ADR plant and the HLF as soon as possible.	Other sign approaches will be considered and signs will be updated/replaced.
		The SDS book was found to be missing the documents for liquid sodium cyanide and the hypochlorite solution. Operations should obtain the proper SDS for each reagent and ensure they are included in hard copy and electronically.	The SDS book will be updated to ensure that all relevant SDS are included and available for site personnel.
	Standard of Practice 6.3 Develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.	Site should continue to ensure drills with varying scenarios are conducted at least annually, consistent with the CMP. The mock drills should include a debrief of the incident response, as well as documentation of any lessons learned or opportunities for improvement in the CMP or other procedures.	Drills for varying scenarios will continue to be conducted annually as recommended. Formal documentation of the debrief and lessons learned from the mock scenarios will be included.
		Medical facilities often have cyanide antidote kits (e.g. sodium nitrate/sodium thiosulfate) on hand to treat cyanide exposure from sources such as fires, and while the availability at the sites relevant to Eagle were not confirmed, it is recommended to contact the local providers to gain an understanding of what other treatment options may be available and that the CMP be updated to reflect any other confirmed treatment options for offsite care.	Initiative with offsite medical facilities to confirm available treatment options will be furthered in 2022.
7	**Standard of Practice 7.3** Designate appropriate personnel and commit necessary equipment and resources for emergency response.	Contact information in the ERP includes call-out procedures and 24-hour contact information for the Incident Management Team and the ERT. Phone numbers and email for all relevant parties are included in the ERP. Radios are also available for 24-hour communications. It is recommended that the list of specific individuals responsible for emergency response, including contact information, be reviewed and updated regularly.	Information will be reviewed and updated regularly.

Principle	Section Description	Audit Recommendation	VGC Response
		Outside entities should continue to be engaged regularly and included in mock drills, as appropriate.	Engagement with outside entities will continue and options for joined mock drills will be explored, as appropriate.
	Standard of Practice 7.5 Incorporate remediation measures and monitoring elements into response plans and account for the additional hazards of using cyanide treatment chemicals.	The CMP does not explicitly prohibit the use of chemicals such as sodium hypochlorite, ferrous sulfate and hydrogen peroxide to treat any cyanide that would have been released into surface water. The plan references the safe use and application of the peroxide detox system to ensure that the process does not unduly impact surface waters. The plan should be updated to specify that addition of these chemicals to surface water is prohibited. As noted above, the plan references the use of hydrogen peroxide when surface water will not be impacted, but the plan should be updated to reflect the change to Caro's acid, as appropriate.	Suggested updates will be made to CMP in 2023.
8	**Standard of Practice 8.1** Train workers to understand the hazards associated with cyanide use.	The ERT specific certification tracking sheet provided notes the hours of training received, but the sheet does not indicate specific training that was completed during each period, such as firefighting, occupational first aid, HAZMAT, etc. Specific and detailed training records should be kept for the ERT for both initial certifications and ongoing refresher training.	Training tracker will be updated as suggested to track the additional information going forward.
	Standard of Practice 8.3: Train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.	Records of ERT and employee involvement in the mock drills was recorded. It is recommended that a formal and documented debrief be conducted following each mock drill or actual incident, and the lessons learned should be incorporated into the ERP and procedures, as appropriate.	Formal documentation of the debrief and lessons learned from the mock scenarios will be included.

5.5 Yukon Government Review of Heap Leach Facility and Cyanide Management

As requested by Yukon Energy, Mines & Resources (EMR), Piteau Associates Engineering Ltd. (Piteau), completed a review of various documents related to the operations of the HLF and cyanide management at Eagle Gold Mine. This review was conducted from January to July 2022. The review focused on the following subjects:

- In-heap Pond pumping test procedure;
- Water balance modeling;
- Cyanide Management Plan (CMP);
- Heap Leach Facility (HLF) Operation, Maintenance and Surveillance (OMS) Manual; and,

- HLF Contingency Water Management Plan (CWMP) and Emergency Response Plan (ERP).

VGC will work with EMR in 2023 on the implementation plan for the recommendations coming out of this review. A number of recommendations for the Water Balance Model have been incorporated into this year's updates, as documented in Appendix E and F.

6 RECLAMATION & CLOSURE

At the time of this report, VGC had a total bond in place for the Eagle Gold Mine of $68,662,300. On October 3, 2022, version 2022-01 of the Reclamation and Closure Plan was submitted to EMR and the Yukon Water Board to satisfy the submission requirements of QML-0011 and QZ14-041-1. While the review and approval process of RCP 2022-01 is ongoing, VGC believes that the current security amount held is sufficient to reclaim the Project per the RCP. Notably, the complete construction of the MWTP, which was a primary cost driver considered in RCP 2022-01, has now been largely completed.

6.1 Reclamation Research

The Reclamation and Closure Plan (RCP) is designed to ensure the gradual and eventual closure of the Mine by implementing several research programs aimed at reclamation. The six main research programs, along with their respective sub-tasks, are as follows:

1. Revegetation - This program aims to identify appropriate plant species based on the site's specific conditions, such as climate, soil fertility, and growing season.

2. Engineered covers - The program's objective is to design the final HLF (Heap Leach Facility) and WRSA (Waste Rock Storage Area) soil cover.

3. Vegetation rooting depth - The program aims to determine the most suitable plant species based on their rooting depth and mature plant distribution, as well as to characterize the growth materials associated with plant roots.

4. Passive water treatment - This program focuses on designing and operating the PTS (Passive Treatment System) for water treatment during the closure.

5. HLF biological detoxification - This program investigates the potential for biological treatment of heap fluids to remove metals and destroy cyanide during closure.

6. Groundwater arsenic attenuation - The program aims to evaluate the direction of seepage from the WRSAs and its potential effects.

Currently, the research programs for revegetation, engineered covers, and passive water treatment are underway. While information from ongoing operations will support the final closure measures, it is not collected specifically for reclamation research and is not part of this report.

6.1.1 Waste Rock Cover Trials

The proposed base case cover system for the closure of the HLF and WRSAs is expected to behave as a store and release system, allowing 20-50% of effective precipitation to infiltrate the cover system to underlying waste or spent ore. To refine closure planning, O'Kane Consulting was retained to design and monitor a pilot-scale cover system trial began in September 2020, where a mixed overburden and topsoil stockpile was placed on the plateau of the 1370 bench of the Platinum Gulch WRSA. The eastern plateau and southeast slope of the 1370 WRSA were included in the trial area. The 2020 Annual Report provided details regarding the construction and instrumentation of the trial, and how data collected from the trial will be used to advance subsequent research.

2022 was the second year of water balance modelling at the 1370 cover trial Slope and Plateau stations. The cover system water balanced model estimated NP rates of 29% and 38% of effective precipitation for Slope and

Plateau locations, respectively, these were similar NP rates as observed in 2020/2021 monitoring period. A continuation of the field trial cover system performance will provide additional data for characterization cover system year over year, basis and will allow various types of climate years to be evaluated.

The cover trial incorporates automated soil monitoring stations that consist of volumetric water content and matric suction soil sensors to measure key surface water and energy balance fluxes. The sensors are installed in pairs through the cover system profile to capture data to calculate water and energy fluxes at the interfaces of different material types, including between the cover system layers and between the cover system and waste. Data is collected by a datalogger powered by a battery and solar panel set up. Monitoring performance of the cover system trial also includes the use of net radiometers, snow surveys, and a rainfall gauge. A memorandum describing the updated findings of the cover trials is provided as Appendix U.

Water balance modelling results for the slope and plateau locations to date align with the conceptual expectations of the base case cover system. Additional data collection is expected to be utilized to support future design iterations to the cover systems as contemplated in RCP 2022-01.

6.1.2 Passive Wetland Treatment System Research

In 2022 Ensero Solutions Canada, Inc. (Ensero) was retained by VGC to undertake a constructed wetland treatment system (CWTS) bench-scale trial to advance the design of a treatment wetland at site. A CWTS has been proposed as passive treatment system (PTS) to be implemented at the toe of the Platinum for the treatment of arsenic. The CWTS for Platinum Gulch will be used to guide further passive treatment implementation for other locations at the Site, such as for seepage from the Eagle Pup Waste Rock Storage Area (EP WRSA), and the Heap Leach Facility (HLF).

The objective of the CWTS bench-scale trial is to de-risk the implementation of an on-site pilot-scale system by testing multiple designs at a smaller scale at the research facility in Saskatoon, with the intention of using the information to refine the on-site pilot-scale design. The trials assessed the suitability of the substrates and plants sourced from the Site in a CWTS environment and evaluated the magnitude of potential leaching of constituents with the main goal of determining the extent of arsenic treatment achievable in a passively designed CWTS. A report describing the status of the bench scale trial is provide as Appendix V.

6.1.3 Pilot Bioreactor Program

Since its establishment in 2019, the Pilot Bioreactor Program has been an ongoing project that aims to evaluate the effectiveness of sulfate-reducing bacteria in removing heavy metals, particularly arsenic, selenium, and antimony, from mine-influenced water (MIW). The program is overseen by the Yukon Industrial Research Chair - Northern Mine Remediation at the Yukon University Research Centre, and builds upon earlier laboratory-scale trials that evaluated metal removal rates.

To assess the impact of ambient freeze-thaw stresses on the efficiency of sulfate-reducing bacteria, MIW from the Platinum Gulch catchment and the PG WRSA is pumped into a 1,000L tank once per week in the winter and twice per week in the summer. The MIW solution is then transferred to 200L vessels both inside and outside the bioreactor program shack, where it is fed with a specified dosage of molasses to promote bacterial growth and survival.

Weekly monitoring of the bioreactors and periodic sampling (ranging from weekly to monthly depending on field conditions) were conducted to evaluate the performance of the bioreactors. The program was shut down on June 11, 2022 and VGC worked with YIRC to publish the results of this program in Water Research.

6.2 Revegetation Program

The VGC revegetation program is committed to a progressive and comprehensive approach to mine reclamation that prioritizes interim measures to mitigate the impact of mining activities and inform the final reclamation plan. Reclamation planning is closely integrated with mine planning and is a continuous process throughout the life of the mine. The program focuses on two closure scenarios at the Eagle site: temporary closure, where mining activities halt temporarily, and permanent closure.

The reclamation and closure goals for each site are tailored based on environmental conditions, site conditions, and community expectations. The primary objective of progressive mine reclamation is to minimize the impact of mining on the environment and local communities and establish a plan for restoring the site to its pre-mining state or a new desired land use acceptable to local stakeholders.

In the progressive mine reclamation approach, interim measures, including erosion and sediment control and vegetation planting, are implemented throughout the mining operation to prevent environmental damage and begin the process of restoring the ecosystem. The reclamation plan is continually refined and improved based on the outcomes of these interim measures and changes in site conditions. This adaptive and sustainable approach to mine reclamation helps ensure that the final reclamation outcome meets the needs of the environment and the local community.

As the operation progresses and permanent reclamation becomes possible, VGC remains committed to engaging stakeholders to refine and meet their expectations for the final land use. The ultimate goal is to create a long-term sustainable land use that supports the natural ecosystem and provides benefits the community and adjacent natural ecosystem.

6.2.1 Revegetation Activities

Revegetation efforts in 2022 included aerial seeding, broadcast seeding, and bioengineering techniques completed throughout additional areas at the Mine site, as detailed in Table 6.2-1. The program was completed in September by VGC supported by Laberge Environmental Services.

Table 6.2-1: Revegetation and Bioengineering Treated Areas 2022

Location	Method / Installation	Notes
LDSP	Broadcast Seeding	Broadcast seeding of reclamation mix (Ticklegrass, Tufted Hairgrass, and Fowl bluegrass) and Slender wheat grass
Slough at HLF1B	Aerial Seeding	Bell 206 with a long line hopper was used to spread Slender WG and a custom reclamation mix seed (see above) on difficult terrain.
Site roadways	Belly Seeding	Roadways around site were hand seeded using belly seeders.
W1/ ROM road	Broadcast seeding and Silt fence	Culverts were installed at W26 and W1 and along the ROM road there was open ground. Area was broadcast seeded with Fall Rye and reclamation mix. Silt fence was set up along the creek
Dublin Creek	Broadcast seeding	Ditches and sump were broadcast seeded along the Dublin Gulch Creek road
Event Pond road slopes	Broadcast seeding	The slopes to the Event Pond road were broadcast seeded to recue sediment transport sourcing from the steep slopes

6.3 Hazardous Materials Inventory

Day to day operation of the Project requires the use of various hazardous materials. These materials are stored in dedicated locations around the Project in accordance with the associated material safety data sheets and industry standard practice. An inventory of the hazardous materials stored is maintained by the Procurement team and responsible operational departments and is provided in Table 6.3-1. The storage areas for these materials are routinely inspected to ensure that there is no evidence of leaks or improper storage methods.

Table 6.3-1: Hazardous Material Inventory

Common Name (Synonyms)	Chemical Name	Manufacturer / Supplier	Phase	TDG Class	Reporting Threshold	Max Level	Stored location
Cyanide	Sodium Cyanide	Cyanco	Solid	6.1		320 T	ADR
Diesel Fuel		North 60 Petro Ltd	Liquid	3	200 L	TBD	Camp, laydown
DEF Fluid IBC Tote	Diesel Exhaust Fluid	Finning Canada	Liquid	N/R		4,420 L	Warehouse
Antifreeze Extended Life Coolant IBC Tote	Glycol	Petro Canada	Liquid	N/R	5 L	3,120 L	Laydown
PolarZone Windshield Washer Fluid IBC Tote	Methanol diluted, methyl hydrate, and wood alcohol	Nemco	Liquid	3 (6.1)	200 L	4,000 L	Laydown
Hydrex XV A/Season Hydraulic Oil IBC Tote		Petro Canada	Liquid	N/R	5 L	2,080 L	Laydown
Produro TO-4+ Synthetic A/Season TDTO Oil IBC Tote		Petro Canada	Liquid	N/R	5 L	4,160 L	Laydown
Spirax S6 CXME 5W30 Hydraulic Oil IBC Tote		Shell Canada	Liquid	N/R	5 L	1,000 L	Laydown
Synduro SHB 32 Compressor Oil 205L Drum		Petro Canada	Liquid	N/R	5 L	1,640 L	Laydown
Duron UHP 5W40 Engine Oil IBC Tote		Petro Canada	Liquid	N/R	5 L	2,080 L	Laydown
Duron SHP 15W40 Engine Oil IBC Tote		Petro Canada	Liquid	N/R	5 L	0	Laydown
Enduratex EP220 Syn Gear Oil 205L Drum		Petro Canada	Liquid	N/R	5 L	820 L	Laydown
Traxon 75W90 Syn Gear Oil 205L Drum		Petro Canada	Liquid	N/R	5 L	820 L	Laydown
Enduratex EP68 Gear Oil IBC Tote		Petro Canada	Liquid	N/R	5 L	2,080 L	Laydown
Hydrex MV32 Hydraulic Oil IBC Tote		Petro Canada	Liquid	N/R	5 L	4,160 L	Laydown
Produro TO-4+ Syn Lotemp TDTO Oil 1600L Tote		Petro Canada	Liquid	N/R	5 L	19,200 L	Laydown
Duron UHP 5W40 Engine Oil 1600L Tote		Petro Canada	Liquid	N/R	5 L	8,000 L	Laydown
Enduratex EP220 Syn Gear Oil IBC Tote		Petro Canada	Liquid	N/R	5 L	2,080 L	Laydown
Produro FD-1 60 TDTO Oil IBC Tote		Petro Canada	Liquid	N/R	5 L	2,080 L	Laydown
Enduratex EP150 Syn Gear Oil IBC Tote		Petro Canada	Liquid	N/R	5 L	4,160 L	Laydown
Hydrex Extreme Hydraulic Oil IBC Tote		Petro Canada	Liquid	N/R	5 L	2,080 L	Laydown

Common Name (Synonyms)	Chemical Name	Manufacturer / Supplier	Phase	TDG Class	Reporting Threshold	Max Level	Stored location
Produro TO-4+ Syn Lotemp TDTO Oil IBC Tote		Petro Canada	Liquid	N/R	5 L	24,960 L	Laydown
Hydrex Extreme Hydraulic Oil 205L Drum		Petro Canada	Liquid	N/R	5 L	1,025 L	Laydown
Precision EP0 XL5 Moly Grease 1600L Tote		Petro Canada	Semi-Solid	N/R	100 L or 100 kg	4,800 L	Laydown
Precision EP0 XL5 Moly Grease 175KG Drum		Petro Canada	Semi-Solid	N/R	100 L or 100 kg	1,225 kg	Laydown
Precision EP1 XL5 Moly Grease 175KG Drum		Petro Canada	Semi-Solid	N/R	100 L or 100 kg	0	Laydown
Precision EP2 XL Grease 54KG Drum		Petro Canada	Semi-Solid	N/R	100 L or 100 kg	108 kg	Laydown
Precision EP2 XL3 Moly Grease 54KG Drum		Petro Canada	Semi-Solid	N/R	100 L or 100 kg	108 kg	Laydown
Nordback Backing Compound	Eboxy backing	Metso Minerals	Liquid	N/R		1,400 kg	Warehouse
Ammonium Nitrate	Ammonium nitrate	ORICA	Solid	5.1	50 kg	TBD	Orica pad
Carbon Activated AC Gold Plus 1000KG Bags	Activated Carbon	Brenntag	Solid	N/R		26,000 kg	ADR
Inhibitor Anti Scalant ML1535	ChemTreat ML153	ChemTreat	Liquid	N/R		16,912 kg	ADR
Inhibitor Anti Scalant ML5105	ChemTreat ML5105	ChemTreat	Liquid	N/R		10,730 kg	ADR
QuickLime	High calcium quicklime	Graymont Western Canada Inc	Solid	N/R		TBD	Lime silo
Caustic Soda 25KG Bags	Sodium hydroxide	Brenntag	Solid	8	5 kg	40,000 kg	ADR
Soda Ash 22.7KG Bags	Soda ash dense	Quadra Chemicals	Solid	N/R		1,400 kg	ADR
Glycol Stanfrost 1060KG Tote	Propylene Glycol	Brenntag	Liquid	N/R	5 L	2,120 kg	Laydown
IPAC 1256F 1040KG Tote	IPAC 1256F	Quadra Chemicals	Liquid	N/R		0	ADR
IPAC 1256F Bulk	IPAC 1256F	Quadra Chemicals	Liquid	N/R		TBD	ADR
IPAC 1250F 1290KG Tote	IPAC 1250F	Quadra Chemicals	Liquid	N/R		0	ADR
IPAC 1250F Bulk	IPAC 1250F	Quadra Chemicals	Liquid	N/R		TBD	ADR
Water Softener Salt	Sodium chloride salt	Clear Blue Water Systems	Solid	N/R		1,000 kg	TBD
Pool Salt	Sodium chloride salt	Sifto Canada	Solid	N/R		300 kg	TBD
Nitric Acid 50% Tote	Nitric acid 50%	Brenntag	Liquid	8	5 L	27,000 kg	ADR
Calcium Chloride	Calcium chloride	Kortech	Solid	N/R		20,000 kg	TBD
Propane	Liquified petroleum gas	Superior Propane	Compressed Gas	2.1	Any if container larger than 100 L	TBD	
Gasoline	Gasoline	North 60 Petrol	Liquid	3	200 L	TBD	

7 SOCIO-ECONOMIC MONITORING

The focus of socio-economic work in 2022 continued to be primarily on ensuring that contracts for the operation of the Project were right scaled to allow for the involvement of Yukon and First Nations businesses to the greatest extent practicable. In 2022, VGC and FNNND have started to develop the scope for a collaborative socio-economic study that will include identification of valued components and indicators, assessment of potential effects from current Eagle Gold Mine operations and establish a framework for the ongoing socio-economic monitoring program. This work is being undertaken as part of the VGC's Extension Project and expected to commence in 2023.

VGC is committed to procuring goods and services from registered FNNND and Yukon based companies whenever possible.

VGC is the largest private sector employer in Yukon with a workforce of 648 people at close of 2022, with 471 being direct hire of which 36% are Yukoners. Yukon direct employee expenditure (wages and benefits) total $17.38 million. In 2022, procurement spend (good and services) in Yukon was 62% of total spend and totaled $123 million. VGC's donations and sponsorship contributions in Yukon in 2022 totaled $86,086.

In 2022, a $1 million payment, as a result of the mine's revenue, and a further $270,000 was remitted to the FNNND under the CBA. In addition, scholarships are awarded to FNNND citizens to pursue their post-secondary educational pursuits for a total disbursement of 155 scholarships to date totaling over $155,000. More than $85M in expenditures has been spent on FNNND and its partner companies including joint ventures and revenue sharing agreements.

In 2022, VGC continued its support of the *Every Student, Every Day* initiative, which directly funds increased student engagement and attendance in Yukon classrooms through the Company's registered charity the Victoria Gold Yukon Student Encouragement Society (VGYSES). Since the establishment of the initiative, *Every Student, Every Day* has raised and distributed over $1.85 million to support more than 180 projects in Yukon.

8 REFERENCES

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Date	Meas. Level (m)	Free Volume (m^3)	Pumpable Vol. (m^3)	Total ore placed (DMT)	% Moisture	Moisture volume in ore (m^3)
1-Jan-22	932.2	27,088	30,675	30,317	2.90%	879
2-Jan-22	932.7	25,029	32,734	38,806	2.30%	893
3-Jan-22	932.8	24,785	32,978	18,860	1.76%	333
4-Jan-22	932.9	24,002	33,761	4	2.30%	0
5-Jan-22	932.6	25,305	32,458	0	2.30%	0
6-Jan-22	932.1	27,382	30,380	6,218	2.30%	143
7-Jan-22	931.7	29,131	28,632	11,948	2.60%	311
8-Jan-22	931.4	30,023	27,740	4,267	4.00%	171
9-Jan-22	931.2	30,723	27,040	9,301	2.30%	214
10-Jan-22	931.1	31,349	26,413	10,242	2.30%	236
11-Jan-22	930.9	31,884	25,879	0	2.30%	0
12-Jan-22	930.9	31,944	25,819	9,016	2.07%	187
13-Jan-22	931.2	31,059	26,703	12,767	2.75%	352
14-Jan-22	931.0	31,723	26,040	27,591	1.78%	491
15-Jan-22	930.8	32,231	25,532	25,519	2.36%	602
16-Jan-22	930.6	32,926	24,836	30,998	1.74%	541
17-Jan-22	930.5	33,432	24,331	19,656	3.11%	611
18-Jan-22	930.4	33,785	23,978	3,340	3.22%	107
19-Jan-22	930.2	34,457	23,305	1,340	4.00%	54
20-Jan-22	930.0	35,123	22,640	1,005	4.00%	40
21-Jan-22	930.0	34,960	22,802	1,048	4.00%	42
22-Jan-22	930.0	35,162	22,601	762	4.00%	30
23-Jan-22	930.0	34,944	22,819	0	2.30%	0
24-Jan-22	930.1	34,705	23,058	0	2.30%	0
25-Jan-22	930.0	34,885	22,878	842	2.30%	19
26-Jan-22	930.2	34,344	23,418	8	2.30%	0
27-Jan-22	930.2	34,311	23,452	0	2.30%	0
28-Jan-22	930.2	34,245	23,518	6	2.30%	0
29-Jan-22	931.0	31,644	26,118	1,579	2.30%	36
30-Jan-22	930.9	31,941	25,822	2,539	2.30%	58
31-Jan-22	930.9	32,083	25,680	3,282	2.30%	75
1-Feb-22	930.9	31,827	25,936	2,678	2.30%	62
2-Feb-22	931.2	30,997	26,765	4,389	2.30%	101
3-Feb-22	931.2	30,965	26,798	4,699	2.30%	108
4-Feb-22	931.0	31,472	26,291	5,852	2.30%	135
5-Feb-22	931.1	31,128	26,634	4,433	2.30%	102
6-Feb-22	931.1	31,335	26,428	1,773	2.30%	41
7-Feb-22	932.7	25,196	32,567	0	2.30%	0
8-Feb-22	934.5	16,902	40,861	0	2.30%	0
9-Feb-22	934.8	15,566	42,197	0	2.30%	0
10-Feb-22	934.5	16,710	41,052	0	2.30%	0
11-Feb-22	934.5	16,922	40,841	0	2.30%	0
12-Feb-22	934.5	16,922	40,841	0	2.30%	0
13-Feb-22	933.1	23,080	34,683	0	2.30%	0
14-Feb-22	931.9	28,368	29,395	0	2.30%	0
15-Feb-22	931.0	31,544	26,219	0	2.30%	0
16-Feb-22	930.7	32,756	25,006	0	2.30%	0
17-Feb-22	930.5	33,326	24,437	0	2.30%	0
18-Feb-22	930.5	33,479	24,283	0	2.30%	0
19-Feb-22	937.1	2,260	55,502	0	2.30%	0
20-Feb-22	937.5	256	57,506	0	2.30%	0
21-Feb-22	936.1	8,268	49,495	0	2.30%	0
22-Feb-22	933.8	20,335	37,428	0	2.30%	0
23-Feb-22	933.5	21,575	36,187	0	2.30%	0
24-Feb-22	932.5	25,761	32,001	65	2.30%	1
25-Feb-22	932.3	26,478	31,284	7,912	2.22%	176
26-Feb-22	932.7	24,953	32,810	12,127	2.34%	284
27-Feb-22	932.9	23,959	33,804	20,538	2.70%	555
28-Feb-22	933.2	22,847	34,915	7,230	2.17%	157

Date	*Meas. Level (m)*	*Free Volume (m^3)*	*Pumpable Vol. (m^3)*	*Total ore placed (DMT)*	*% Moisture*	*Moisture volume in ore (m^3)*
1-Mar-22	933.5	21,701	36,061	4,087	2.40%	98
2-Mar-22	933.6	20,977	36,786	7,256	0.78%	57
3-Mar-22	933.6	21,164	36,599	11,195	1.96%	219
4-Mar-22	933.6	21,186	36,576	12,354	2.36%	291
5-Mar-22	933.2	22,821	34,942	21,537	1.48%	318
6-Mar-22	932.9	24,113	33,649	19,743	2.20%	434
7-Mar-22	933.2	22,918	34,845	14,973	3.02%	452
8-Mar-22	936.8	4,427	53,335	26,469	2.34%	620
9-Mar-22	934.6	16,290	41,473	25,822	1.95%	502
10-Mar-22	933.5	21,733	36,030	15,555	2.74%	427
11-Mar-22	932.2	26,863	30,900	13,270	2.88%	382
12-Mar-22	931.5	29,708	28,055	16,912	3.69%	625
13-Mar-22	931.2	30,833	26,930	9,799	4.00%	392
14-Mar-22	932.9	24,207	33,555	22,991	3.29%	756
15-Mar-22	932.3	26,855	30,908	11,080	2.30%	255
16-Mar-22	933.1	23,267	34,495	19,429	2.85%	554
17-Mar-22	932.3	26,718	31,045	12,145	3.98%	484
18-Mar-22	931.6	29,242	28,521	27,809	2.39%	664
19-Mar-22	931.2	30,906	26,857	23,670	2.69%	637
20-Mar-22	931.0	31,573	26,190	11,815	3.20%	378
21-Mar-22	931.0	31,730	26,032	27,405	1.74%	478
22-Mar-22	930.8	32,171	25,592	16,135	2.94%	475
23-Mar-22	930.8	32,467	25,296	22,443	2.60%	584
24-Mar-22	930.7	32,544	25,219	16,689	2.58%	431
25-Mar-22	930.5	33,285	24,478	21,498	2.02%	435
26-Mar-22	930.5	33,195	24,567	20,908	1.88%	393
27-Mar-22	930.7	32,690	25,072	28,407	1.66%	470
28-Mar-22	930.9	32,005	25,758	19,556	2.21%	433
29-Mar-22	929.9	35,392	22,371	5,505	1.63%	90
30-Mar-22	928.9	38,355	19,408	19,714	2.30%	453
31-Mar-22	927.8	41,356	16,407	12,320	1.15%	142
1-Apr-22	926.8	43,865	13,898	5,169	0.83%	43
2-Apr-22	926.0	45,721	12,041	4,914	1.05%	52
3-Apr-22	925.9	45,825	11,937	11,362	0.36%	41
4-Apr-22	926.2	45,343	12,420	10,962	1.68%	185
5-Apr-22	926.3	45,168	12,595	10,057	1.11%	112
6-Apr-22	926.1	45,505	12,258	8,577	2.10%	180
7-Apr-22	925.9	45,956	11,806	26,042	2.49%	647
8-Apr-22	925.7	46,236	11,527	27,697	2.89%	801
9-Apr-22	925.7	46,269	11,494	26,398	1.65%	435
10-Apr-22	925.8	46,057	11,706	20,947	2.80%	586
11-Apr-22	926.1	45,494	12,269	14,396	3.10%	446
12-Apr-22	926.3	44,956	12,807	26,874	2.59%	697
13-Apr-22	926.1	45,444	12,318	27,878	2.72%	759
14-Apr-22	926.0	45,615	12,148	28,495	2.96%	845
15-Apr-22	926.2	45,199	12,564	30,265	2.94%	890
16-Apr-22	926.6	44,469	13,294	24,258	2.76%	669
17-Apr-22	927.0	43,525	14,237	32,038	4.00%	1,282
18-Apr-22	927.3	42,726	15,036	25,819	2.44%	630
19-Apr-22	928.2	40,265	17,498	29,751	4.00%	1,190
20-Apr-22	927.9	41,088	16,674	28,070	2.02%	567
21-Apr-22	927.4	42,538	15,224	24,263	2.24%	544
22-Apr-22	926.9	43,682	14,081	22,856	1.57%	358
23-Apr-22	926.8	43,965	13,797	31,713	1.95%	618
24-Apr-22	927.1	43,315	14,448	16,363	2.20%	360
25-Apr-22	927.7	41,711	16,051	30,420	2.46%	747
26-Apr-22	928.3	40,034	17,728	30,927	2.20%	680
27-Apr-22	929.1	37,773	19,989	31,325	2.16%	675
28-Apr-22	929.8	35,744	22,019	26,643	1.70%	453

Date	Meas. Level (m)	Free Volume (m^3)	Pumpable Vol. (m^3)	Total ore placed (DMT)	% Moisture	Moisture volume in ore (m^3)
29-Apr-22	930.1	34,550	23,213	32,976	2.01%	663
30-Apr-22	930.3	33,896	23,867	9,494	2.92%	277
1-May-22	930.4	33,548	24,215	35,191	2.69%	946
2-May-22	930.1	34,652	23,111	40,132	2.43%	975
3-May-22	929.5	36,599	21,164	32,886	2.48%	816
4-May-22	928.7	38,914	18,849	31,911	2.43%	776
5-May-22	927.4	42,471	15,292	31,909	3.51%	1,120
6-May-22	926.1	45,535	12,228	19,929	3.49%	695
7-May-22	926.0	45,762	12,001	31,255	2.97%	930
8-May-22	925.9	46,005	11,758	33,953	3.78%	1,282
9-May-22	925.3	47,204	10,558	8,827	2.64%	233
10-May-22	924.7	48,368	9,394	18,585	4.07%	756
11-May-22	924.8	48,056	9,707	23,042	2.78%	641
12-May-22	927.2	43,003	14,759	34,583	2.58%	891
13-May-22	927.1	43,296	14,467	9,197	2.88%	265
14-May-22	927.9	41,304	16,459	8,080	3.62%	292
15-May-22	928.9	38,411	19,352	22,292	3.02%	673
16-May-22	927.7	41,624	16,139	28,554	3.14%	896
17-May-22	926.9	43,596	14,166	17,705	3.72%	659
18-May-22	928.1	40,684	17,079	31,355	2.34%	733
19-May-22	928.5	39,627	18,136	33,145	2.34%	777
20-May-22	927.0	43,416	14,347	12,720	2.69%	342
21-May-22	925.0	47,690	10,072	37,922	2.43%	921
22-May-22	925.1	47,484	10,279	37,164	2.44%	908
23-May-22	926.2	45,216	12,547	23,699	1.75%	414
24-May-22	925.9	45,828	11,935	35,621	2.97%	1,057
25-May-22	927.4	42,399	15,364	32,766	2.18%	714
26-May-22	928.9	38,288	19,475	26,011	2.06%	535
27-May-22	928.5	39,509	18,253	23,729	2.32%	550
28-May-22	928.8	38,585	19,178	15,313	2.37%	362
29-May-22	928.3	40,240	17,523	35,525	2.47%	876
30-May-22	927.5	42,104	15,658	36,181	2.92%	1,055
31-May-22	934.4	17,493	40,269	21,539	2.82%	606
1-Jun-22	933.9	19,811	37,951	11,645	1.79%	208
2-Jun-22	932.0	27,677	30,085	9,079	3.62%	329
3-Jun-22	930.4	33,690	24,073	8,252	1.75%	144
4-Jun-22	930.6	33,109	24,653	12,126	3.03%	367
5-Jun-22	930.2	34,265	23,498	25,510	3.13%	799
6-Jun-22	930.4	33,544	24,219	22,852	2.40%	549
7-Jun-22	930.8	32,456	25,307	33,125	2.30%	762
8-Jun-22	932.1	27,555	30,208	33,256	2.30%	765
9-Jun-22	933.0	23,515	34,248	24,766	1.79%	443
10-Jun-22	933.4	22,180	35,583	16,449	4.00%	658
11-Jun-22	933.7	20,634	37,128	23,741	2.52%	599
12-Jun-22	934.9	14,613	43,149	33,330	4.00%	1,333
13-Jun-22	935.4	12,027	45,736	29,692	1.85%	549
14-Jun-22	935.5	11,738	46,024	25,743	1.93%	498
15-Jun-22	935.6	11,196	46,567	36,931	2.63%	969
16-Jun-22	935.2	13,098	44,664	33,296	2.33%	777
17-Jun-22	934.6	16,419	41,344	15,694	2.43%	382
18-Jun-22	933.8	19,946	37,816	26,047	2.64%	687
19-Jun-22	932.8	24,696	33,067	25,824	2.53%	653
20-Jun-22	931.4	30,250	27,513	30,354	2.17%	658
21-Jun-22	930.1	34,566	23,196	32,463	2.58%	838
22-Jun-22	929.3	37,244	20,519	32,102	2.58%	829
23-Jun-22	928.4	39,722	18,041	31,912	2.44%	778
24-Jun-22	928.9	38,524	19,239	31,937	2.11%	674
25-Jun-22	928.5	39,442	18,321	15,145	1.65%	251
26-Jun-22	928.4	39,979	17,783	38,191	1.65%	632

Date	Meas. Level (m)	Free Volume (m^3)	Pumpable Vol. (m^3)	Total ore placed (DMT)	% Moisture	Moisture volume in ore (m^3)
27-Jun-22	928.1	40,713	17,049	36,467	1.78%	650
28-Jun-22	928.0	41,051	16,711	36,529	1.39%	507
29-Jun-22	928.1	40,753	17,009	34,315	2.00%	688
30-Jun-22	930.4	33,548	24,215	29,331	1.99%	585
1-Jul-22	930.4	33,731	24,032	31,069	3.07%	954
2-Jul-22	930.2	34,510	23,253	7,763	2.01%	156
3-Jul-22	930.8	32,298	25,465	17,185	1.77%	303
4-Jul-22	933.2	22,654	35,109	6,029	1.53%	93
5-Jul-22	933.0	23,907	33,855	0	2.30%	0
6-Jul-22	933.0	23,610	34,153	0	2.30%	0
7-Jul-22	932.7	24,907	32,856	2,834	2.30%	65
8-Jul-22	933.2	22,869	34,893	33,265	2.21%	737
9-Jul-22	933.4	21,934	35,828	30,111	1.72%	519
10-Jul-22	933.5	21,746	36,017	25,307	2.09%	529
11-Jul-22	933.0	23,847	33,915	20,922	4.00%	837
12-Jul-22	933.4	21,916	35,846	29,064	2.98%	866
13-Jul-22	932.6	25,480	32,283	16,875	2.20%	371
14-Jul-22	931.5	29,963	27,800	8,864	2.58%	228
15-Jul-22	930.5	33,319	24,444	5,901	2.20%	130
16-Jul-22	929.9	35,369	22,394	8,193	3.20%	262
17-Jul-22	929.7	35,852	21,911	15,260	3.05%	465
18-Jul-22	930.8	32,386	25,377	33,678	4.00%	1,347
19-Jul-22	932.4	26,377	31,386	11,762	3.17%	372
20-Jul-22	933.2	23,067	34,696	36,137	2.58%	932
21-Jul-22	933.7	20,547	37,216	23,106	2.95%	682
22-Jul-22	933.9	19,858	37,905	33,925	2.51%	851
23-Jul-22	934.0	19,164	38,598	39,102	1.58%	616
24-Jul-22	933.8	20,187	37,575	29,260	2.50%	731
25-Jul-22	933.4	21,751	36,012	34,610	3.67%	1,272
26-Jul-22	932.9	24,288	33,474	25,653	2.47%	635
27-Jul-22	932.1	27,411	30,351	31,216	2.73%	853
28-Jul-22	931.5	29,888	27,875	31,760	2.33%	740
29-Jul-22	930.9	32,072	25,691	25,459	2.02%	515
30-Jul-22	930.2	34,364	23,398	27,752	1.88%	522
31-Jul-22	929.2	37,416	20,347	32,992	1.22%	403
1-Aug-22	927.9	41,170	16,593	14,115	2.03%	287
2-Aug-22	930.7	32,565	25,198	0	2.30%	0
3-Aug-22	930.3	34,144	23,618	7,601	4.00%	304
4-Aug-22	929.2	37,687	20,076	3,602	2.15%	77
5-Aug-22	930.7	32,523	25,240	27,419	3.41%	936
6-Aug-22	930.9	32,047	25,716	26,687	4.00%	1,067
7-Aug-22	930.2	34,520	23,243	20,267	3.67%	745
8-Aug-22	929.5	36,698	21,065	35,130	4.00%	1,405
9-Aug-22	929.0	38,097	19,666	32,296	2.45%	791
10-Aug-22	928.9	38,545	19,218	29,281	2.66%	779
11-Aug-22	928.7	38,862	18,901	36,055	2.66%	957
12-Aug-22	928.7	39,057	18,706	29,851	4.00%	1,194
13-Aug-22	928.6	39,276	18,487	0	2.30%	0
14-Aug-22	929.0	38,085	19,678	0	2.30%	0
15-Aug-22	928.9	38,291	19,472	0	2.30%	0
16-Aug-22	929.0	38,167	19,595	0	2.30%	0
17-Aug-22	929.1	37,785	19,978	0	2.30%	0
18-Aug-22	928.5	39,647	18,116	0	2.30%	0
19-Aug-22	928.4	39,888	17,874	20,629	2.96%	611
20-Aug-22	927.7	41,649	16,113	17,635	2.59%	456
21-Aug-22	927.3	42,744	15,019	21,748	1.91%	416
22-Aug-22	927.9	41,325	16,438	29,757	1.50%	446
23-Aug-22	929.2	37,591	20,172	34,027	1.78%	607
24-Aug-22	930.1	34,636	23,127	36,799	2.47%	908

Date	Meas. Level (m)	Free Volume (m^3)	Pumpable Vol. (m^3)	Total ore placed (DMT)	% Moisture	Moisture volume in ore (m^3)
25-Aug-22	931.3	30,561	27,202	30,196	1.91%	576
26-Aug-22	932.1	27,280	30,483	32,719	2.18%	713
27-Aug-22	932.8	24,408	33,355	33,138	2.61%	864
28-Aug-22	933.5	21,318	36,445	36,922	2.06%	761
29-Aug-22	933.6	21,000	36,763	38,449	2.18%	839
30-Aug-22	933.5	21,413	36,350	8,907	2.47%	220
31-Aug-22	933.3	22,318	35,445	35,112	2.08%	731
1-Sep-22	933.1	23,471	34,291	40,352	1.91%	773
2-Sep-22	932.9	24,156	33,607	32,406	2.89%	936
3-Sep-22	933.0	23,890	33,872	17,674	3.05%	539
4-Sep-22	932.6	25,625	32,138	39,619	2.51%	993
5-Sep-22	931.9	28,220	29,543	31,929	2.04%	650
6-Sep-22	931.4	30,295	27,468	24,408	2.17%	531
7-Sep-22	930.7	32,725	25,038	14,048	2.29%	322
8-Sep-22	931.1	31,429	26,334	6,881	3.60%	248
9-Sep-22	930.7	32,690	25,072	8,746	3.76%	329
10-Sep-22	930.7	32,694	25,069	6,489	4.00%	260
11-Sep-22	931.0	31,551	26,212	19,965	2.30%	459
12-Sep-22	931.2	30,895	26,868	31,363	2.45%	768
13-Sep-22	931.6	29,493	28,270	30,814	2.70%	832
14-Sep-22	931.8	28,732	29,031	27,966	3.05%	853
15-Sep-22	933.2	22,773	34,990	25,776	2.50%	644
16-Sep-22	933.8	20,109	37,654	36,556	2.64%	964
17-Sep-22	933.5	21,327	36,436	31,317	2.39%	750
18-Sep-22	933.3	22,389	35,374	17,650	2.80%	494
19-Sep-22	933.1	23,319	34,443	38,389	1.58%	607
20-Sep-22	933.1	23,350	34,413	22,858	3.17%	725
21-Sep-22	932.8	24,446	33,317	29,035	2.77%	804
22-Sep-22	932.7	24,898	32,864	24,443	4.00%	978
23-Sep-22	932.9	23,963	33,799	30,239	2.96%	895
24-Sep-22	934.4	17,216	40,547	39,508	3.10%	1,226
25-Sep-22	935.0	14,486	43,277	30,598	2.76%	844
26-Sep-22	934.9	14,669	43,093	26,380	5.07%	1,337
27-Sep-22	934.8	15,299	42,464	23,909	4.00%	956
28-Sep-22	934.8	15,213	42,550	22,827	3.62%	827
29-Sep-22	934.7	16,001	41,761	23,480	2.98%	700
30-Sep-22	934.5	16,853	40,910	1,784	2.98%	53
1-Oct-22	934.5	17,044	40,718	1,481	3.63%	54
2-Oct-22	935.0	14,352	43,410	1,786	2.05%	37
3-Oct-22	935.6	11,239	46,524	4,619	2.40%	111
4-Oct-22	935.8	9,883	47,880	743	2.30%	17
5-Oct-22	935.9	9,419	48,344	0	2.30%	0
6-Oct-22	935.9	9,286	48,477	1,978	3.20%	63
7-Oct-22	935.9	9,530	48,233	11,145	3.53%	394
8-Oct-22	935.8	10,059	47,704	10,706	3.18%	340
9-Oct-22	935.7	10,855	46,908	12,559	3.53%	444
10-Oct-22	936.1	8,127	49,636	5,424	3.70%	201
11-Oct-22	936.1	8,392	49,371	5,291	2.09%	110
12-Oct-22	936.0	8,818	48,945	0	2.30%	0
13-Oct-22	935.8	9,806	47,957	0	2.30%	0
14-Oct-22	936.5	5,993	51,770	5,527	2.30%	127
15-Oct-22	936.6	5,273	52,489	8,787	2.03%	178
16-Oct-22	936.7	4,890	52,873	20,098	4.00%	804
17-Oct-22	936.8	4,249	53,514	32,118	4.00%	1,285
18-Oct-22	936.9	4,553	54,125	23,776	3.48%	827
19-Oct-22	936.8	5,402	53,276	23,809	2.62%	623
20-Oct-22	937.2	2,138	55,625	8,847	3.23%	286
21-Oct-22	937.2	2,046	55,717	18,229	3.25%	592
22-Oct-22	937.4	832	56,930	32,805	2.38%	780

Date	*Meas. Level (m)*	*Free Volume (m^3)*	*Pumpable Vol. (m^3)*	*Total ore placed (DMT)*	*% Moisture*	*Moisture volume in ore (m^3)*
23-Oct-22	937.3	1,280	56,482	22,333	2.82%	631
24-Oct-22	937.2	2,132	55,631	14,350	3.20%	459
25-Oct-22	937.1	2,389	55,374	33,430	2.08%	696
26-Oct-21	929.4	36,871	20,892	26,065	2.18%	568
27-Oct-21	929.1	37,901	19,862	6,376	3.13%	200
28-Oct-22	937.0	3,409	54,354	31,190	2.50%	780
29-Oct-22	936.8	4,179	53,584	41,492	3.40%	1,411
30-Oct-22	936.7	4,869	52,894	26,046	3.70%	964
31-Oct-22	936.8	4,524	53,238	35,191	3.33%	1,173
1-Nov-22	936.9	3,926	53,837	22,997	3.31%	762
2-Nov-22	936.8	4,272	53,491	17,658	3.40%	600
3-Nov-22	936.7	5,180	52,583	12,373	2.30%	285
4-Nov-22	936.8	4,428	53,334	12,649	3.42%	433
5-Nov-22	937.0	3,032	54,731	19,218	3.18%	611
6-Nov-22	937.1	2,388	55,375	19,827	1.90%	377
7-Nov-22	936.9	3,794	53,969	14,274	1.83%	260
8-Nov-22	936.8	4,332	53,431	17,532	2.37%	415
9-Nov-22	936.6	5,315	52,448	27,868	2.80%	780
10-Nov-22	936.6	5,777	51,985	9,130	3.08%	282
11-Nov-22	936.5	6,185	51,578	23,699	2.99%	708
12-Nov-22	936.4	6,913	50,850	35,578	2.82%	1,002
13-Nov-22	936.3	7,240	50,523	26,625	3.18%	846
14-Nov-22	936.3	7,434	50,329	35,149	3.31%	1,163
15-Nov-22	936.4	6,936	50,827	25,258	4.00%	1,010
16-Nov-22	936.2	7,940	49,823	22,104	3.10%	685
17-Nov-22	935.8	9,855	47,907	12,217	2.74%	335
18-Nov-21	931.7	29,066	28,697	19,873	4.00%	795
19-Nov-22	934.8	15,162	42,600	1,689	2.30%	39
20-Nov-22	934.4	17,113	40,650	22,344	4.02%	898
21-Nov-22	934.7	15,751	42,011	24,364	3.04%	740
22-Nov-22	936.1	8,290	49,473	12,080	2.58%	311
23-Nov-22	935.5	11,626	46,137	18,316	2.73%	501
24-Nov-22	934.7	15,847	41,916	9,559	3.06%	292
25-Nov-22	934.0	19,141	38,622	12,680	2.54%	322
26-Nov-22	933.7	20,662	37,101	24,552	3.33%	818
27-Nov-22	933.7	20,676	37,087	20,004	2.68%	535
28-Nov-22	933.9	19,559	38,204	14,292	2.30%	329
29-Nov-22	934.3	17,600	40,162	19,022	2.30%	438
30-Nov-22	935.9	9,585	48,178	13,951	2.54%	354
1-Dec-22	936.5	5,842	51,921	14,338	2.38%	342
2-Dec-22	936.4	6,700	51,063	25,314	2.85%	721
3-Dec-22	936.3	7,514	50,249	4,679	4.00%	187
4-Dec-22	936.5	6,255	51,508	15,587	4.00%	623
5-Dec-22	936.7	5,144	52,619	29,027	2.86%	831
6-Dec-22	936.8	4,410	53,353	29,199	2.24%	655
7-Dec-22	936.7	4,718	53,044	26,722	2.23%	595
8-Dec-22	936.9	3,788	53,975	14,176	2.82%	399
9-Dec-22	937.2	2,187	55,576	15,173	4.00%	607
10-Dec-22	936.8	4,290	53,472	11,297	4.00%	452
11-Dec-22	936.0	8,762	49,001	1,826	2.30%	42
12-Dec-22	935.0	14,383	43,380	5,408	2.30%	124
13-Dec-22	934.1	18,605	39,158	20,255	3.33%	675
14-Dec-22	933.2	22,997	34,766	16,751	3.36%	563
15-Dec-22	932.4	26,450	31,313	8,293	3.13%	260
16-Dec-22	932.0	27,780	29,983	5,854	3.33%	195
17-Dec-22	931.6	29,553	28,210	7,998	1.15%	92
18-Dec-22	931.2	30,917	26,846	13,980	2.17%	304
19-Dec-22	931.0	31,684	26,079	5,005	2.54%	127
20-Dec-22	930.9	32,143	25,620	340	2.30%	8

Date	*Meas. Level (m)*	*Free Volume (m^3)*	*Pumpable Vol. (m^3)*	*Total ore placed (DMT)*	*% Moisture*	*Moisture volume in ore (m^3)*
21-Dec-22	930.8	32,199	25,563	2,000	2.30%	46
22-Dec-22	930.8	32,273	25,489	10,534	3.52%	370
23-Dec-22	930.8	32,477	25,286	5,854	2.78%	162
24-Dec-22	930.8	32,235	25,528	1,561	2.90%	45
25-Dec-22	931.1	31,223	26,540	508	2.30%	12
26-Dec-22	931.3	30,528	27,235	1,720	2.30%	40
27-Dec-22	931.7	28,921	28,842	1,955	2.30%	45
28-Dec-22	932.3	26,535	31,228	1,799	2.30%	41
29-Dec-22	932.8	24,747	33,016	1,642	2.30%	38
30-Dec-22	933.1	23,367	34,395	18,154	1.77%	321
31-Dec-22	933.4	21,970	35,793	13,814	3.95%	546

VICTORIA GOLD CORP

Eagle Gold
Streamflow Monitoring Report – 2022 Update

Project No. A610-1
22 March 2023

LORAX ENVIRONMENTAL

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1. Introduction

1. Introduction

1.1 Scope of Report

This report presents a summary of all streamflow data (*i.e.*, baseline, construction, and operational data) collected for the Eagle Gold Project (Project) since August 2007, including hydrometric information summarized in previous reports (Jacques Whitford 2008; Stantec 2010; Stantec 2011; Stantec 2012; Knight Piésold 2013, Lorax 2017, Lorax 2018, Lorax 2019, Lorax 2020, Lorax 2021 and Lorax 2022).

An overview of the streamflow monitoring program is provided in Section 2. Methods for the measurement of streamflow and stage (both spot and continuous) are presented in Section 3, along with the approach used to develop the rating curves for each station, the paired stage-discharge measurements and associated rating curve error. Stage record corrections (*e.g.,* due to station relocation, frost jacking of the staff gauge, channel aggradation, *etc*.) are also presented.

In Section 4, streamflow data are presented in the following formats:

- Monthly tables showing average, maximum and minimum 15-minute discharge values (m^3/s);
- Monthly tables showing average discharge (m^3/s), average unit yields ($L/s/km^2$) and total runoff (mm);
- Time-series plots of continous average daily discharge (m^3/s) and spot flow measurements (m^3/s), and;
- Time series plots of average daily unit yields ($L/s/km^2$), by year.

1.2 Previous Reports

The streamflow data collected at the Eagle Gold Project site from 2007 up to and including 2021, has been previously summarized in the following reports:

- *Dublin Gulch Project – Climate and Hydrology Environmental Baseline Report* (2008), prepared by Jacques Whitford AXYS (Burnaby, BC) for Strata Gold Corp. (Vancouver, BC).
- *Eagle Gold Project, Environmental Baseline Report: Hydrology* (2010), prepared by Stantec (Burnaby, BC) for Victoria Gold Corp., February 2010.

- *Eagle Gold Project, Environmental Data Summary Report: Hydrology 2011 Update* (2011), prepared by Stantec (Burnaby, BC) for Victoria Gold Corp., June 2011.
- *Eagle Gold Project, Surface Water Balance Model Report* (2011), prepared by Stantec (Burnaby, BC) for Victoria Gold Corp., June 2011.
- *Eagle Gold Project, Environmental Baseline Data Report: Hydrology 2011 Update* (2012), prepared by Stantec (Burnaby, BC) for Victoria Gold Corp., June 2012.
- *Victoria Gold Corp., Eagle Gold Project – Hydrology Baseline Data Summary. VA101-290/6-10*, prepared by Knight Piésold Ltd. (Vancouver, BC) for Victoria Gold Corp., August 2013.
- *Victoria Gold Corp., Eagle Gold Project – Indirect Discharge Measurement at W-29 and Repair of Stream gauges at W-22, W-5 and W-29* (2013), prepared by Laberge Environmental Services (Whitehorse, YT) for Victoria Gold Corp., September 2013.
- *Victoria Gold Corp., Eagle Gold Project – Hydrology Baseline Report* (2017), prepared by Lorax Environmental Ltd. (Vancouver, BC) for Victoria Gold Corp., March 2017.
- *Victoria Gold Corp. Eagle Gold Project – Hydrometeorology Report.* A413-3, prepared by Lorax Environmental Services Ltd. (Vancouver, BC) for Victoria Gold Corp., March 2017.
- *Victoria Gold Corp., Eagle Gold Project – Hydrology Baseline Report* (2018), prepared by Lorax Environmental Ltd. (Vancouver, BC) for Victoria Gold Corp., March 2018.
- *Victoria Gold Corp., Eagle Gold Project – Streamflow Monitoring Report* (2019), prepared by Lorax Environmental Ltd. (Vancouver, BC) for Victoria Gold Corp., March 2019.
- *Victoria Gold Corp., Eagle Gold Project – Streamflow Monitoring Report – 2019 Update* (2020), prepared by Lorax Environmental Ltd. (Vancouver, BC) for Victoria Gold Corp., March 2020.
- *Victoria Gold Corp., Eagle Gold Project – Streamflow Monitoring Report – 2020 Update* (2021), prepared by Lorax Environmental Ltd. (Vancouver, BC) for Victoria Gold Corp., March 2021.

- *Victoria Gold Corp., Eagle Gold Project – Streamflow Monitoring Report – 2021 Update* (2022), prepared by Lorax Environmental Ltd. (Vancouver, BC) for Victoria Gold Corp., March 2022.

1.3 Project Area Characteristics

The majority of the Project site lies within the Dublin Gulch watershed, a second order tributary to the larger Haggart Creek watershed, which is a major tributary of the South McQuesten River. The South McQuesten River joins the Stewart River, which flows west to its eventual confluence with the Yukon River.

The hydrology of the region is characterized by a dominant snowmelt driven freshet signature, which typically peaks between early May and early June. The recession limb of the freshet hydrograph tapers to a lower summer flow regime reflective of groundwater primarily, which is punctuated by periodic rainfall driven runoff events, typically one to four days in duration. Base flows are lowest in the winter and flow sub-ice; in the smaller creeks, groundwater is depleted in the winter and no flow conditions under the ice are typical of second and third order tributaries.

In larger tributaries, groundwater discharge maintains limited amounts of streamflow below the ice throughout the winter (*i.e.,* November through end March). Aufeis (*i.e.,* groundwater that seeps and freezes onto- and adjacent to local watercourses) is present in several places throughout streams at the Project site. As with shelf ice in the streams, aufeis melts during the freshet, but may in some cases persist into the early summer.

Historical placer mining activities in the Project site streams have altered the natural channel conditions, and in some cases, have also altered the drainage areas of several sub-watersheds. More information is provided in Stantec (2012) as it relates to placer mining near the Project.

2. Streamflow Monitoring Program

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2. Streamflow Monitoring Program

2.1 Data Sources

Data collection was originally undertaken by Hallam Knight Piésold (1993 to 1995), then a new program was initiated in 2007 by Jacques Whitford AXYS (now Stantec Consulting Ltd., or Stantec). Field support for this program was provided by Laberge Environmental Services (Laberge), through to 2018. All streamflow data collected at the Project site up to the end of 2021 has been previously summarized in the reports per Section 1.2.

Since 2018, Victoria Gold site staff have assumed all hydrometric monitoring activities, with the exception of routine benchmark levelling surveys which were most recently conducted by a qualified third party in the early summer of 2022. Initial QA/QC of the streamflow data collected in 2022 and associated development and updates of rating curves were undertaken by Lorax Environmental. At the time of report preparation, there are eleven continuously recording hydrometric stations operating at the Project site. Of these, continuous data for ten stations are presented in this report. The eleventh station, W45, has water level records for 2018, 2019, 2020 and 2022. A rating curve has not been developed for W45 due to a problematic stage:discharge relationship, and it was instrumented with a Parshall flume in August 2022 to improve the data quality for this station.

2.2 Project Site Hydrometric Stations

The number of continuously recording hydrometric stations has varied over the period of record, but nine of the eleven stations presented in this report update have the most complete records (the ninth, W21, was installed in 2018, and the tenth, W99 was installed in 2019). In addition, several more stations are monitored as required by the Environmental Monitoring, Surveillance and Adaptive Management Plan (EMSAMP) and Water Use Licence QZ14-041-1. The continuous hydrometric stations and the associated metadata are presented in Table 2-1 and shown in Figure 2-1, while the additional spot flow stations are described in Table 2-2.

Additional manual streamflow measurements have been collected (often concurrently with water quality samples) at an additional 20 locations at the Project site. Previously collected continuous streamflow records for the Eagle Creek Pond (WECP), W13, W20 and W31 stations span shorter durations (1 to 3 years), and are presented in previous reports.

Table 2-1:
Eagle Gold Project continuous hydrometric stations

Station ID	Station Name	Record Period	Northing	Easting	Drainage Area (km^2)	Median Basin Elevation (m)	Notes
W1	Dublin Gulch above Stewart Gulch	2007 – 2022	7,101,545	460,249	7.0	1,303	Continuous discharge time-series 2022 logging period: May 22 to Oct 18
W4	Haggart Creek below Dublin Gulch	2007 – 2022	7,101,223	458,144	76.8	1,125	Continuous discharge time-series 2022 logging period: Apr 29 to Oct 18
W5	Haggart Creek above Lynx Creek	2007 – 2022	7,095,888	457,815	97.7	1,091	Continuous discharge time-series 2022 logging period: May 11 to Oct 18
W6	Lynx Creek above Haggart Creek	2007 – 2022	7,095,964	458,099	100.9	1,049	Continuous discharge time-series 2022 logging period: May 15 to Oct 8
W21[2]	Dublin Gulch near the Mouth	2018 - 2022	7,101,261	458,359	10.1	1,216	Continuous discharge time-series 2022 logging period: May 20 to Oct 18
W22	Haggart Creek above Dublin Gulch	2007 – 2022	7,101,377	458,319	66.5	1,113	Continuous discharge time-series 2022 logging period: Apr 29 to Oct 18
W26	Stewart Gulch	2007 – 2022	7,101,443	460,331	1.4	1,183	Continuous discharge time-series, manual data only for 2007 - 2009, 2011. 2022 logging period: Jun 21 to Oct 18
W27	Eagle Creek near Camp	2007 – 2022	7,100,997	458,235	2.6	1,037	Continuous discharge time-series, manual data only for 2007 and 2018 2022 logging period: June 18 to Oct 18
W29[3]	Haggart Creek below Eagle Creek	2010 – 2015 2020-2022	7,099,583	458,225	86.1	1,112	Manual measurements for 2010, continuous data thereafter 2022 logging period: May 8 to Oct 18
W45[4]	Eagle Creek at mouth	2018 – 2022	7,099,740	458,243	3.9	1,018	Continuous water level time-series, manual measurements 2022 logging period: Apr 29 to Oct 18
W99	Haggart Creek above 15 Pup	2019 – 2022	7,098,180	458,322	88.3	1,116	Continuous discharge time-series 2022 logging period: May 19 to Oct 18

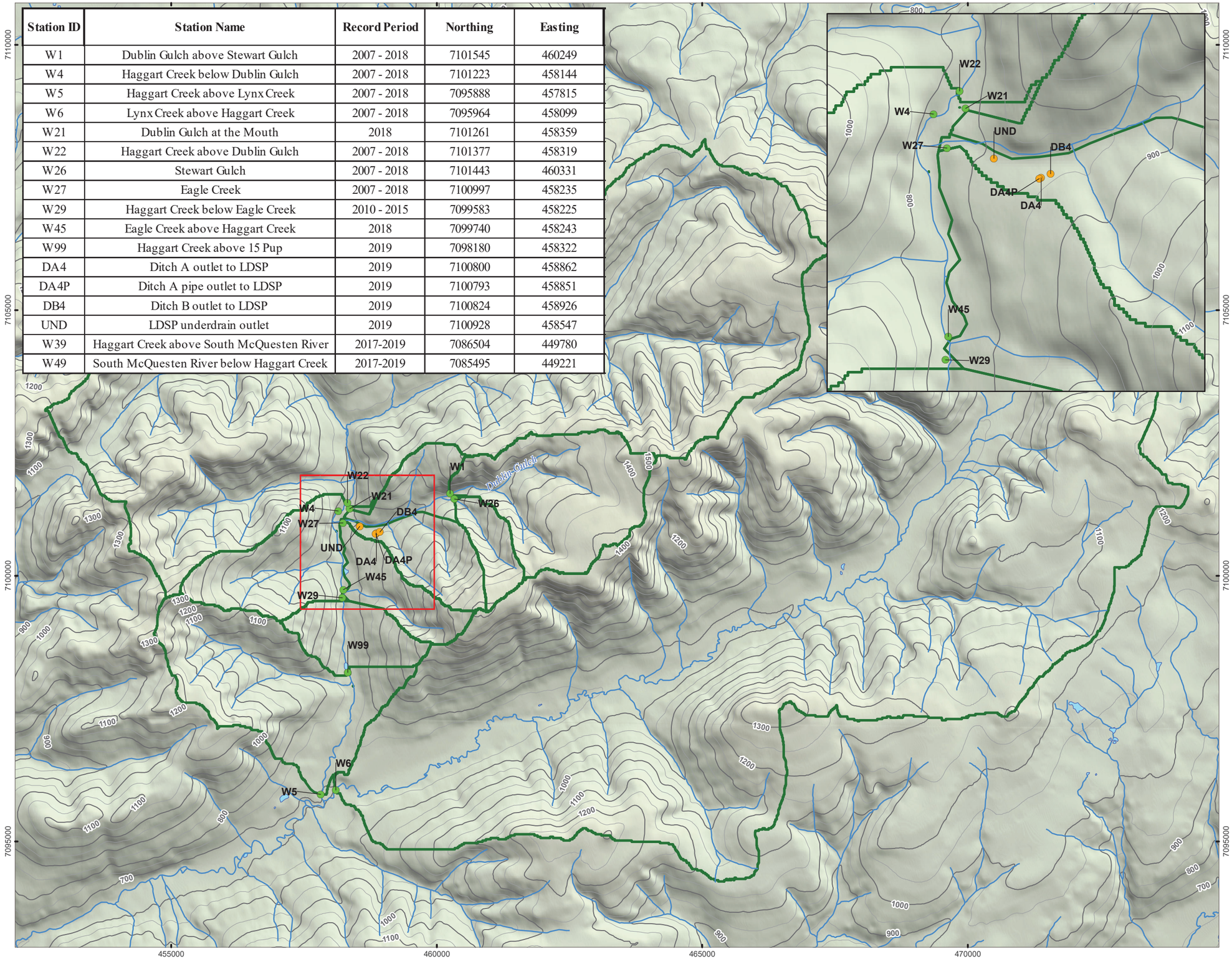
Notes:
1. Source of UTM co-ordinates, drainage area and median basin elevation (Knight-Piésold, 2013).
2. Water level sensor malfunctioned in 2019 and 2020, therefore no continuous water level data are available for these years.
3. No continuous water level data are available for this station for 2016-2019, however manual measurements continue. See Section 2.2.3 for details.
4. Water level sensor malfunctioned in 2021, therefore no continuous water level data are available for this year.

Table 2-2:
Eagle Gold Project spot flow hydrometric stations

Station ID	Station Name	UTM N	UTM E	Description
PDI*	Platinum Gulch ditch into LDSP	7,100,800	458,862	Transfer between engineered structures
PGS*	Platinum Gulch WRSA Seepage	7,100,793	458,851	Transfer between engineered structures
EPS*	Eagle Pup WRSA Seepage	7,100,824	458,926	Transfer between engineered structures
LDSP-UND	LDSP underdrain outlet	7,100,928	458,547	Water management infrastructure
W20	Bawn Boy Gulch	7,101,961	461,945	Upstream Environment
W23	Haggart Creek below Lynx Creek	7,095,683	457,790	Receiving Environment
W39	Haggart Creek above South McQuesten River	7,086,504	449,780	Receiving Environment
W49	South McQuesten River below Haggart Creek	7,085,495	449,221	Receiving Environment

Notes:
- *PDI + PGS + EPS= LDSPI (Lower Dublin South Pond inflow)
- PDI and PGS locations are currently surrogate sites measured at the Ditch A outlet to the LDSP until the Platinum Gulch WRSA rock drain is completed.
- EPS location is currently a surrogate site for Ditch B inflow until the full length of Ditch B and the Eagle Pup WRSA rock drain are completed.

Station ID	Station Name	Record Period	Northing	Easting
W1	Dublin Gulch above Stewart Gulch	2007 - 2018	7101545	460249
W4	Haggart Creek below Dublin Gulch	2007 - 2018	7101223	458144
W5	Haggart Creek above Lynx Creek	2007 - 2018	7095888	457815
W6	Lynx Creek above Haggart Creek	2007 - 2018	7095964	458099
W21	Dublin Gulch at the Mouth	2018	7101261	458359
W22	Haggart Creek above Dublin Gulch	2007 - 2018	7101377	458319
W26	Stewart Gulch	2007 - 2018	7101443	460331
W27	Eagle Creek	2007 - 2018	7100997	458235
W29	Haggart Creek below Eagle Creek	2010 - 2015	7099583	458225
W45	Eagle Creek above Haggart Creek	2018	7099740	458243
W99	Haggart Creek above 15 Pup	2019	7098180	458322
DA4	Ditch A outlet to LDSP	2019	7100800	458862
DA4P	Ditch A pipe outlet to LDSP	2019	7100793	458851
DB4	Ditch B outlet to LDSP	2019	7100824	458926
UND	LDSP underdrain outlet	2019	7100928	458547
W39	Haggart Creek above South McQuesten River	2017-2019	7086504	449780
W49	South McQuesten River below Haggart Creek	2017-2019	7085495	449221



LEGEND

- Continuous Hydrometric Station
- Manual Spot Flow Measurements
- Watershed Boundary
- Watercourse
- Waterbody
- Contour (100m)
- Contour (50m)

NOTES
Base data source:

STATUS
FOR INTERNAL USE ONLY

EAGLE GOLD PROJECT
YUKON TERRITORY

Hydrometric Station Network

PROJECTION Transverse Mercator UTM Zone 8				**DATUM** NAD83
Scale: 1:70,000 700 350 0 700 Metres				**CLIENT** Victoria Gold Corp
FILE NO.				Lorax Environmental
PROJECT Eagle Gold	**DWN** GM	**CKD** SJ	**APVD** DHF	**REV** 1
OFFICE	**DATE** March 16, 2020			**Figure 1**

Path: P:\@Drafting\Eagle Gold\Drafting Figures\MXD\Hydrometric Stations_20200312.mxd

2.2.1 Hydrometric Station Summary

A brief summary of the hydrometric network history is provided below. Further details are available in the previous baseline reports listed in Section 1.2.

W1

- Installed in 2007 with a continuous water level recorder, staff gauge, and stilling well and survey benchmarks
- Transducer malfunctions in 2013 and 2014 resulted in loss of data
- Channel bed can be unstable at high flows; channel condition reflects historical placer mining activity.
- The water level recorder returned inaccurate stage data for extended periods of time in 2019, and thus no continuous water level record is available from which to calculate discharge prior to August 5, 2019.

W4

- Installed in 2007 with a continuous water level recorder, staff gauge, and stilling well and survey benchmarks
- Datalogger failure resulted in no continuous water level data for 2016

W5

- Installed in 2007 with a continuous water level recorder, staff gauge, and stilling well and survey benchmarks
- Staff gauge was knocked over in the 2013 freshet and repaired in July 2013

W6

- Installed in 2007 with a continuous water level recorder, staff gauge, and stilling well and survey benchmarks
- A portion of the 2014 record is influenced by a beaver dam located downstream of the control section – influence is minimal and it was possible to correct for the artificially elevated stage.
- The W6 datalogger cable was chewed by wildlife in summer 2022, which resulted in a data gap from August 4 to September 10, 2022.

W20

- Station re-established in 2016 and has water level records for 2016 and 2017, but not continued in 2018 through 2022.

- Manual flow and stage measurements conducted when access allows.
- Data is not sufficient to develop a rating curve.

W21

- A staff gauge, stilling well and water level logger were installed on June 13, 2018.
- Twenty three paired staff gauge:discharge measurements are available for this site, however, there is not sufficient range in flow and stage data. Therefore the rating curve and estimated discharges are considered preliminary.The W21 water level logger experienced malfunctions in 2019 and 2020, therefore no usable continuous water level data were collected for these years. Continuous data collection resumed in 2021.

W22

- Installed in 2007 with a continuous water level recorder, staff gauge, and stilling well and survey benchmarks
- No data was available for 2011 due to a pressure transducer malfunction. The water level record estimated by Stantec was carried forward in this report.
- Staff gauge was knocked over in the 2013 freshet and repaired in July 2013.
- Technical issues with the datalogger resulted in a data gap from August 11 to September 7, 2020.

W26

- Manual measurements from 2007 to 2009.
- Instrumented with a continuous water level recorder, staff gauge, and stilling well and survey benchmarks in 2009.
- V-notch weir installed in 2009, and replaced with a Parshall flume in August 2011
- Technical issues with datalogger installation in 2011 resulted in loss of continous data – only manual measurements are available for 2011 as a result.

W27

- Installed in 2007 with a continuous water level recorder, staff gauge, and stilling well and survey benchmarks however data is not reported due to apparent sedimentation in the stilling well resulting in a continuously rising water level
- V-notch weir installed in 2009, and replaced with a Parshall flume in August 2011

- Malfunction of pressure transducer in August 2015 resulted in loss of data for remainder of this year.
- Technical issues with datalogger and/or flume installation in 2018 resulted in loss of continous water level data. Therefore, only manual measurements are available for this year.
- Issues with the datalogger resulted in loss of continuous water level data for the period of July 23 – August 31, 2019.

W29

- Manual measurements in 2010, instrumented with a continuous water level recorder, staff gauge, and stilling well and survey benchmarks in 2011
- Station was destroyed in the 2013 freshet, and a replacement pressure transducer was deployed on an anchor in the streambed just upstream; water levels were surveyed at the old location and the temporary installation to determine the required offset. A new stilling well was installed in July 2015 at the original gauge location.
- Datalogger malfunctions and channel stability issues, including frost jacking of the stilling well resulted in the loss of continuous water level data for 2016 through 2018.
- The stilling well and datalogger were decomissioned in 2019. W99 utilized as a surrogate station by Victoria Gold.
- The station was re-commissioned in July 2020 as a backup for the W99 record and to maintain site in accordance with licence terms, and was operated during the open water season in 2022. Manual measurements continue to be reported for this station in Table 3-12.

W45

- A staff gauge, stilling well and water level logger were installed on June 13, 2018.
- A malfunction of the transducer in 2021 resulted in loss of water level data for this year.
- Measured water levels in 2022 deviate from those measured from 2018-2020, likely due to channel scouring of the highly mobile bedload.
- A Parshall flume was installed on August 2, 2022.

W99

- A staff gauge, stilling well and water level logger were installed on June 7, 2019

2.2.2 Manual Discharge Measurements

Over time, manual discharge measurements have been conducted using the following methods:

- Velocity area techniques using a current meter;
- Rhodamine dilution;
- Salt dilution;
- Calibrated V-notch weir;
- Calibrated Parshall flume;
- Bucket/Bag and stopwatch, and;
- Float-area method.

The majority of the manual discharge measurements are conducted using the salt dilution technique, particularly during the winter months, where this is the only method used due to ice encroachment on the channel. When flow conditions permit (*i.e.*, sufficient water depths, and more laminar flows) during the open water season, the velocity-area method is used. Typically, one discharge measurement was made at each visit when using a current meter, however, duplicate salt dilution streamflow measurements were made on every site visit where this method was used in 2021 and 2022, allowing the calculation of relative percent difference (RPD) metrics to quantify the measurement accuracy.

2.2.3 Stage Measurements and Corrections

All continuously recording stations were instrumented with metric staff gauges, mounted to vertical angle iron in the stream channel, and regularly surveyed to nearby benchmarks. Continuously recording HOBO pressure transducers were installed in stilling wells and set to record water level every 15 minutes. These readings were corrected for fluctuations in barometric pressure in a post-processing step. During each site visit, the water level was noted on the staff gauge. These readings formed the basis for the continuous water level records, which were adjusted to match the manual stage readings. Regular benchmark surveys were conducted to determine the staff gauge zero datum and water level, and these measurements were used to correct the station records for changes due to shifts in the channel bed (*i.e.*, aggradation or scour), frost-jacking or station relocation following a high-magnitude flood event.

At each station, an annual offset was developed to bring the staff gauge measurements into line with the reference datum from the 2012 benchmark surveys. W27 was the exception, as no survey information was available for 2012, so 2009 was used as the benchmark

reference year for this station following Knight Piésold (2013). In this way, the reference datum at each station was kept consistent for the duration of the record period, regardless of station location or streambed conditions.

With the exceptions of W6 and W45 stations, no notable issues were encountered with the stage records in 2022 at any of the continuous hydrometric stations, noting that flows were significantly higher than the baseline median for the majority of the open water season. Benchmark surveys were conducted for operating hydrometric stations in June, to allow for stage corrections to be made if evidence of staff gauge shifts was found. There are 4.5 consecutive years with no continuous water level at W29, as channel instability led to the rejection of the 2016 water level record, and in June 2017, the stilling well frost jacked completely out of the streambed. This station was located in a highly mobile channel that has not reached equilibrium yet, following historical placer mining disturbances, and is therefore challenging to gauge. This station was not operated between June 2017 and July 2020 but was replaced by the new W99 station in 2019. W29 was recommissioned in July 2020 as a backup to W99 and to satisfy QZ14-041-1 requirements.

3. Streamflow Record Development

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3. Streamflow Record Development

3.1 General Approach

To develop continuous time-series of discharge for the Project streams, spot measurements of stage and discharge are combined with continuous water level records collected by the pressure transducers. Mathematical relationships are derived to describe the relationship between water level and discharge, and then applied to the continuous water level records to estimate discharge. By convention, assembled stage and discharge relationships are commonly referred to as rating curves, where the relationship between stage and discharge are unique and specific to each monitoring station.

3.2 Rating Curve Development

Adjustments for stage (Section 2.2.3) were made prior to the assembly of rating curves. Winter spot flow measurements provided information on the magnitude of winter discharge, but due to ice effects and greater measurement uncertainty for both stage and discharge, these measurements were not employed in the rating curve development process.

Rating curves were developed using the standard rating equation, and the coefficient, offset and exponent were selected to conform to hydraulic theory (*e.g.*, Maidment, 1993) and the stream channel properties.

$$Q = C(h - a)^n$$

Where:

Q = discharge (m^3/s)

C = coefficient (function of channel geometry)

h = stage (m)

a = stage at point of zero flow, offset (m)

n = exponent (function of channel geometry)

The term C is usually 0.5 to 2.5 times the channel width at the control section, and n is often between 1.6 and 3 for moderate gradient streams. The BC RISC standards (RISC, 2009) state that ideally, a rating curve will be based on a minimum of 10 stage-discharge measurements. Given the long duration of monitoring activities at the Project site, all stations meet these guiding criteria.

More recently installed stations now have sufficient data with which to construct rating curves, including W21 and W99. W21 was installed in 2018, and now has twenty three paired measurements, noting that there is relatively high average and standard error in the rating curve (Table 3-6 and Table 3-7), and thus it is still considered preliminary. W99 was installed in 2019 and there are now nineteen paired flow and stage measurements with relatively low average and standard errors (Table 3-14), indicating that the rating curve is stable. Survey benchmarks are installed at both stations and will continue to be surveyed annually to confirm stability of the staff gauge, and thus the rating curves.

3.3 Rating Curve Error

The overall quality of the discharge record can be assessed by reviewing the average and standard errors calculated from the differences between the measured discharges, and those estimated from the rating equation. A positive rating curve error is defined where the discharge calculated from the rating curve overestimates the value when compared to the measured discharge, and vice-versa for a negative error. A summary of the error metrics for all stations is presented in Table 3-1, with reporting for each station in Table 3-2 through Table 3-10.

Table 3-1 also reports rating curve control percentages by monitoring station. These values indicate the percent of time that a continuously recorded observation (15-minute intervals) falls between the highest and lowest manually recorded measurements for each monitoring station. For example, at the W5 station, 97% of the 15-minute water level measurements are lower than the highest recorded manual stage measurement. Therefore, the measurements used in the rating curve development represent 97% of the entire continuous water level record, and only 3% of the continuous discharge data derived from the rating curve are based on an extrapolation beyond the highest manually recorded stage-discharge measurement.

For monitoring stations where effort is limited to manual flow measurements, period of record data for the stations are presented in Table 3-12 through Table 3-15.

Overall, the rating curves provide reasonable estimates of discharge across a wide range of flows at most of the Project stations. The rating curve errors presented in Table 3-1 indicate that the average errors are relatively low, ranging from -7% (W29) to 9% (W21). The standard error, or the degree of variability about the average error values varies more between stations, from a high of 30% for station W21, to a low of 12% for station W6. Note that continuous discharge data are sporadic for W21 prior to 2021 due to limited water level data, and that the W29 data, due to bank and stream section instabilities, are considered only as a potential backup with regard to adaptive management evaluations in the event that data from W99 are not available.

Rating curves for the site hydrometric stations are presented in Figure 3-1 through Figure 3-8. For the 2017 update, the rating equations were compared to those previously developed for each station to ensure that the coefficients and exponents were consistent through time. After examining the 2018 data, no further updates to the rating curves developed in 2017 were necessary, and the same curves were applied to the 2018 through 2021 continuous water level data. A similar conclusion was drawn based on inclusion of field data collected in 2022 within the rating relations per monitoring station, except W21, for which a secondary rating equation was introduced to handle the high flow from June 2022. Note that because stations W26, W27 and more recently W45 are instrumented with Parshall flumes, rating curves were not developed for these stations. The rating curve plot and error table for the relatively new hydrometric station W99, are presented in Figure 3-8 and Table 3-14, and based on measurements collected in 2019 through 2022.

Table 3-1:
Rating curve error metric summary for Eagle Gold Project site hydrometric stations

Station	Measurements (n)	Average Error (%)	Standard Error (%)	Rating Curve Control
W1	60	-1%	25%	100%
W4	65	-1%	15%	100%
W5	52	3%	17%	97%
W6	41	-4%	12%	93%
W21	23	9%	30%	98%
W22	53	0%	15%	100%
W26	50	--	--	100%
W27	93	--	--	100%
W29	34	-7%	28%	95%
W99	19	5%	21%	95%
Average	52	0%	20%	94%

Notes:
1. Stations W26, W27 and W45 currently have Parshall flumes installed, and therefore rating curves have not been developed for these sites as part of this baseline streamflow update.

Table 3-2:
Station W1 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2007-08-14	-	3.5	0.059	0.059	0%	
2007-08-29	-	3.494	0.062	0.055	-12%	
2007-09-12	-	3.513	0.063	0.068	8%	
2007-09-26	-	3.532	0.092	0.084	-9%	
2007-10-19	-	3.514	0.047	0.069	-	Stage affected by snow in channel
2007-11-20	Salt Dilution		0.04	-	-	Stage measurement not available
2008-04-25	Salt Dilution		0.015	-	-	Stage measurement not available
2008-06-09	-		0.072	-	-	Stage measurement not available
2008-08-12	-	3.614	0.177	0.175	-1%	Average of 2 measurements
2008-10-20	-	3.594	0.097	0.148	-	Stage affected by snow in channel
2009-07-19	Current Meter	3.467	0.045	0.039	-14%	
2009-07-26	-	3.454	0.032	0.032	1%	
2009-08-09	-	3.443	0.025	0.028	10%	
2009-08-20	-	3.438	0.044	0.025	-42%	
2009-09-01	Current Meter	3.459	0.074	0.035	-53%	
2009-10-07	Current Meter	3.447	0.055	0.029	-47%	
2009-10-21	-	3.455	0.036	0.033	-9%	
2010-03-31	Salt Dilution		0.021	-	-	Stage measurement not available
2010-05-04	-	3.520	0.055	0.074	-	Stage affected by snow in channel
2010-06-01	-	3.597	0.143	0.152	6%	
2010-06-15	-	3.558	0.113	0.108	-5%	
2010-08-17	-	3.542	0.234	0.092	-60%	
2010-09-23	-	3.509	-	0.065	-	Discharge measurement not available
2010-10-19	Salt Dilution	3.512	0.034	0.067	-	Stage affected by snow in channel
2011-03-30	Salt Dilution	-	0.017	-	-	Stage measurement not available
2011-04-19	Salt Dilution	3.450	0.021	0.031	-	Stage affected by snow in channel
2011-05-04	-	3.484	0.032	0.049	-	Stage affected by snow in channel
2011-05-17	Current Meter	3.593	0.147	0.147	0%	
2011-05-18	Current Meter	3.591	0.172	0.145	-16%	
2011-06-07	Current Meter	3.522	0.073	0.075	3%	
2011-08-16	Current Meter	3.573	0.190	0.124	-35%	
2011-10-17	Current Meter	3.535	0.084	0.086	3%	
2011-11-16	Salt Dilution	-	0.041	-	-	Stage measurement not available
2011-12-06	Salt Dilution	-	0.036	-	-	Stage measurement not available
2012-04-18	Salt Dilution	3.460	0.015	0.035	-	Stage affected by snow in channel
2012-05-06	Current Meter	3.469	0.023	0.040	-	Stage affected by snow in channel
2012-08-15	Current Meter	3.531	0.087	0.083	-5%	
2012-10-16	Current Meter	3.499	0.044	0.058	32%	
2012-11-20	Salt Dilution	-	0.033	-	-	Stage measurement not available
2013-04-15	Salt Dilution	-	0.010	-	-	Stage measurement not available
2013-05-21	Current Meter	0.099	0.051	0.069	34%	
2013-07-25	Current Meter	0.050	0.011	0.019	69%	
2013-09-14	Current Meter	0.064	0.039	0.030	-24%	
2013-10-19	Current Meter	0.065	0.036	0.031	-15%	
2014-05-06	Current Meter	-	0.381	-	-	Stage measurement not available
2014-08-06	Current Meter	0.083	0.055	0.049	-11%	
2014-10-17	-	0.095	-	-	-	Discharge measurement not available
2015-06-18	Current Meter	0.121	0.080	0.101	26%	
2015-07-31	Current Meter	0.159	0.181	0.169	-7%	
2016-07-14	Current Meter	0.178	0.202	0.210	4%	
2016-07-15	Salt dilution	-	0.374	-	-	Stage measurement not available
2016-10-13	Salt dilution	-	0.072	-	-	Stage measurement not available
2017-03-15	Salt dilution	-	0.019	-	-	Stage measurement not available
2017-04-13	Salt dilution	-	0.013	-	-	Stage measurement not available
2017-05-03	Salt dilution	-	0.040	-	-	Stage measurement not available
2017-06-10	Salt dilution	-	0.071	-	-	Stage measurement not available
2017-08-03	Salt dilution	0.078	0.045	0.043	-3%	
2017-08-16	Current Meter	0.079	0.045	0.045	-1%	
2017-10-11	Salt dilution	-	0.167	-	-	Stage affected by ice in channel
2017-12-06	Salt dilution	-	0.040	-	-	Stage affected by ice in channel
2018-01-28	Salt dilution	-	0.021	-	-	Stage affected by ice in channel
2018-03-22	Salt dilution	-	0.013	-	-	Stage affected by ice in channel
2018-04-24	Salt dilution	-	0.011	-	-	Stage affected by ice in channel
2018-08-19	Current Meter	0.118	0.108	0.093	-14%	
2018-08-19	Salt dilution	0.119	0.096	0.095	-1%	
2018-08-26	Salt dilution	0.147	0.117	0.144	23%	
2018-09-22	Salt dilution	0.100	0.085	0.067	-21%	
2018-10-12	Salt dilution	-	0.048	-	-	Stage affected by ice in channel

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2018-11-09	Salt dilution	-	0.030	-	-	Stage affected by ice in channel
2018-11-23	Salt dilution	-	0.023	-	-	Stage affected by ice in channel
2018-12-03	Salt dilution	-	0.026	-	-	Stage affected by ice in channel
2018-12-18	Salt dilution	-	0.021	-	-	Stage affected by ice in channel
2019-01-15	Salt dilution	-	0.016	-	-	Stage affected by ice in channel
2019-01-22	Salt dilution	-	0.021	-	-	Stage affected by ice in channel
2019-02-04	Salt dilution	-	0.017	-	-	Stage affected by ice in channel
2019-02-24	Salt dilution	-	0.017	-	-	Stage affected by ice in channel
2019-03-04	Salt dilution	-	0.011	-	-	Stage affected by ice in channel
2019-03-15	Salt dilution	-	0.012	-	-	Stage affected by ice in channel
2019-04-10	Salt dilution	-	0.011	-	-	Stage affected by ice in channel
2019-04-16	Salt dilution	-	0.012	-	-	Stage affected by ice in channel
2019-04-23	Salt dilution	-	0.011	-	-	Stage affected by ice in channel
2019-05-01	Salt dilution	-	0.006	-	-	Stage affected by ice in channel
2019-05-04	Salt dilution	-	0.012	-	-	Stage measurement not available
2019-06-03	Salt dilution	-	0.061	-	-	Stage measurement not available
2019-07-01	Salt dilution	0.072	0.037	0.035	-3%	
2019-08-05	Salt dilution	0.063	0.026	0.027	5%	
2019-09-07	Salt dilution	0.061	0.025	0.026	1%	
2019-10-01	Salt dilution	0.076	0.044	0.039	-10%	
2019-10-08	Salt dilution	0.079	0.035	0.042	20%	
2019-12-03	Salt dilution	-	0.002	-	-	Stage affected by ice in channel
2020-05-08	Salt dilution	0.121	0.097	0.098	1%	
2020-06-04	Current Meter	0.204	0.283	0.273	-3%	
2020-06-22	Current Meter	0.235	0.379	0.361	-5%	
2020-07-04	Current Meter	0.167	0.188	0.185	-2%	
2020-07-12	Current Meter	0.170	0.213	0.191	-10%	
2020-07-21	Current Meter	0.164	0.169	0.178	6%	
2020-08-03	Current Meter	0.165	0.157	0.180	15%	
2020-08-10	Current Meter	0.157	0.208	0.163	-21%	
2020-09-02	Current Meter	0.157	0.199	0.163	-18%	
2020-10-06	Salt dilution	0.140	0.164	0.131	-20%	
2020-12-07	Salt dilution	0.080	0.040	0.043	9%	Average of 2 salt dilutions (RPD = 5%)
2021-01-03	Salt dilution	-	0.025			Average of 2 salt dilutions (RPD = 5%)
2021-02-04	Salt dilution	-	0.019			Average of 2 salt dilutions (RPD = 0%)
2021-03-07	Salt dilution	-	0.016			Average of 2 salt dilutions (RPD = 5%)
2021-04-10	Salt dilution	-	0.010			Average of 2 salt dilutions (RPD = 4%)
2021-05-01	Salt dilution	-	0.026			Average of 2 salt dilutions (RPD = 0%)
2021-07-04	Salt dilution	-	0.060			Average of 2 salt dilutions (RPD = 3%)
2021-07-05	Salt dilution	0.095	0.060	0.061	2%	Average of 2 salt dilutions (RPD = 3%)
2021-08-06	Salt dilution	0.087	0.061	0.051	-16%	Average of 2 salt dilutions (RPD = 3%)
2021-10-31	Salt dilution	-	0.052			Average of 2 salt dilutions (RPD = 4%)
2021-11-02	Salt dilution	0.105	0.051	0.074	47%	Average of 2 salt dilutions (RPD = 20%)
2021-12-03	Salt dilution	-	0.029			Average of 2 salt dilutions (RPD = 2%)
2022-01-02	Salt dilution	-	0.023			Single measurement
2022-02-05	Salt dilution	-	0.015			Glaciation - flow taken from W8
2022-04-01	Salt dilution	-	0.013			Glaciation - flow taken from W8
2022-05-21	Salt dilution	-	0.155			Single measurement
2022-06-02	Salt Dilution	0.397	0.955	1.011	6%	Average of 2 salt dilutions (RPD = 11%)
2022-06-26	Salt Dilution	0.144	0.085	0.138	62%	Average of 2 salt dilutions (RPD = 0%)
2022-08-01	Salt Dilution	0.107	0.083	0.077	-7%	Average of 2 salt dilutions (RPD = 35%)
2022-09-02	Salt Dilution	0.101	0.083	0.069	-17%	Average of 2 salt dilutions (RPD = 4%)
2022-10-02	Rhodamine Dilution	0.170	0.111	0.191	72%	Average of 2 rhodamine dilutions (RPD = 7%)
2022-11-04	Salt Dilution	-	0.088			Average of 2 salt dilutions (RPD = 4%)
2022-12-02	Salt Dilution	-	0.051			Average of 2 salt dilutions (RPD = 11%)
Average Error (%)					-1%	
Standard Error (%)					25%	

Notes:
1. Measurements highlighted in grey were not included in rating curve development as they were conducted in ice-affected waters, lack a corresponding staff gauge reading, or the discharge measurements was of low quality. .
2. Stage measurements for the period 2007 to 2012 are as reported in Knight Piésold (2013). Stage measurements for the period 2013 to 2022 are the staff gauge readings relative to the staff gauge datum from 2012.

Table 3-3:
Station W4 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2007-08-13	-	-	0.701	-	-	Stage measurement not available
2007-08-15	-	3.046	0.693	0.665	-4%	
2007-08-28	-	3.033	0.631	0.594	-6%	
2007-09-11	-	3.073	0.810	0.829	2%	
2007-09-25	-	3.091	0.737	-	-	Stage affected by snow in channel
2007-10-19	-	3.048	0.442	-	-	Stage affected by snow in channel
2007-11-21	-	-	0.360	-	-	Stage measurement not available
2008-04-25	Salt Dilution	-	0.050	-	-	Stage measurement not available
2008-06-09	-	3.056	0.740	0.724	-2%	
2008-08-12	-	3.164	1.575	1.543	-2%	
2008-10-21	-	3.104	0.926	-	-	Stage affected by snow in channel
2009-07-18	Current Meter	2.983	0.361	0.362	0%	
2009-07-26	Current Meter	2.966	0.303	0.298	-2%	
2009-08-09	Current Meter	2.973	0.298	0.323	8%	
2009-08-20	Current Meter	2.973	0.344	0.323	-6%	
2009-09-02	Current Meter	3.040	0.834	0.632	-24%	
2009-10-07	Current Meter	3.008	0.449	0.469	5%	
2009-10-21	Current Meter	2.999	0.430	0.429	0%	
2010-05-04	Current Meter	3.078	0.970	0.862	-11%	
2010-06-15	-	3.109	1.122	1.081	-4%	
2010-08-17	-	3.053	0.619	0.706	14%	
2010-09-23	-	3.024	-	-	-	Discharge measurement not available
2010-10-19	-	2.406	0.294	-	-	Stage affected by snow in channel
2011-01-27	Salt Dilution	-	0.187	-	-	Stage measurement not available
2011-03-30	Salt Dilution	-	0.212	-	-	Stage measurement not available
2011-04-19	Salt Dilution	-	0.229	-	-	Stage measurement not available
2011-05-04	Current Meter	3.128	0.445	-	-	Stage affected by snow in channel
2011-05-17	Current Meter	3.295	2.050	3.051	49%	
2011-05-18	Current Meter	3.554	-	-	-	Discharge measurement not available
2011-06-07	Current Meter	3.072	0.724	0.823	14%	
2011-06-28	Current Meter	3.032	0.741	0.589	-21%	
2011-08-16	Current Meter	3.169	1.970	1.590	-19%	
2011-10-17	Current Meter	3.065	0.591	0.778	32%	
2011-11-16	Salt Dilution	-	0.333	-	-	Stage measurement not available
2011-12-06	Salt Dilution	-	0.248	-	-	Stage measurement not available
2012-02-14	Salt Dilution	-	0.169	-	-	Stage measurement not available
2012-04-17	Salt Dilution	2.968	0.167	-	-	Stage affected by snow in channel
2012-05-04	Current Meter	3.069	0.759	0.804	6%	
2012-08-15	Current Meter	3.056	0.738	0.724	-2%	
2012-10-16	Current Meter	3.027	0.478	0.562	18%	
2012-11-20	Salt Dilution	-	0.277	-	-	Stage affected by snow in channel
2013-02-19	Salt Dilution	-	0.216	-	-	Stage measurement not available
2013-05-21	Current Meter	0.318	1.183	1.178	0%	
2013-07-24	Current Meter	0.160	0.322	0.325	1%	
2013-09-14	Current Meter	0.236	0.696	0.673	-3%	
2013-10-19	Current Meter	0.171	0.370	0.368	0%	
2014-05-07	-	0.485	-	-	-	Discharge measurement not available
2014-08-06	Current Meter	0.183	0.416	0.418	1%	
2014-10-17	Current Meter	0.212	0.707	0.551	-22%	
2015-06-18	Current Meter	0.234	0.699	0.663	-5%	
2015-07-31	Current Meter	0.349	1.609	1.402	-13%	
2015-10-14	-	0.251	-	-	-	Discharge measurement not available
2016-07-14	Current Meter	0.263	0.911	0.825	-9%	
2017-03-15	Current Meter	-	0.054	-	-	
2017-04-13	Current Meter	-	0.150	-	-	
2017-06-08	Current Meter	0.251	0.822	0.756	-8%	
2018-08-03	Current Meter	0.231	0.797	0.647	-19%	
2017-08-16	Current Meter	0.190	0.376	0.449	19%	
2017-10-11	Current Meter	0.265	0.832	0.837	1%	
2017-12-05	Current Meter	-	0.294	-	-	Stage affected by ice in channel
2018-01-28	Current Meter	-	0.198	-	-	Stage affected by ice in channel
2018-02-13	Current Meter	-	0.203	-	-	Stage affected by ice in channel
2018-03-20	Current Meter	-	0.162	-	-	Stage affected by ice in channel
2018-04-25	Current Meter	-	0.151	-	-	Stage affected by ice in channel
2018-05-16	Current Meter	0.500	3.271	2.797	-14%	
2018-06-11	Current Meter	0.371	1.827	1.609	-12%	
2018-07-22	Current Meter	0.218	0.618	0.600	-3%	
2018-08-21	Current Meter	0.261	0.851	0.838	-2%	
2018-09-09	Current Meter	0.258	0.777	0.820	6%	
2018-10-24	Current Meter	-	0.395	-	-	Stage affected by ice in channel
2018-11-06	Current Meter	-	0.275	-	-	Stage affected by ice in channel
2018-11-25	Current Meter	-	0.289	-	-	Stage affected by ice in channel
2018-12-03	Current Meter	-	0.250	-	-	Stage affected by ice in channel
2018-12-17	Current Meter	-	0.251	-	-	Stage affected by ice in channel

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2019-01-12	Salt Dilution	-	0.291	-	-	Stage measurement not available
2019-01-22	Salt Dilution	-	0.225	-	-	Stage measurement not available
2019-02-15	Salt Dilution	-	0.160	-	-	Stage measurement not available
2019-02-24	Salt Dilution	-	0.166	-	-	Stage measurement not available
2019-03-04	Salt Dilution	-	0.165	-	-	Stage measurement not available
2019-03-15	Salt Dilution	-	0.160	-	-	Stage measurement not available
2019-04-03	Salt Dilution	-	0.187	-	-	Stage measurement not available
2019-04-15	Salt Dilution	-	0.166	-	-	Stage measurement not available
2019-04-23	Salt Dilution	-	0.201	-	-	Stage measurement not available
2019-04-26	Salt Dilution	-	0.200	-	-	Stage measurement not available
2019-05-05	Current Meter	0.100	0.195	0.142	-27%	
2019-06-03	Current Meter	0.275	1.000	0.923	-8%	
2019-07-02	Current Meter	0.161	0.293	0.342	17%	
2019-08-02	Current Meter	0.178	0.349	0.412	18%	
2019-09-06	Current Meter	0.134	0.230	0.243	6%	
2019-10-03	Salt Dilution	0.171	0.373	0.383	2%	
2019-10-16	Salt Dilution	-	0.336	-	-	Stage measurement not available
2019-11-01	Salt Dilution	-	0.174	-	-	Stage affected by ice in channel
2019-12-03	Salt Dilution	-	0.175	-	-	Stage affected by ice in channel
2020-01-07	Salt Dilution	-	0.136	-	-	Stage measurement not available
2020-02-09	Salt Dilution	-	0.162	-	-	Stage measurement not available
2020-03-09	Salt Dilution	-	0.232	-	-	Stage measurement not available
2020-04-20	Salt Dilution	-	0.254	-	-	Stage measurement not available
2020-04-21	Salt Dilution	-	0.239	-	-	Stage measurement not available
2020-04-22	Salt Dilution	-	0.147	-	-	Stage measurement not available
2020-04-23	Salt Dilution	-	0.321	-	-	Stage measurement not available
2020-04-24	Salt Dilution	-	0.369	-	-	Stage measurement not available
2020-04-25	Salt Dilution	-	0.434	-	-	Stage measurement not available
2020-04-26	Salt Dilution	-	0.557	-	-	Stage measurement not available
2020-04-27	Salt Dilution	-	0.174	-	-	Stage measurement not available
2020-05-06	Current Meter	0.300	1.088	1.078	-1%	
2020-06-04	Current Meter	0.499	2.725	2.776	2%	
2020-06-22	Current Meter	0.601	4.812	3.922	-18%	
2020-07-04	Current Meter	0.413	1.721	1.953	13%	
2020-07-21	Current Meter	0.399	1.498	1.832	22%	
2020-08-03	Current Meter	0.435	1.781	2.151	21%	
2020-08-10	Current Meter	0.426	1.791	2.069	16%	
2020-09-01	Current Meter	0.441	2.223	2.206	-1%	
2020-12-07	Salt Dilution	-	0.381	-	-	Average of 5 salt dilutions (RPD = 17%)
2021-01-03	Salt Dilution	-	0.282	-	-	Stage measurement not available
2021-02-04	Salt Dilution	-	0.105	-	-	Average of 2 salt dilutions (RPD = 6%)
2021-02-15	Salt Dilution	-	0.418	-	-	Stage measurement not available
2021-03-06	Salt Dilution	-	0.194	-	-	Average of 2 salt dilutions (RPD = 4%)
2021-04-07	Salt Dilution	-	0.365	-	-	Average of 2 salt dilutions (RPD = 5%)
2021-05-01	Current Meter	0.228	1.065	0.647	-39%	
2021-07-04	Current Meter	-	0.574	-	-	Stage measurement not available
2021-07-05	Salt Dilution	0.207	0.574	0.541	-6%	
2021-08-05	Current Meter	0.250	0.836	0.768	-8%	
2021-09-01	Current Meter		0.372			Stage measurement not available
2021-10-03	Current Meter		0.487			Stage measurement not available
2021-11-15	Salt Dilution		0.497			Stage measurement not available
2021-12-03	Salt Dilution	-	0.278	-	-	Average of 2 salt dilutions (RPD = 5%)
2022-02-04	Salt Dilution	-	0.180	-	-	Average of 2 salt dilutions (RPD = 14%)
2022-03-03	Salt Dilution	-	0.227	-	-	Average of 2 salt dilutions (RPD = 1%)
2022-04-04	Salt Dilution	-	0.182	-	-	Average of 2 salt dilutions (RPD = 4%)
2022-05-05	Salt Dilution	0.231	0.748	0.667	-11%	Average of 2 salt dilutions (RPD = 18%)
2022-06-02	Salt Dilution	0.521	3.976	3.016	-24%	
2022-06-25	Current Meter	0.292	1.265	1.030	-19%	
2022-07-01	Salt Dilution	0.260	0.830	0.831	0%	Average of 2 salt dilutions (RPD = 3%)
2022-08-01	Current Meter	0.245	0.901	0.744	-17%	
2022-09-05	Current Meter	0.245	0.855	0.744	-13%	
2022-10-02	Rhodamine Dilution	0.385	1.321	1.721	30%	Average of 2 rhodamine dilutions (RPD = 4%)
2022-11-04	Salt Dilution	-	0.992	-	-	Single measurement
2022-12-02	Salt Dilution	-	0.437	-	-	Average of 2 salt dilutions (RPD = 5%)
Average Error (%)					-1%	
Standard Error (%)					15%	

Notes:
1. Measurements highlighted in grey were not included in rating curve development as they were conducted in ice-affected waters, lack a corresponding staff gauge reading, or the discharge measurements was of low quality.
2. Stage measurements for the period 2007 to 2012 are as reported in Knight Piésold (2013). Stage measurements for the period 2013 to 2022 are the staff gauge readings relative to the staff gauge datum from 2012.

Table 3-4:
Station W5 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2007-08-12	-	-	0.744	-	-	Stage measurement not available
2007-08-28	-	3.510	0.689	0.691	0%	
2007-09-11	-	3.546	0.896	0.914	2%	
2007-09-25	-	3.559	0.873	1.001	15%	
2007-10-20	-	3.699	0.323	-	-	Stage affected by snow in channel
2007-11-21	Salt Dilution	-	0.280	-	-	Stage measurement not available
2008-04-25	Salt Dilution	-	0.282	-	-	Stage measurement not available
2008-06-10	-	3.506	0.653	0.668	2%	
2008-08-13	-	-	1.900	-	-	Stage measurement not available
2008-10-21	-	3.633	1.230	-	-	Stage affected by snow in channel
2009-07-20	Current Meter	3.499	0.452	0.629	39%	
2009-07-26	-	3.476	0.419	0.507	21%	
2009-08-09	-	3.462	0.385	0.439	14%	
2009-08-20	-	3.456	0.458	0.411	-10%	
2009-09-02	Current Meter	3.526	0.895	0.787	-12%	
2009-10-07	Current Meter	3.473	0.605	0.492	-19%	
2009-10-22	-	3.573	0.466	-	-	Stage affected by snow in channel
2010-05-04	-	-	1.166	-	-	Stage measurement not available
2010-05-30	-	3.617	1.486	1.431	-4%	
2010-06-15	-	3.583	1.043	1.17	12%	
2010-08-17	-	3.509	0.674	0.686	2%	
2011-05-17	-	3.864	3.799	3.987	5%	
2011-06-08	-	3.532	0.868	0.824	-5%	
2011-06-29	Current Meter	3.523	0.965	0.769	-20%	
2011-08-19	-	3.609	1.357	1.367	1%	
2011-10-18	-	3.528	0.778	0.799	3%	
2012-05-04	Current Meter	3.579	1.285	1.141	-11%	
2012-07-18	-	3.612	-	-	-	Discharge measurement not available
2012-08-16	Current Meter	3.553	0.963	0.960	0%	
2012-09-19	-	3.503	-	-	-	Discharge measurement not available
2012-10-17	Current Meter	3.532	0.578	-	-	Stage affected by snow in channel
2012-11-20	Salt Dilution	-	0.278	-	-	Stage measurement not available
2013-05-22	Current Meter	0.280	1.877	1.801	-4%	
2013-08-05	-	0.120	-	-	-	
2013-09-14	Current Meter	0.195	0.948	0.918	-3%	
2013-10-20	Current Meter	0.145	0.510	0.528	4%	
2014-08-05	Current Meter	0.152	0.570	0.577	1%	
2014-10-17	Current Meter	0.185	0.864	0.832	-4%	
2015-06-19	Current Meter	0.175	0.735	0.750	2%	
2015-07-30	Current Meter	0.308	2.032	2.150	6%	
2015-10-14	-	0.200	-	-	-	Discharge measurement not available
2016-07-13	Current Meter	0.219	1.126	1.139	1%	
2017-06-09	Current Meter	0.193	0.933	0.900	-4%	
2017-08-02	Current Meter	0.147	0.607	0.542	-11%	
2017-08-18	Current Meter	0.144	0.580	0.522	-10%	
2017-10-14	Current Meter	-	1.143	-	-	Stage affected by ice in channel
2017-12-06	Salt Dilution	-	0.314	-	-	Stage affected by ice in channel
2018-01-28	Salt Dilution	-	0.219	-	-	Stage affected by ice in channel
2018-05-17	Current Meter	0.450	-	-	-	
2018-06-13	Current Meter	0.279	1.594	1.788	12%	
2018-07-30	Current Meter	0.139	0.516	0.488	-5%	
2018-08-21	Current Meter	0.219	0.993	1.139	15%	
2018-09-10	Current Meter	0.216	0.878	1.110	26%	
2018-10-16	Current Meter	-	0.308	-	-	Stage affected by ice in channel
2018-11-30	Salt Dilution	-	0.402	-	-	Stage affected by ice in channel
2018-12-06	Salt Dilution	-	0.475	-	-	Stage affected by ice in channel
2018-12-18	Salt Dilution	-	0.512	-	-	Stage affected by ice in channel
2019-01-12	Salt Dilution	-	0.377	-	-	Stage affected by ice in channel
2019-01-26	Salt Dilution	-	0.370	-	-	Stage affected by ice in channel
2019-02-19	Salt Dilution	-	0.155	-	-	Stage affected by ice in channel
2019-02-25	Salt Dilution	-	0.169	-	-	Stage affected by ice in channel
2019-04-14	Salt Dilution	-	0.379	-	-	Stage affected by ice in channel
2019-05-03	Salt Dilution	-	0.683	-	-	Stage measurement not available
2019-06-02	Current Meter	0.397	2.871	3.450	20%	
2019-07-02	Current Meter	0.121	0.386	0.377	-2%	
2019-08-02	Current Meter	0.090	0.328	0.217	-34%	
2019-09-05	Current Meter	0.080	0.275	0.174	-36%	
2019-10-02	Salt Dilution	0.151	0.455	0.570	25%	
2019-10-07	Salt Dilution	0.189	-	-	-	Discharge measurement not available
2019-11-01	Salt Dilution	-	0.191	-	-	Stage affected by ice in channel
2019-11-05	Salt Dilution	-	0.022	-	-	Stage affected by ice in channel
2019-12-02	Salt Dilution	-	0.099	-	-	Stage affected by ice in channel
2020-05-05	Current Meter	0.365	1.695	2.428	43%	
2020-06-03	Current Meter	0.432	2.535	3.154	24%	

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2020-07-03	Current Meter	0.362	1.802	2.397	33%	
2020-08-06	Current Meter	0.363	2.344	2.408	3%	
2020-09-02	Current Meter	0.388	2.076	2.670	29%	
2020-10-02	Current Meter	-	1.269	-	-	Stage affected by ice in channel
2020-12-05	Salt Dilution	-	0.325	-	-	Stage affected by ice in channel
2021-01-02	Salt Dilution	-	0.260	-	-	Stage measurement not available
2021-02-01	Salt Dilution	-	0.247	-	-	Average of two salt dilutions (RPD = 8%)
2021-03-05	Salt Dilution	-	0.280	-	-	Average of two salt dilutions (RPD = 2%)
2021-04-15	Salt Dilution	-	0.221	-	-	Average of two salt dilutions (RPD = 3%)
2021-05-18	Current Meter	-	1.916	-	-	Stage measurement not available
2021-06-19	Current Meter	-	0.902	-	-	Staff gauge broken
2021-07-05	-	0.161	-	-	-	Discharge measurement not available
2021-07-10	Salt Dilution	-	1.188	-	-	Stage measurement not available
2021-08-05	Current Meter	0.220	1.030	1.107	7%	
2021-10-25	Salt Dilution	0.215	1.530	1.068	-30%	
2021-11-06	Salt Dilution	-	0.333	-	-	Average of two salt dilutions (RPD = 22%)
2021-12-07	Salt Dilution	-	0.117	-	-	Average of two salt dilutions (RPD = 3%)
2022-01-01	Salt Dilution	-	0.164	-	-	Single measurement
2022-02-01	Salt Dilution	-	0.298	-	-	Average of two salt dilutions (RPD = 6%)
2022-03-01	Salt Dilution	-	0.224	-	-	Average of two salt dilutions (RPD = 27%)
2022-04-02	Salt Dilution	-	0.212	-	-	Average of two salt dilutions (RPD = 7%)
2022-05-06	Salt Dilution	-	0.813	-	-	Average of two salt dilutions (RPD = 19%)
2022-06-26	Current Meter	0.224	1.369	1.138	-17%	
2022-07-10	Current Meter	0.190	0.904	0.882	-2%	
2022-08-04	Current Meter	0.200	0.972	0.955	-2%	
2022-09-05	Current Meter	0.200	0.964	0.955	-1%	
2022-10-08	Current Meter	0.278	1.417	1.591	12%	
2022-11-05	Salt Dilution	-	0.981	-	-	Average of two salt dilutions (RPD = 8%)
2022-12-01	Salt Dilution	-	0.695	-	-	Average of two salt dilutions (RPD = 6%)
Average Error (%)					3%	
Standard Error (%)					17%	

Notes:
1. Measurements highlighted in grey were not included in rating curve development as they were conducted in ice-affected waters, lack a corresponding staff gauge reading, or the discharge measurements was of low quality.
2. Stage measurements for the period 2007 to 2012 are as reported in Knight Piésold (2013). Stage measurements for the period 2013 to 2022 are the staff gauge readings relative to the staff gauge datum from 2012.

Table 3-5:
Station W6 – Discharge Measurement Summar

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2007-08-28	-	3.820	0.872	0.850	-2%	
2007-09-11	-	3.901	1.399	1.291	-8%	
2007-09-25	-	3.880	1.059	1.169	10%	
2007-10-20	-	3.787	0.231	-	-	Stage affected by snow in channel
2007-11-21	Salt Dilution	-	0.274	-	-	Stage measurement not available
2008-04-25	Salt Dilution	-	0.335	-	-	Stage measurement not available
2008-06-10	-	3.720	0.433	0.422	-3%	
2008-08-13	-	-	1.810	-	-	Stage measurement not available
2008-10-21	-	3.893	1.179	-	-	Stage affected by snow in channel
2009-07-20	Current Meter	3.701	0.408	0.356	-13%	
2009-07-26	-	3.715	0.533	0.404	-24%	
2009-08-09	-	3.710	0.343	0.386	13%	
2009-08-20	-	3.753	0.499	0.549	10%	
2009-09-02	Current Meter	3.873	1.161	1.130	-3%	
2009-10-07	Current Meter	-	0.771	-	-	Stage measurement not available
2009-10-22	-	-	0.521	-	-	Stage measurement not available
2010-05-04	-	-	2.474	-	-	Stage measurement not available
2010-05-30	-	3.807	0.824	0.787	-4%	
2010-06-15	-	3.846	1.003	0.983	-2%	
2010-08-17	-	3.763	0.550	0.590	7%	
2010-10-19	-	3.460	0.379	-	-	Stage affected by snow in channel
2011-06-09	-	-	0.962	-	-	Stage measurement not available
2011-06-29	Current Meter	2.905	1.216	-	-	Stage affected by snow in channel
2011-08-19	-	3.894	1.253	1.250	0%	
2011-10-18	-	3.786	0.703	0.690	-2%	
2012-05-04	Current Meter	3.959	1.806	1.656	-8%	
2012-07-18	-	3.987	-	-	-	Discharge measurement not available
2012-08-16	-	3.838	0.929	0.941	1%	
2012-09-19	-	3.817	-	0.836	-	Discharge measurement not available
2012-10-17	-	3.781	-	0.667	-	Discharge measurement not available
2013-05-22	Current Meter	0.453	2.971	2.650	-11%	
2013-07-25	-	0.172	-	-	-	Discharge measurement not available
2013-09-14	Current Meter	0.286	1.171	1.227	5%	
2013-10-20	Current Meter	0.196	0.699	0.652	-7%	
2014-08-05	Current Meter	0.245	0.449	-	-	Beaver dam downstream of gauge site, therefore unreliable stage.
2014-10-17	Current Meter	0.250	0.973	0.980	1%	
2015-06-19	Current Meter	0.201	0.702	0.680	-3%	
2015-07-30	Current Meter	0.271	1.173	1.121	-4%	
2016-07-13	Current Meter	0.317	1.345	1.458	8%	
2017-06-09	Current Meter	0.212	0.780	0.743	-5%	
2017-08-02	Current Meter	0.174	0.517	0.534	3%	
2017-08-18	Current Meter	0.177	0.449	0.550	22%	
2017-09-22	Current Meter	0.263	1.161	1.067	-8%	
2017-10-14	Current Meter	-	0.563	0.993	-	Stage affected by ice in channel
2017-12-06	Salt Dilution	-	0.365	-	-	Stage affected by ice in channel
2018-01-28	Salt Dilution	-	0.310	-	-	Stage affected by ice in channel
2018-06-13	Current Meter	0.314	1.437	1.457	1%	
2018-07-30	Current Meter	0.123	0.405	0.306	-24%	
2018-08-21	Current Meter	0.213	0.762	0.764	0%	
2018-09-10	Current Meter	0.238	0.864	0.919	6%	
2018-10-16	Current Meter	-	0.390	-	-	Stage affected by ice in channel
2018-11-30	Salt Dilution	-	0.402	-	-	Stage affected by ice in channel
2018-12-13	Salt Dilution	-	0.235	-	-	Stage affected by ice in channel
2018-12-18	Salt Dilution	-	0.268	-	-	Stage affected by ice in channel
2019-01-12	Salt Dilution	-	0.221	-	-	Stage affected by ice in channel
2019-01-27	Salt Dilution	-	0.219	-	-	Stage affected by ice in channel
2019-02-21	Salt Dilution	-	0.148	-	-	Stage affected by ice in channel
2019-02-25	Salt Dilution	-	0.155	-	-	Stage affected by ice in channel
2019-05-08	Salt Dilution	-	2.802	-	-	Stage affected by ice in channel
2019-06-02	Current Meter	-	2.900	-	-	Stage measurement not available
2019-07-02	Current Meter	0.111	0.258	0.258	0%	
2019-08-02	Current Meter	0.112	0.256	0.262	2%	
2019-09-05	Current Meter	-	0.258	-	-	Stage measurement not available
2019-10-02	Salt Dilution	0.151	0.406	0.431	6%	
2020-07-03	Current Meter	-	1.493	-	-	Stage measurement not available
2020-08-06	Current Meter	0.316	1.384	1.481	7%	
2020-10-02	Current Meter	0.308	1.613	1.419	-12%	
2020-12-05	Salt Dilution	-	0.580	-	-	Stage measurement not available
2021-01-02	Salt Dilution	-	2.119	-	-	Stage measurement not available
2021-03-05	Salt Dilution	-	0.272	-	-	Stage measurement not available
2021-04-05	Salt Dilution	-	0.233	-	-	Stage measurement not available
2021-05-08	Current Meter	-	1.600	-	-	Stage measurement not available
2021-05-18	Current Meter	-	2.779	-	-	Stage measurement not available

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2021-06-19	Current Meter	-	0.103	-	-	Stage measurement not available
2021-07-05	-	0.114		-	-	Discharge measurement not available
2021-07-10	Current Meter	-	1.037	-	-	Stage measurement not available
2021-08-05	Current Meter	0.195	0.717	0.665	-7%	
2021-11-06	Salt Dilution	-	0.355	-	-	Average of two salt dilutions (RPD = 1%)
2021-12-06	Salt Dilution	-	0.225	-	-	Average of two salt dilutions (RPD = 2%)
2022-01-01	Salt Dilution	-	1.027	-	-	Single measurement
2022-02-01	Salt Dilution	-	0.434	-	-	Average of two salt dilutions (RPD = 11%)
2022-02-12	Salt Dilution	-	0.204	-	-	Average of two salt dilutions (RPD = 43%)
2022-03-01	Salt Dilution	-	0.238	-	-	Average of two salt dilutions (RPD = 1%)
2022-04-02	Salt Dilution	-	0.206	-	-	Average of two salt dilutions (RPD = 0%)
2022-06-26	Current Meter	0.202	1.057	0.705	-33%	
2022-07-10	Current Meter	-	0.727	-	-	Stage measurement not available
202-08-04	Current Meter	0.170	0.931	0.529	-43%	
2022-09-05	Current Meter	0.230	1.040	0.874	-16%	
2022-10-08	Current Meter	0.328	1.908	1.575	-17%	
2022-11-05	Salt Dilution		0.768			Stage measurement not available
2022-12-01	Salt Dilution		0.631			Stage measurement not available
Average Error (%)					-4%	
Standard Error (%)					12%	

Notes:
1. Measurements highlighted in grey were not included in rating curve development as they were conducted in ice-affected waters, lack a corresponding staff gauge reading, or the discharge measurements was of low quality.
2. Stage measurements for the period 2007 to 2012 are as reported in Knight Piésold (2013). Stage measurements for the period 2013 to 2022 are the staff gauge readings relative to the staff gauge datum from 2012.

Table 3-6:
Station W20 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Comments
2007-08-14	Current Meter	-	0.025	No staff gauge reading available
2007-08-29	Current Meter	-	0.033	No staff gauge reading available
2007-09-12	Current Meter	-	0.028	No staff gauge reading available
2008-06-09	Current Meter	-	0.015	No staff gauge reading available
2008-08-12	Current Meter	-	0.045	No staff gauge reading available
2009-07-19	Current Meter	0.17	0.018	
2009-07-26	Current Meter	0.18	0.022	
2009-08-09	Current Meter	0.16	0.012	
2009-08-20	Current Meter	-	0.014	No staff gauge reading available
2009-10-05	Current Meter	0.18	0.024	
2016-07-14	Current Meter	-	0.064	No staff gauge reading available
2017-05-04	Current Meter	-	0.005	No staff gauge reading available
2017-06-10	Salt Dilution	-	0.025	No staff gauge reading available
2017-08-03	Salt Dilution	-	0.024	No staff gauge reading available
2017-10-12	Salt Dilution	-	0.068	No staff gauge reading available
2017-12-06	Salt Dilution	-	0.014	Stage affected by ice in channel
2018-02-12	Salt Dilution	-	0.004	Stage affected by ice in channel
2018-06-13	Salt Dilution	-	0.040	Stage affected by ice in channel
2018-07-13	Salt Dilution	-	0.044	No staff gauge reading available
2018-08-21	Salt Dilution	-	0.037	No staff gauge reading available
2018-09-22	Salt Dilution	0.291	0.029	
2018-10-12	Salt Dilution	-	0.018	Stage affected by ice in channel
2018-11-09	Salt Dilution	-	0.013	Stage affected by ice in channel
2018-12-31	Salt Dilution	-	0.008	Stage affected by ice in channel
2019-01-25		-	0.007	Stage affected by ice in channel
2019-01-25		-	0.007	Stage affected by ice in channel
2019-02-26		-	0.006	Stage affected by ice in channel
2019-03-01	Salt dilution	-	0.004	Stage affected by ice in channel
2019-04-19	Salt dilution	-	0.004	Stage affected by ice in channel
2019-04-19	Salt dilution	-	0.004	Stage affected by ice in channel
2019-05-11	Salt dilution	-	0.061	No staff gauge reading available
2019-06-01	Current Meter	-	0.022	No staff gauge reading available
2019-07-13	Salt dilution	-	0.006	No staff gauge reading available
2019-08-05	Salt dilution	-	0.009	No staff gauge reading available
2019-09-19	Salt dilution	-	0.033	No staff gauge reading available
2019-10-01	Salt dilution	-	0.013	No staff gauge reading available
2020-06-04	Salt dilution	-	0.095	No staff gauge reading available
2020-07-10	Salt dilution	-	0.050	No staff gauge reading available
2020-08-12	Salt dilution	-	0.053	No staff gauge reading available
2020-09-01	Salt dilution	-	0.052	No staff gauge reading available
2021-01-09	Salt dilution	-	0.011	No staff gauge reading available
2021-06-20	Salt dilution	-	0.045	No staff gauge reading available
2021-07-14	Salt dilution	-	0.031	No staff gauge reading available
2021-08-12	Salt dilution	-	0.034	No staff gauge reading available
2021-09-03	Salt dilution	-	0.036	No staff gauge reading available
2021-10-31	Salt dilution	-	0.024	No staff gauge reading available
2021-11-09	Salt dilution	-	0.015	No staff gauge reading available
2021-12-12	Salt dilution	-	0.011	No staff gauge reading available
2022-01-02	Salt dilution	-	0.008	No staff gauge reading available
2022-02-05	Salt dilution	-	0.007	No staff gauge reading available
2022-03-04	Salt dilution	-	0.006	No staff gauge reading available
2022-04-01	Salt Dilution	-	0.007	No staff gauge reading available
2022-06-11	Salt Dilution	-	0.166	Very high flow - water overflowing on streambanks
2022-06-25	Salt Dilution	-	0.059	No staff gauge reading available
2022-07-09	Salt Dilution	-	0.035	No staff gauge reading available
2022-08-02	Salt Dilution	-	0.038	No staff gauge reading available
2022-09-09	Salt Dilution	-	0.029	No staff gauge reading available
2022-10-10	Salt Dilution	-	0.058	No staff gauge reading available
2022-11-09	Salt Dilution	-	0.029	No staff gauge reading available
2022-12-03	Salt Dilution	-	0.021	No staff gauge reading available

Notes:
[1]Due to the limited number of stage measurements for this station, no rating curve has been developed.

Table 3-7:
Station W21 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2007-08-15	Current Meter	-	0.059	-	-	Staff gauge not installed yet
2007-08-28	Current Meter	-	0.05	-	-	Staff gauge not installed yet
2007-09-11	Current Meter	-	0.071	-	-	Staff gauge not installed yet
2007-09-25	Current Meter	-	0.099	-	-	Staff gauge not installed yet
2007-10-19	Current Meter	-	0.043	-	-	Staff gauge not installed yet
2007-11-21	Current Meter	-	0.02	-	-	Staff gauge not installed yet
2008-08-12	Current Meter	-	0.25	-	-	Staff gauge not installed yet
2008-10-21	Current Meter	-	0.098	-	-	Staff gauge not installed yet
2009-07-18	Current Meter	0.150	0.012	-	-	
2009-07-26	Current Meter	0.150	0.008	-	-	
2009-08-09	Current Meter	0.130	0.008	-	-	
2009-08-20	Current Meter	0.160	0.012	-	-	
2009-09-01	Current Meter	0.200	0.067	-	-	
2009-10-20	Current Meter	0.274	0.362	-	-	
2017-12-05	Salt Dilution	-	0.031	-	-	Stage affected by ice in channel
2018-04-24	Salt Dilution	-	0.032	-	-	Stage affected by ice in channel
2018-05-16	Current Meter	-	0.485	-	-	Stage affected by ice in channel
2018-06-11	Current Meter	0.335	0.205	0.206	0%	
2018-08-19	Current Meter	0.302	0.139	0.130	-7%	
2018-09-22	Current Meter	0.291	0.109	0.106	-3%	
2018-10-12	Current Meter	0.273	0.064	0.069	9%	
2018-12-03	Salt Dilution	-	0.024	-	-	Stage affected by ice in channel
2018-12-18	Salt Dilution	-	0.023	-	-	Stage affected by ice in channel
2019-01-15	Salt Dilution	-	0.016	-	-	Stage affected by ice in channel
2019-01-15	Salt Dilution	-	0.010	-	-	Stage affected by ice in channel
2019-01-21	Salt Dilution	-	0.013	-	-	Stage affected by ice in channel
2019-02-25	Salt Dilution	-	0.007	-	-	Stage affected by ice in channel
2019-04-15	Salt Dilution	-	0.021	-	-	Stage affected by ice in channel
2019-04-23	Salt Dilution	-	0.024	-	-	Stage affected by ice in channel
2019-05-04	Salt Dilution	-	0.017	-	-	Stage affected by ice in channel
2019-05-08	Salt Dilution	-	0.019	-	-	Stage measurement not available
2019-05-24	Salt Dilution	-	0.086	-	-	Stage measurement not available
2019-05-27	Salt Dilution	-	0.048	-	-	Stage measurement not available
2019-06-03	Salt Dilution	0.265	0.072	0.054	-25%	
2019-07-05	Salt Dilution	-	0.030	-	-	Stage measurement not available
2019-08-06	Salt Dilution	-	0.018	-	-	Stage measurement not available
2019-09-19	Salt Dilution	0.288	0.100	0.100	0%	
2019-10-01	Salt Dilution	-	0.036	-	-	Stage measurement not available
2019-10-08	Salt Dilution	-	0.016	-	-	Stage measurement not available
2019-11-05	Salt Dilution	-	0.014	-	-	Stage affected by ice in channel
2019-12-03	Salt Dilution	-	0.001	-	-	Stage affected by ice in channel
2020-02-09	Salt Dilution	-	0.009	-	-	Stage affected by ice in channel
2020-04-13	Salt Dilution	-	0.016	-	-	Stage affected by ice in channel
2020-04-21	Salt Dilution	-	0.127	-	-	Stage affected by ice in channel
2020-05-08	Salt Dilution	0.103	0.169	0.201	19%	Average of two measurements (RPD = 26%)
2020-06-04	Current Meter	0.136	0.337	0.282	-16%	
2020-06-22	Current Meter	-	0.937	-	-	Stage measurement not available
2020-07-05	Current Meter	0.115	0.281	0.230	-18%	
2020-07-12	Current Meter	0.119	0.134	0.240	80%	
2020-07-21	Current Meter	0.105	0.377	0.206	-45%	
2020-08-03	Current Meter	0.115	0.188	0.230	23%	
2020-08-10	Current Meter	0.112	0.142	0.223	57%	
2020-09-01	Current Meter	0.114	0.299	0.228	-24%	
2020-10-05	Current Meter	0.096	0.177	0.185	4%	
2021-01-03	Salt Dilution	-	0.030	-	-	Average of two salt dilutions (RPD = 6%)
2021-02-04	Salt Dilution	-	0.017	-	-	Average of two salt dilutions (RPD = 0%)
2021-03-07	Salt Dilution	-	0.012	-	-	Average of two salt dilutions (RPD = 0%)
2021-05-01	Salt Dilution	-	0.071	-	-	Average of two salt dilutions (RPD = 7%)
2021-06-13	Salt Dilution	0.315	-	-	-	Discharge measurement not available
2021-07-04	Salt Dilution	0.044	0.068	0.071	5%	Average of two salt dilutions (RPD = 1%)
2021-07-05	-	0.043		0.069		Discharge measurement not available
2021-08-06	Salt Dilution	0.056	0.074	0.096	30%	Average of two salt dilutions (RPD = 4%)
2021-10-14	Salt Dilution	-	0.078	-	-	Average of two salt dilutions (RPD = 21%)
2021-11-02	Salt Dilution	-	0.068	-	-	Average of two salt dilutions (RPD = 6%)
2021-12-03	Salt Dilution	-	0.115	-	-	Average of two salt dilutions (RPD = 4%)
2022-01-02	Salt Dilution	-	0.024	-	-	Average of two salt dilutions (RPD = 12%)
2022-02-12	Salt Dilution	-	0.013	-	-	Stage measurement not available
2022-03-03	Salt Dilution	-	0.015	-	-	Average of two salt dilutions (RPD = 0%)
2022-04-04	Salt Dilution	-	0.015	-	-	Average of two salt dilutions (RPD = 0%)
2022-05-05	Salt Dilution	0.048	0.040	0.071	78%	Average of two salt dilutions (RPD = 0%)
2022-05-21	Salt Dilution	0.104	0.152	0.188	24%	Single measurement
2022-06-02	Salt Dilution	0.228	0.327	0.327	0%	Average of two salt dilutions (RPD = 7%)
2022-06-20	Rhodamine Dilution	-	0.209	-	-	Stage measurement not available
2022-07-01	Salt Dilution	0.080	-	-	-	Discharge measurement not available
2022-08-01	Salt Dilution	0.065	0.104	0.104	1%	Average of two salt dilutions (RPD = 7%)
2022-09-02	Salt Dilution	0.062	0.089	0.098	10%	Average of two salt dilutions (RPD = 4%)
2022-10-02	Rhodamine Dilution	0.110	0.179	0.202	13%	Average of two rhodamine dilutions (RPD = 15%)
2022-11-04	Salt Dilution	-	0.109	-	-	Average of two salt dilutions (RPD = 6%)
2022-12-02	Salt Dilution	-	0.055	-	-	Average of two salt dilutions (RPD = 40%)
Average Error (%)					9%	
Standard Error (%)					30%	

Notes:
[1] Measurements highlighted in grey were not included in rating curve development as they were conducted in ice-affected waters, lack a corresponding staff gauge reading, or the discharge measurements was of low quality.

[2] A rating curve for W21 was not developed in 2009, and no continuous discharge record is available for 2007-2009, therefore no error metrics are reported for this period.

Table 3-8:
Station W22 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2007-08-13	-	-	0.597	-	-	Stage measurement not available
2007-08-15	-	2.846	0.577	0.515	-11%	
2007-08-28	-	2.831	0.538	0.414	-23%	
2007-09-11	-	2.898	0.684	0.941	38%	
2007-09-25	-	2.877	0.641	0.755	18%	
2007-10-19	-	2.873	0.372	-	-	Stage affected by snow in channel
2007-11-21	Salt Dilution	-	0.343	-	-	Stage measurement not available
2008-04-25	Salt Dilution	-	0.266	-	-	Stage measurement not available
2008-06-09	-	2.866	0.688	0.666	-3%	
2008-08-12	-	2.927	1.237	1.226	-1%	
2008-10-21	-	2.936	0.741	-	-	Stage affected by snow in channel
2009-04-21	Salt Dilution	1.570	0.191	-	-	Stage affected by snow in channel
2009-07-18	Current Meter	2.809	0.749	0.284	-62%	
2009-07-26	-	2.809	0.294	0.284	-4%	
2009-08-09	-	2.810	0.278	0.289	4%	
2009-08-20	-	2.811	0.276	0.295	7%	
2009-09-01	Current Meter	2.874	0.749	0.730	-2%	
2009-10-07	Current Meter	2.824	0.361	0.370	3%	
2010-03-31	Salt Dilution	-	0.173	-	-	Stage measurement not available
2010-05-04	-	2.873	0.915	0.722	-21%	
2010-06-15	-	2.905	0.791	1.006	27%	
2010-08-17	-	2.847	0.531	0.522	-2%	
2010-09-23	-	2.816	-	-	-	Discharge measurement not available
2010-10-19	-	2.910	0.265	-	-	Stage affected by snow in channel
2011-01-27	Salt Dilution	-	0.158	-	-	Stage measurement not available
2011-03-30	Salt Dilution	-	0.203	-	-	Stage measurement not available
2011-04-19	Salt Dilution	-	0.194	-	-	Stage measurement not available
2011-05-04	Current Meter	2.975	0.418	-	-	Stage affected by snow in channel
2011-05-17	-	2.964	2.010	-	-	Uncertainty in dataset
2011-05-18	-	2.936	4.989	-	-	Uncertainty in dataset
2011-06-07	-	2.856	0.567	-	-	Uncertainty in dataset
2011-06-28	Current Meter	3.099	0.676	-	-	Uncertainty in dataset
2011-08-16	-	2.968	1.655	-	-	Uncertainty in dataset
2011-10-17	Current Meter	2.962	0.523	-	-	Stage affected by snow in channel
2011-11-16	Salt Dilution	-	0.288	-	-	Stage measurement not available
2011-12-06	Salt Dilution	-	0.207	-	-	Stage measurement not available
2012-03-19	Salt Dilution	-	0.154	-	-	Stage measurement not available
2012-04-17	Salt Dilution	2.790	0.117	-	-	Stage affected by snow in channel
2012-05-04	Current Meter	2.876	0.737	0.747	1%	
2012-07-18	-	2.924	1.055	1.195	13%	
2012-08-15	Current Meter	2.860	0.609	0.619	2%	
2012-09-19	-	2.841	-	-	-	Discharge measurement not available
2012-10-16	Current Meter	2.827	0.403	0.389	-4%	
2012-11-20	Salt Dilution	-	0.245	-	-	Stage measurement not available
2012-12-17	Salt Dilution	-	0.258	-	-	Stage measurement not available
2013-02-19	Salt Dilution	-	0.216	-	-	Stage measurement not available
2013-04-15	Salt Dilution	-	0.159	-	-	Stage measurement not available.
2013-05-21	Current Meter	0.215	0.994	0.935	-6%	
2013-07-24	Current Meter	-	0.264	-	-	Stage measurement not available
2013-08-04	-	0.105	-	-	-	Discharge measurement not available
2013-09-14	Current Meter	0.183	0.698	0.699	0%	
2013-10-19	Current Meter	0.113	0.309	0.293	-5%	
2014-08-06	Current Meter	0.135	0.391	0.404	3%	
2014-10-17	Current Meter	0.165	0.587	0.580	-1%	
2015-06-18	Current Meter	0.178	0.633	0.665	5%	
2015-07-31	Current Meter	0.261	1.379	1.326	-4%	
2015-10-14	-	0.191	-	-	-	Discharge measurement not available
2016-07-14	Current Meter	0.193	0.731	0.769	5%	
2017-05-04	Current Meter	-	0.748	-	-	Stage measurement ice affected
2017-06-08	Current Meter	0.190	0.718	0.748	4%	
2017-08-04	Current Meter	0.155	0.471	0.518	10%	
2017-08-16	Current Meter	0.130	0.377	0.377	0%	
2017-10-11	Current Meter	-	0.698	-	-	Stage affected by ice in channel
2017-12-06	Salt Dilution	-	0.241	-	-	Stage affected by ice in channel
2018-01-28	Salt Dilution	-	0.176	-	-	Stage affected by ice in channel
2018-02-13	Salt Dilution	-	0.182	-	-	Stage affected by ice in channel
2018-03-20	Salt Dilution	-	0.172	-	-	Stage affected by ice in channel
2018-04-25	Current Meter	-	0.098	-	-	Stage affected by ice in channel
2018-05-16	Current Meter	0.410	3.015	2.971	-1%	
2018-06-11	Current Meter	0.261	1.544	1.311	-15%	
2018-07-22	Current Meter	0.151	0.473	0.486	3%	
2018-08-21	Current Meter	0.200	0.760	0.809	6%	
2018-09-09	Current Meter	0.190	0.660	0.738	12%	
2018-10-24	Current Meter	-	0.065	-	-	Stage affected by ice in channel

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2018-11-06	Salt Dilution	-	0.249	-	-	Stage affected by ice in channel
2018-11-25	Salt Dilution	-	0.189	-	-	Stage affected by ice in channel
2018-12-03	Salt Dilution	-	0.235	-	-	Stage affected by ice in channel
2018-12-17	Salt Dilution	-	0.216	-	-	Stage affected by ice in channel
2019-01-15	Salt Dilution	-	0.153	-	-	Stage measurement not available
2019-01-26	Salt Dilution	-	0.215	-	-	Stage measurement not available
2019-01-26	Salt Dilution	-	0.226	-	-	Stage measurement not available
2019-02-19	Salt Dilution	-	0.341	-	-	Stage measurement not available
2019-02-25	Salt Dilution	-	0.097	-	-	Stage measurement not available
2019-03-04	Salt Dilution	-	0.111	-	-	Stage measurement not available
2019-03-15	Salt Dilution	-	0.132	-	-	Stage measurement not available
2019-04-03	Salt Dilution	-	0.116	-	-	Stage measurement not available
2019-04-15	Salt Dilution	-	0.093	-	-	Stage measurement not available
2019-04-23	Salt Dilution	-	0.287	-	-	Stage measurement not available
2019-04-26	Salt Dilution	-	0.140	-	-	Stage measurement not available
2019-05-05	Salt Dilution	-	0.169	-	-	Stage affected by ice in channel
2019-06-03	Current Meter	0.228	1.030	1.026	0%	
2019-07-02	Current Meter	0.122	0.307	0.331	8%	
2019-08-02	Current Meter	0.109	0.237	0.270	14%	
2019-09-06	Current Meter	0.095	0.233	0.210	-10%	
2019-10-03	Salt Dilution	0.132	0.331	0.381	15%	
2019-10-07	Salt Dilution	-	0.545	-	-	Stage affected by ice in channel
2019-11-01	Salt Dilution	-	0.165	-	-	Stage measurement not available
2019-12-03	Salt Dilution	-	0.185	-	-	Stage measurement not available
2020-01-07	Salt Dilution	-	0.091	-	-	Stage measurement not available
2020-02-09	Salt Dilution	-	0.131	-	-	Stage measurement not available
2020-03-09	Salt Dilution	-	0.127	-	-	Stage measurement not available
2020-04-20	Salt Dilution	-	0.181	-	-	Stage measurement not available
2020-04-21	Salt Dilution	-	0.133	-	-	Stage measurement not available
2020-04-22	Salt Dilution	-	0.324	-	-	Stage measurement not available
2020-04-23	Salt Dilution	-	0.305	-	-	Stage measurement not available
2020-04-24	Salt Dilution	-	0.242	-	-	Stage measurement not available
2020-04-25	Salt Dilution	-	0.198	-	-	Stage measurement not available
2020-04-26	Current Meter	-	0.135	-	-	Stage measurement not available
2020-04-27	Current Meter	-	0.125	-	-	Stage measurement not available
2020-05-07	Current Meter	0.279	1.452	1.479	2%	
2020-06-04	Current Meter	0.353	2.649	2.265	-14%	
2020-07-04	Current Meter	0.228	0.977	1.026	5%	
2020-07-21	Current Meter	0.229	1.067	1.034	-3%	
2020-08-03	Current Meter	0.244	1.188	1.160	-2%	
2020-08-10	Current Meter	0.260	1.320	1.302	-1%	
2020-09-01	Current Meter	-	1.516	-	-	Stage measurement not available
2020-10-05	Current Meter	-	0.902	-	-	Stage affected by ice in channel
2020-12-07	Salt Dilution	-	0.389	-	-	Stage affected by ice in channel
2021-01-03	Salt Dilution	-	0.128	-	-	Average of 2 salt dilutions (RPD = 22%)
2021-02-04	Salt Dilution	-	0.280	-	-	Average of 2 salt dilutions (RPD = 15%)
2021-03-06	Salt Dilution	-	0.165	-	-	Average of 2 salt dilutions (RPD = 7%)
2021-04-07	Salt Dilution	-	0.182	-	-	Average of 2 salt dilutions (RPD = 4%)
2021-05-01	Salt Dilution	-	0.223	-	-	Average of 2 salt dilutions (RPD = 1%)
2021-07-04	-	0.150	-	-	-	Discharge measurement not available
2021-07-05	Current Meter	-	0.224	-	-	Stage measurement not available
2021-08-05	Current Meter	0.200	0.698	0.809	16%	
2021-10-14	Salt Dilution	-	0.346	-	-	Stage measurement not available
2021-11-19	Salt Dilution	-	0.293	-	-	Stage measurement not available
2021-12-03	Salt Dilution	-	0.043	-	-	Average of 2 salt dilutions (RPD = 11%)
2022-01-02	Salt Dilution	-	0.260	-	-	Average of 2 salt dilutions (RPD = 8%)
2022-02-04	Salt Dilution	-	0.243	-	-	Average of 2 salt dilutions (RPD = 13%)
2022-03-03	Salt Dilution	-	0.170	-	-	Average of 2 salt dilutions (RPD = 0%)
2022-04-04	Salt Dilution	-	0.091	-	-	Average of 2 salt dilutions (RPD = 11%)
2022-06-02	Salt Dilution	0.422	3.655	3.131	-14%	Average of 2 salt dilutions (RPD = 6%)
2022-06-25	Current Meter	0.212	0.912	0.899	-1%	
2022-07-01	Salt Dilution	0.185	0.992	0.703	-29%	Average of 2 salt dilutions (RPD = 32%)
2022-08-01	Current Meter	0.175	0.656	0.635	-3%	
2022-09-05	Current Meter	0.175	0.672	0.635	-5%	
2022-10-02	Rhodamine Dilution	0.320	1.461	1.896	30%	Average of 2 salt dilutions (RPD = 3%)
2022-11-11	Salt Dilution	-	0.533	-	-	Average of 2 salt dilutions (RPD = 0%)
2022-12-04	Salt Dilution	-	0.304	-	-	Average of 2 salt dilutions (RPD = 18%)
Average Error (%)					0%	
Standard Error (%)					15%	

Notes:
1. Measurements highlighted in grey were not included in rating curve development as they were conducted in ice-affected waters, lack a corresponding staff gauge reading, or the discharge measurements was of low quality.
2. Stage measurements for the period 2007 to 2012 are as reported in Knight Piésold (2013). Stage measurements for the period 2013 to 2022 are the staff gauge readings relative to the staff gauge datum from 2012.

Table 3-9:
Station W23 – Discharge Measurement Summary

Date	Method	Discharge (m^3/s)	Date	Method	Discharge (m^3/s)
2007-08-12	Current Meter	1.584	2019-07-02	Salt Dilution	0.7
2007-08-28	Current Meter	1.695	2019-08-02	Salt Dilution	0.649
2007-09-11	Current Meter	2.261	2019-09-05	Salt Dilution	0.476
2007-09-25	Current Meter	2.025	2019-10-02	Salt Dilution	0.807
2007-10-20	Current Meter	0.634	2019-11-01	Salt Dilution	0.3
2008-04-25	Current Meter	0.659	2019-11-01	Salt Dilution	0.29
2008-06-10	Current Meter	1.139	2019-12-02	Salt Dilution	0.035
2008-08-13	Current Meter	4.048	2020-01-02	Salt Dilution	0.211
2008-10-21	Current Meter	2.125	2020-01-02	Salt Dilution	0.423
2009-04-22	Salt Dilution	0.551	2020-01-27	Salt Dilution	0.295
2009-07-20	Current Meter	0.844	2020-02-07	Salt Dilution	0.1405
2009-07-26	Current Meter	0.788	2020-03-08	Salt Dilution	0.205
2009-08-09	Current Meter	0.669	2020-04-17	Salt Dilution	0.3175
2009-08-20	Current Meter	0.974	2020-05-05	Salt Dilution	3.102
2009-09-02	Current Meter	2.269	2020-07-03	Salt Dilution	3.259
2010-05-04	Current Meter	4.299	2020-08-05	Salt Dilution	3.251
2010-06-01	Current Meter	2.378	2020-12-05	Salt Dilution	1.572
2010-06-15	Current Meter	2.159	2021-01-02	Salt Dilution	0.407
2010-08-17	Current Meter	1.169	2021-02-01	Salt Dilution	0.142
2010-10-19	Current Meter	0.722	2021-03-05	Salt Dilution	0.350
2011-01-27	Salt Dilution	0.5	2021-04-05	Salt Dilution	0.456
2011-06-09	Current Meter	1.979	2021-05-18	Current Meter	4.481
2011-10-18	Current Meter	1.5	2021-06-19	Current Meter	1.291
2018-01-28	Current Meter	0.478	2021-07-10	Current Meter	2.376
2018-02-13	Current Meter	0.565	2021-08-05	Current Meter	1.777
2018-04-25	Current Meter	0.392	2021-09-01	Current Meter	2.239
2018-06-13	Current Meter	3.031	2021-10-04	Current Meter	2.263
2018-07-22	Current Meter	1.125	2021-11-07	Salt Dilution	0.798
2018-08-20	Current Meter	1.801	2021-12-06	Salt Dilution	0.184
2018-10-14	Current Meter	0.963	2022-03-01	Salt Dilution	0.407
2018-12-06	Current Meter	0.517	2022-04-02	Salt Dilution	0.375
2019-01-18	Salt Dilution	0.716	2022-05-21	Salt Dilution	0.719
2019-02-19	Salt Dilution	0.489	2022-06-26	Current Meter	2.302
2019-03-21	Salt Dilution	0.545	2022-07-10	Current Meter	1.568
2019-03-21	Salt Dilution	0.502	2022-08-04	Current Meter	1.759
2019-04-19	Salt Dilution	0.603	2022-09-05	Current Meter	1.970
2019-05-03	Salt Dilution	0.64	2022-10-08	Current Meter	3.643
2019-05-09	Salt Dilution	1.633	2022-11-05	Salt Dilution	1.815
2019-06-25	Salt Dilution	0.788	2022-12-01	Salt Dilution	2.144

Table 3-10:
Station W26 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Comments
2010-06-02	-	0.168	0.030	
2010-06-15	-	0.152	0.023	
2010-06-18	-	0.120	0.013	
2010-09-23	-	0.110	0.010	
2010-10-19	-	0.065	0.003	Stage affected by snow in channel
2011-05-18	-	-	0.121	Stage measurement not available
2011-05-19	-	-	0.142	Stage measurement not available
2011-08-19	-	-	0.017	Stage measurement not available
2011-10-16	Flume	-	0.007	Stage affected by snow in channel
2011-11-16	Flume	-	0.003	Stage measurement not available
2012-07-17	Flume	0.117	0.020	
2012-08-15	Flume	0.090	0.012	
2013-07-25	Flume	-	0.001	Stage measurement not available
2013-09-15	Flume	0.040	0.004	
2014-08-06	Flume	0.047	0.005	
2014-10-17	Flume	0.059	0.007	
2015-07-31	Flume	0.131	0.024	
2015-10-14	Flume	0.192	0.043	
2016-07-14	Flume	0.120	0.017	
2017-08-03	Flume	0.025	0.003	
2017-08-16	Flume	0.330	0.098	
2017-09-20	Flume	0.070	0.009	
2017-10-11	Flume	0.065	0.008	
2018-06-13	Flume	-	0.024	Stage measurement not available
2018-07-13	Flume	0.020	0.002	
2018-08-26	Flume	0.060	0.008	
2018-09-09	Flume	0.070	0.011	
2019-06-01	Flume	-	0.009	Stage measurement not available
2019-08-05	Flume	-	0.000	Stage measurement not available
2019-10-01	Flume	0.023	0.005	
2019-10-08	Flume	0.012	0.003	
2019-11-05	Flume	-	0.002	Stage measurement not available
2020-06-04	Flume	0.105	0.029	
2020-07-05	Flume	0.009	0.019	
2020-08-02	Flume	-	0.015	Stage measurement not available
2020-09-02	Flume	0.011	0.036	
2020-10-06	Flume	-	0.020	Stage measurement not available
2021-07-03	Salt Dilution	-	0.002	Stage measurement not available
2021-08-10	Salt Dilution	-	0.010	Stage measurement not available
2021-10-31	Salt Dilution	-	0.006	Stage measurement not available
2021-11-09	Salt Dilution	-	0.005	Stage measurement not available
2021-12-08	Salt Dilution	-	0.001	Stage measurement not available
2022-05-09	Salt Dilution	-	0.017	Stage measurement not available
2022-06-11	Salt Dilution	-	0.047	Stage measurement not available
2022-07-26	Flume	0.062	0.270	
2022-08-02	Salt Dilution	-	0.012	Stage measurement not available
2022-09-04	Salt Dilution	0.074	0.014	
2022-10-09	Flume	0.101	0.021	
2022-11-10	Flume	-	0.065	Stage measurement not available
2022-12-01	Salt Dilution	-	0.008	Stage measurement not available

Notes:
1. Stage measurements for the period 2007 to 2012 are as reported in Knight Piésold (2013). Stage measurements for the period 2013 to 2018 are the staff gauge readings relative to the staff gauge datum from 2012.
2. A V-notch weir was installed in 2009, and replaced with a Parshall flume in August 2011.

Table 3-11:
Station W27 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Comments
2007-08-14	Current Meter	-	0.015	-	Stage measurement not available
2007-08-28	-	-	0.039	-	Stage measurement not available
2007-09-12	-	-	0.017	-	Stage measurement not available
2007-09-26	Current Meter	0.146	0.017	-	
2007-10-20	-	-	0.011	-	Stage measurement not available
2007-11-21	-	-	0.004	-	Stage measurement not available
2008-04-26	Salt Dilution	-	0.011	-	Stage measurement not available
2008-06-10	-	0.185	0.026	0.023	
2008-08-13	Current Meter	-	0.050	-	Stage measurement not available
2008-10-21	Current Meter	0.250	0.051	0.056	
2009-07-19	-	0.209	0.033	0.034	
2009-07-26	-	0.201	0.033	0.030	
2009-08-09	-	0.187	0.024	0.024	
2009-08-11	-	0.189	0.023	0.025	
2009-08-20	-	0.193	0.026	0.026	
2009-08-26	-	0.221	0.038	0.040	
2009-09-01	-	0.197	0.029	0.028	
2009-10-22	-	-	0.013	-	Stage measurement not available
2010-05-04	Salt Dilution	-0.025	0.072	-	
2010-05-05	Salt Dilution	0.225	0.086	-	Average of 3 measurements
2010-05-06	-	0.209	0.069	-	
2010-06-01	Salt Dilution	0.258	0.035	0.061	Average of 3 measurements
2010-06-02	-	0.261	0.035	0.063	
2010-06-15	-	0.243	0.052	0.052	
2010-06-16	-	0.238	0.049	0.049	
2010-06-18	-	0.227	0.046	0.043	
2010-09-23	-	0.020	0.015	-	Erratic logger data
2010-10-19	-	0.025	0.014	-	Stage affected by snow in channel
2011-03-30	Salt Dilution	-	0.010	-	Stage measurement not available
2011-04-19	Salt Dilution	-	0.009	-	Stage measurement not available
2011-05-17	Current Meter	0.339	0.120	0.127	
2011-05-18	Current Meter	0.363	0.261	-	Erratic logger data
2011-06-06	-	0.165	0.016	0.016	
2011-08-16	-	0.008	0.031	-	Erratic logger data
2011-10-17	-	0.173	0.008	-	Stage affected by snow in channel
2012-03-19	-	-	0.004	-	Unreliable discharge measurement
2012-04-17	-	-	0.007	-	Stage measurement not available
2012-05-06	-	-	0.040	-	Stage affected by snow in channel
2012-07-18	-	0.281	0.025	0.077	
2012-08-15	-	0.207	0.027	0.033	
2012-09-19	-	0.158	0.018	0.014	
2012-10-16	-	-	0.014	-	Stage measurement not available
2013-07-25	Flume	0.127	0.030	-	
2013-09-15	Flume	0.110	0.023	-	
2013-10-19	Flume	0.119	0.027	-	
2014-05-07	Flume	0.130	0.032	-	
2014-08-05	Flume	0.119	0.027	-	
2014-10-17	Flume	0.073	0.013	-	
2015-07-31	Flume	0.187	0.054	-	
2015-10-14	Flume	0.149	0.038	-	
2016-05-03	Flume	0.260	0.090	-	
2016-07-14	Flume	0.145	0.038	-	
2017-06-09	Flume	0.101	0.024	-	
2017-08-17	Flume	0.100	0.021	-	
2017-09-20	Flume	0.072	0.012	-	
2017-10-11	Flume	0.021	0.002	-	
2018-05-16	Flume	0.044	0.006	-	
2018-06-12	Flume	0.018	0.002	-	
2018-07-13	Flume	0.030	0.004	-	
2018-08-17	Flume	0.030	0.004	-	
2018-09-09	Flume	0.040	0.006	-	
2019-05-04	Flume	-	0.001	-	Stage measurement not available
2019-05-12	Flume	-	0.003	-	Stage measurement not available
2019-05-20	Flume	-	0.005	-	Stage measurement not available
2019-05-27	Flume	-	0.002	-	Stage measurement not available
2019-06-03	Flume	-	0.007	-	Stage measurement not available
2019-07-05	Flume	-	0.008	-	Stage measurement not available
2019-08-06	Flume	-	0.005	-	Stage measurement not available
2019-10-01	Flume	0.039	0.003		
2019-10-08	Flume	-	0.005	-	Stage measurement not available
2020-05-07	Flume	-	0.003	-	Stage measurement not available
2020-06-02	Flume	-	0.008	-	Stage measurement not available
2020-07-05	Flume	-	0.008	-	Stage measurement not available
2020-08-02	Flume	-	0.111	-	Stage measurement not available
2020-09-02	Flume	0.040	0.005	-	
2020-10-04	Flume	0.004	0.002	-	
2020-12-02	Flume	-	0.003	-	Stage measurement not available
2021-01-05	Salt Dilution	-	0.003	-	Stage measurement not available
2021-05-03	Salt Dilution	-	0.003	-	Stage measurement not available
2021-07-03	Salt Dilution	-	0.006	-	Stage measurement not available
2021-08-03	Salt Dilution	-	0.010	-	Stage measurement not available
2021-10-02	Salt Dilution	-	0.004	-	Stage measurement not available
2021-10-30	Salt Dilution	-	0.003	-	Stage measurement not available
2021-11-07	Salt Dilution	-	0.006	-	Stage measurement not available
2021-12-06	Salt Dilution	-	0.004	-	Stage measurement not available
2022-05-06	Salt Dilution	-	0.004	-	Stage measurement not available
2022-06-04	Salt Dilution	-	0.006	-	Stage measurement not available
2022-07-08	Salt Dilution	-	0.001	-	Stage measurement not available
2022-08-02	Salt Dilution	-	0.006	-	Stage measurement not available
2022-09-03	Salt Dilution	0.043	0.009	-	
2022-10-07	Flume	0.040	0.007	-	
2022-11-03	Salt Dilution	-	0.010	-	Stage measurement not available
2022-12-01	Salt Dilution	-	0.006	-	Stage measurement not available

Notes:
1. Stage measurements for the period 2007 to 2012 are as reported in Knight Piésold (2013). Stage measurements for the period 2013 to 2022 are the staff gauge readings relative to the staff gauge datum from 2012.
2. A V-notch weir was installed in 2009, and replaced with a Parshall flume in August 2011.

Table 3-12:
Station W29 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2010-10-19	Current Meter	-	0.359	-	-	Stage measurement not available
2011-03-30	Salt Dilution	-	0.200	-	-	Stage measurement not available
2011-05-17	Current Meter	-	2.309	-	-	Stage measurement not available
2011-06-08	Current Meter	3.639	0.776	0.791	2%	
2011-06-28	Current Meter	3.630	0.839	0.735	-12%	
2011-08-16	-	3.788	1.971	1.986	1%	
2011-10-17	-	3.647	0.722	-	-	Stage affected by snow in channel
2011-11-16	Salt Dilution	-	0.377	-	-	Stage measurement not available
2011-12-06	Salt Dilution	-	0.269	-	-	Stage measurement not available
2012-05-04	Current Meter	3.644	0.859	-	-	Stage affected by snow in channel
2012-06-14	-	3.749	-	1.591	-5%	Discharge measurement not available
2012-07-18	-	3.702	-	-	-	Discharge measurement not available
2012-08-16	Current Meter	3.626	0.711	0.703	-1%	
2012-10-17	Current Meter	3.581	0.447	-	-	Stage affected by snow in channel
2012-11-20	Salt Dilution	-	0.264	-	-	Stage measurement not available
2012-12-17	Salt Dilution	-	0.281	-	-	Stage measurement not available
2013-02-19	Salt Dilution	-	0.350	-	-	Potentially unreliable flow measurement
2013-04-15	Current Meter	0.298	0.165	-	-	Stage affected by snow in channel
2013-05-21	Current Meter	0.366	1.513	1.628	8%	
2013-07-25	Current Meter	0.180	0.526	0.476	-9%	
2013-08-04	-	0.151	-	-	-	Discharge measurement not available
2013-09-14	Current Meter	0.275	0.793	0.884	11%	
2013-10-19	Current Meter	0.217	0.566	0.619	9%	
2014-08-05	Current Meter	0.191	0.505	0.516	2%	
2014-10-17	Current Meter	0.274	0.793	-	-	Stage affected by snow in channel
2015-06-18	Current Meter	0.208	0.709	0.582	-18%	
2015-07-31	Current Meter	0.385	1.834	1.534	-16%	
2015-10-14	Salt Dilution	0.274	0.754	-	-	Potentially unreliable flow measurement
2016-07-14	Current Meter	0.329	1.189	1.332	12%	
2017-06-09	Current Meter	-	0.865	-	-	Stage measurement not available
2017-08-04	Current Meter	0.259	0.600	0.562	-6%	
2017-08-16	Current Meter	-	0.501	-	-	Stage measurement not available
2017-10-13	Salt Dilution	-	1.124	-	-	Stage affected by ice in channel
2018-04-24	Current Meter	-	0.256	-	-	Stage affected by ice in channel
2018-06-12	Current Meter	0.355	1.546	1.406	-9%	
2018-07-22	Current Meter	0.237	0.665	0.735	11%	
2018-08-21	Current Meter	0.275	1.064	0.933	-12%	
2018-09-09	Current Meter	0.275	0.954	0.933	-2%	
2018-10-16	Current Meter	-	0.360	-	-	Stage affected by ice in channel
2018-11-06	Salt Dilution	-	0.380	-	-	Stage affected by ice in channel
2018-11-29	Salt Dilution	-	0.251	-	-	Stage affected by ice in channel
2018-12-04	Salt Dilution	-	0.200	-	-	Stage affected by ice in channel
2018-12-31	Salt Dilution	-	0.210	-	-	Stage affected by ice in channel
2019-01-12	Salt Dilution	-	0.189	-	-	Stage affected by ice in channel
2019-01-21	Salt Dilution	-	0.193	-	-	Stage affected by ice in channel
2019-02-15	Salt Dilution	-	0.205	-	-	Stage affected by ice in channel
2019-02-24	Salt Dilution	-	0.179	-	-	Stage affected by ice in channel
2019-03-03	Salt Dilution	-	0.174	-	-	Stage affected by ice in channel
2019-03-15	Salt Dilution	-	0.541	-	-	Stage affected by ice in channel
2019-03-21	Salt Dilution	-	0.216	-	-	Stage affected by ice in channel
2019-04-03	Salt Dilution	-	0.202	-	-	Stage affected by ice in channel
2019-04-15	Salt Dilution	-	0.217	-	-	Stage affected by ice in channel
2019-04-20	Salt Dilution	-	0.220	-	-	Stage affected by ice in channel
2019-04-26	Salt Dilution	-	0.289	-	-	Stage affected by ice in channel
2019-04-27	Salt Dilution	-	0.217	-	-	Stage affected by ice in channel
2019-05-04	Salt Dilution	-	0.198	-	-	Stage affected by ice in channel
2019-06-10	Current Meter	0.182	1.756	0.481	-73%	
2019-08-02	Current Meter	-	0.282	-	-	Stage measurement not available
2019-08-08	Current Meter	-	0.268	-	-	Stage measurement not available
2019-09-06	Current Meter	0.132	0.279	0.288	3%	
2019-10-03	Salt Dilution	0.174	0.488	0.448	-8%	
2019-11-01	Salt Dilution	-	0.172	-	-	Stage affected by ice in channel
2019-12-03	Salt Dilution	-	0.175	-	-	Stage affected by ice in channel
2020-01-06	Salt Dilution	-	0.130	-	-	Stage affected by ice in channel
2020-02-09	Salt Dilution	-	0.174	-	-	Stage affected by ice in channel
2020-03-09	Salt Dilution	-	0.337	-	-	Stage affected by ice in channel
2020-04-20	Salt Dilution	-	0.316	-	-	Stage affected by ice in channel
2020-04-21	Salt Dilution	-	0.329	-	-	Stage affected by ice in channel
2020-04-22	Salt Dilution	-	0.345	-	-	Stage affected by ice in channel

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2020-04-23	Salt Dilution	-	0.363	-	-	Stage affected by ice in channel
2020-04-24	Salt Dilution	-	0.319	-	-	Stage affected by ice in channel
2020-04-25	Salt Dilution	-	0.293	-	-	Stage affected by ice in channel
2020-04-26	Salt Dilution	-	0.284	-	-	Stage affected by ice in channel
2020-04-27	Salt Dilution	-	0.165	-	-	Stage affected by ice in channel
2020-05-06	Salt Dilution	0.226	0.778	0.681	-12%	
2020-07-04	Current Meter	0.256	0.767	0.832	9%	
2020-07-21	Current Meter	0.280	1.886	0.961	-49%	
2020-08-03	Current Meter	-	1.690	-	-	Stage measurement not available
2020-08-10	Current Meter	0.295	2.103	1.045	-50%	
2020-09-01	Current Meter	0.314	1.828	1.154	-37%	
2020-12-07	Salt Dilution	-	0.390	-	-	Stage affected by ice in channel
2021-01-03	Salt Dilution	-	0.320	-	-	Average of two salt dilutions (RPD = 17%)
2021-03-06	Salt Dilution	-	0.191	-	-	Average of two salt dilutions (RPD = 1%)
2021-02-04	Salt Dilution	-	-	-	-	Two measurements made, both in error
2021-04-07	Salt Dilution	-	0.171	-	-	Average of two salt dilutions (RPD = 16%)
2021-05-01	Salt Dilution	-	0.169	-	-	Average of two salt dilutions (RPD = 8%)
2021-06-19	Current Meter	0.216	0.531	0.634	19%	
2021-07-04	Current Meter	0.172	0.390	0.440	13%	
2021-08-05	Current Meter	0.189	1.077	0.512	-53%	
2021-10-03	Salt Dilution	-	0.714	-	-	Stage measurement not available
2021-11-15	Salt Dilution	-	0.507	-	-	Stage measurement not available
2021-12-03	Salt Dilution	-	0.259	-	-	Average of two salt dilutions (RPD = 0%)
2022-01-02	Salt Dilution	-	0.236	-	-	Average of two salt dilutions (RPD = 4%)
2022-02-04	Salt Dilution	-	0.210	-	-	Average of two salt dilutions (RPD = 0%)
2022-03-03	Salt Dilution	-	0.192	-	-	Average of two salt dilutions (RPD = 2%)
2022-04-04	Salt Dilution	-	0.177	-	-	Average of two salt dilutions (RPD = 2%)
2022-05-08	Salt Dilution	-	0.229	-	-	Average of two salt dilutions (RPD = 10%)
2022-06-25	Current Meter	0.292	1.157	1.028	-11%	
2022-07-01	Salt Dilution	0.278	1.723	0.950	-45%	Single measurement
2022-08-01	Current Meter	0.255	0.949	0.827	-13%	
2022-09-05	Current Meter	0.259	0.823	0.848	3%	
2022-10-02	Rhodamine Dilution	0.400	0.875	1.702	95%	
2022-11-04	Salt Dilution	-	0.914	-	-	Average of two salt dilutions (RPD = 7%)
2022-12-02	Salt Dilution	-	0.710	-	-	Average of two salt dilutions (RPD = 15%)
Average Error (%)					-7%	
Standard Error (%)					28%	

Notes:
1. Measurements highlighted in grey were not included in rating curve development as they were conducted in ice-affected waters, lack a corresponding staff gauge reading, or the discharge measurements was of low quality.
2. Stage measurements for the period 2007 to 2012 are as reported in Knight Piésold (2013). Stage measurements for the period 2013 to 2022 are the staff gauge readings relative to the staff gauge datum from 2012.
3. Station measurements considered unreliable. Measurements continued to comply with QZ14-041-1 requirements.

Table 3-13:
Station W45 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Comments
2017-10-11	Salt Dilution	-	0.016	Stage measurement not available
2018-05-16	Salt Dilution	-	0.086	Stage measurement not available
2018-06-12	Salt Dilution	-	0.006	Stage measurement not available
2018-07-02	Salt Dilution	0.120	0.006	
2018-07-13	Salt Dilution	0.112	0.003	
2018-08-17	Salt Dilution	0.122	0.006	
2018-09-23	Salt Dilution	0.124	0.006	
2018-10-25	Salt Dilution	0.135	0.006	
2018-11-21	Salt Dilution	-	0.007	Stage measurement not available
2018-12-03	Salt Dilution	-	0.004	Stage measurement not available
2018-12-17	Salt Dilution	-	0.005	Stage measurement not available
2019-04-14	Salt Dilution	-	0.013	Stage measurement not available
2019-04-23	Salt Dilution	-	0.014	Stage measurement not available
2019-04-26	Salt Dilution	-	0.004	Stage measurement not available
2019-05-04	Salt Dilution	-	0.003	Stage measurement not available
2019-05-12	Salt Dilution	-	0.014	Stage measurement not available
2019-05-20	Salt Dilution	-	0.006	Stage measurement not available
2019-05-27	Salt Dilution	-	0.003	Stage measurement not available
2019-06-03	Salt Dilution	0.132	0.003	
2019-07-05	Salt Dilution	0.240	0.001	
2019-08-06	Salt Dilution	-	0.001	Stage measurement not available
2019-09-19	Salt Dilution	0.261	0.003	
2019-10-01	Salt Dilution	0.254	0.003	
2019-10-08	Salt Dilution	0.253	0.003	
2019-11-05	Salt Dilution	-	0.002	Stage measurement not available
2019-11-05	Salt Dilution	-	0.004	Stage measurement not available
2020-02-07	Salt Dilution	-	0.002	Stage measurement not available
2020-05-07	Salt Dilution	-	0.019	Stage measurement not available
2020-06-02	Salt Dilution	0.091	0.002	
2020-07-05	Salt Dilution	0.102	0.006	
2020-07-21	Salt Dilution	-	0.004	Stage measurement not available
2020-08-02	Salt Dilution	0.110	0.080	
2020-09-02	Salt Dilution	0.150	0.077	
2020-10-04	Salt Dilution	-	0.010	Stage measurement not available
2020-11-02	Salt Dilution	-	0.007	Stage measurement not available
2020-12-02	Salt Dilution	-	0.009	Stage measurement not available

Date	Method	Stage (m)	Discharge (m^3/s)	Comments
2021-01-02	Salt Dilution	-	0.008	Average of two measurements (RPD = 0%)
2021-02-02	Salt Dilution	-	0.004	Average of two measurements (RPD = 0%)
2021-03-09	Salt Dilution	-	0.002	Average of two measurements (RPD = 0%)
2021-05-03	Salt Dilution	0.081	0.025	Average of two measurements (RPD = 8%)
2021-07-03	Salt Dilution	0.012	0.002	Average of two measurements (RPD = 0%)
2021-08-03	Salt Dilution	0.041	0.003	Average of two measurements (RPD = 0%)
2021-10-30	Salt Dilution	0.044	0.006	Average of two measurements (RPD = 0%)
2021-11-07	Salt Dilution	-	0.005	Average of two measurements (RPD = 0%)
2021-12-06	Salt Dilution	-	0.005	Average of two measurements (RPD = 0%)
2022-01-03	Salt Dilution	-	0.004	Average of two measurements (RPD = 0%)
2022-02-02	Salt Dilution	-	0.005	Average of two measurements (RPD = 0%)
2022-03-02	Salt Dilution	-	0.004	Average of two measurements (RPD = 25%)
2022-04-02	Salt Dilution	-	0.003	Average of two measurements (RPD = 0%)
2022-05-06	Salt Dilution	0.132	0.053	Average of two measurements (RPD = 4%)
2022-06-04	Salt Dilution	0.030	0.002	Average of two measurements (RPD = 0%)
2022-07-08	Salt Dilution	0.001	0.001	Average of two measurements (RPD = 0%)
2022-08-02	Salt Dilution	0.020	0.026	Average of two measurements (RPD = 4%)
2022-09-03	Salt Dilution	0.010	0.005	Average of two measurements (RPD = 71%)
2022-10-07	Flume	0.002	0.005	
2022-11-05	Flume	0.013	0.007	
2022-12-01	Salt Dilution	0.015	0.006	Average of two measurements (RPD = 0%)

Notes:
[1]A Parshall flume was installed in August 2022.
[2]Due to the limited number of measurements for this station, no rating curve has been developed.

Table 3-14:
Station W99 – Discharge Measurement Summary

Date	Method	Stage (m)	Discharge (m^3/s)	Rating Curve Discharge (m^3/s)	Rating Curve Error (%)	Comments
2019-06-03	Current Meter	-	1.283	-	-	Stage measurement not available
2019-04-14	Salt Dilution	-	1.625	-	-	Stage measurement not available
2019-04-22	Salt Dilution	-	1.035	-	-	Stage measurement not available
2019-05-04	current meter	-	0.254	-	-	Stage measurement not available
2019-06-10	Current Meter	0.178	0.558	0.560	1%	
2019-07-02	Current Meter	0.141	0.373	0.380	2%	
2019-08-02	Current Meter	0.123	0.300	0.303	1%	
2019-10-03	Salt Dilution	0.161	0.426	0.474	11%	
2019-10-07	Salt Dilution	-	0.167	-	-	Stage measurement not available
2019-10-16	Salt Dilution	0.155	0.521	0.445	-15%	
2019-11-01	Salt Dilution	-	3.435	-	-	Stage measurement not available
2019-12-03	Salt Dilution	-	0.280	-	-	Stage measurement not available
2020-01-06	Salt Dilution	-	0.130	-	-	Stage measurement not available
2020-02-09	Salt Dilution	-	0.172	-	-	Stage measurement not available
2020-03-09	Salt Dilution	-	0.132	-	-	Stage measurement not available
2020-04-12	Salt Dilution	-	0.147	-	-	Stage measurement not available
2020-05-06	Current Meter	0.278	1.226	1.181	-4%	
2020-06-04	Current Meter	0.440	2.661	2.537	-5%	
2020-07-04	Current Meter	0.325	1.572	1.532	-3%	
2020-08-03	Current Meter	0.379	1.849	1.979	7%	
2020-09-01	Current Meter	0.400	2.124	2.165	2%	
2020-10-06	Current Meter	0.322	1.596	1.509	-6%	
2020-11-03	Salt Dilution	-	0.750	-	-	Stage affected by ice in channel
2020-12-07	Salt Dilution	-	0.521	-	-	Stage affected by ice in channel
2021-01-03	Salt Dilution	-	0.368	-	-	Average of two salt dilutions (RPD = 13%)
2021-02-04	Salt Dilution	-	0.163	-	-	Average of two salt dilutions (RPD = 1%)
2021-03-06	Salt Dilution	-	0.220	-	-	Average of two salt dilutions (RPD = 7%)
2021-04-07	Salt Dilution	-	0.205	-	-	Average of two salt dilutions (RPD = 5%)
2021-05-01	Salt Dilution	-	0.192	-	-	Average of two salt dilutions (RPD = 0%)
2021-06-19	Current Meter	-	0.760	-	-	Stage measurement not available
2021-07-04	Current Meter	0.183	0.599	0.589	-2%	
2021-08-05	Current Meter	0.249	0.978	0.983	1%	
2021-11-19	Salt Dilution	-	0.288	-	-	Average of two salt dilutions (RPD = 3%)
2021-12-03	Salt Dilution	-	0.233	-	-	Average of two salt dilutions (RPD = 11%)
2022-01-02	Salt Dilution	-	0.228	-	-	Average of two salt dilutions (RPD = 12%)
2022-02-04	Salt Dilution	-	0.197	-	-	Average of two salt dilutions (RPD = 17%)
2022-03-03	Salt Dilution	-	0.174	-	-	Average of two salt dilutions (RPD = 1%)
2022-04-04	Salt Dilution	-	0.160	-	-	Average of two salt dilutions (RPD = 4%)
2022-05-08	Salt Dilution	-	1.033	-	-	Average of two salt dilutions (RPD = 4%)
2022-05-21	Salt Dilution	0.428	1.438	2.423	68%	
2022-06-25	Current Meter	0.270	1.370	1.125	-18%	
2022-07-01	Salt Dilution	0.250	0.699	0.990	42%	Average of two salt dilutions (RPD = 3%)
2022-08-01	Current Meter	0.230	0.934	0.862	-8%	
2022-09-05	Current Meter	0.239	0.933	0.918	-2%	
2022-10-02	Rhodamine Dilution	0.410	1.731	2.255	30%	
2022-11-04	Salt Dilution	-	0.630	-	-	Average of two salt dilutions (RPD = 3%)
2022-12-02	Salt Dilution	-	0.401	-	-	Average of two salt dilutions (RPD = 0%)
Average Error (%)					5%	
Standard Error (%)					21%	

Notes:
Measurements highlighted in grey were not included in rating curve development as they were conducted in ice-affected waters, lack a corresponding staff gauge reading, or the discharge measurements was of low quality.

Table 3-15:
Station W39 and W49- Discharge Measurements Summary

Station ID	Station Name	Date	Discharge (m^3/s)
W39	Haggart Creek above South McQuesten River	2017-08-17	0.995
		2018-08-20	2.125
		2019-05-03	0.995
		2019-07-02	2.125
		2019-11-12	1.065
		2019-11-12	0.672
		2020-07-03[2]	4.872
		2020-12-05	1.66
		2021-02-04	1.11
		2021-06-19	2.0231
		2021-10-11	2.053
		2022-06-26	2.746
		2022-09-10	2.702
		2022-10-31	2.481
W49	South McQuesten River below Haggart Creek[3]	2017-08-17	4.523
		2018-06-14	19.334
		2019-05-03	4.975
		2019-07-02	4.562
		2019-11-12	1.283
		2020-01-02	0.296
		2020-05-05	0.851
		2020-09-23	18.131
		2020-11-05	8.9
		2021-05-09	35.635
		2022-06-26	10.11
		2022-09-10	8.531
		2022-10-16	13.720
		2022-10-30	10.439

Notes:
[1]Due to the limited number of measurements for these stations, no rating curves have been developed.
[2]Q2 W39 measurements were not achievable due to winter site access restrictions. W39 was relocated to a more accessible location on Haggart creek in July to mitigate this in the future.
[3]Ice precluded flow measurements in Q1 and Q2 of 2021, equipment malfunction prevented measurement in Q4.

Table 3-16:
Station PDI – Ditch A Outlet to LDSP – Discharge Measurement Summary

Date	Discharge (m^3/s)		Date	Discharge (m^3/s)
08-Apr-19	0.008		07-May-21	0.036
11-Apr-19	0.001		07-May-21	0.027
12-Apr-19	0.008		08-May-21	0.032
12-Apr-19	0.001		08-May-21	0.017
12-Apr-19	0.002		08-May-21	0.032
13-Apr-19	0.008		08-May-21	0.017
13-Apr-19	0.010		09-May-21	0.017
14-Apr-19	0.007		09-May-21	0.019
14-Apr-19	0.007		09-May-21	0.017
15-Apr-19	0.010		09-May-21	0.019
16-Apr-19	0.012		10-May-21	0.011
17-Apr-19	0.007		10-May-21	0.013
18-Apr-19	0.012		10-May-21	0.011
19-Apr-19	0.013		10-May-21	0.013
20-Apr-19	0.013		11-May-21	0.007
21-Apr-19	0.010		11-May-21	0.008
22-Apr-19	0.009		11-May-21	0.007
23-Apr-19	0.009		11-May-21	0.008
26-Apr-19	0.005		12-May-21	0.006
28-Apr-19	0.005		12-May-21	0.007
29-Apr-19	0.007		12-May-21	0.006
01-May-19	0.005		12-May-21	0.007
02-May-19	0.004		13-May-21	0.005
03-May-19	0.003		13-May-21	0.006
04-May-19	0.003		13-May-21	0.005
05-May-19	0.003		13-May-21	0.006
08-May-19	0.009		14-May-21	0.004
09-May-19	0.009		14-May-21	0.005
10-May-19	0.007		14-May-21	0.004
12-May-19	0.007		14-May-21	0.005
13-May-19	0.005		15-May-21	0.005
14-May-19	0.020		15-May-21	0.005
15-May-19	0.037		15-May-21	0.005
16-May-19	0.004		15-May-21	0.005
17-May-19	0.005		16-May-21	0.004
18-May-19	0.002		16-May-21	0.006
20-May-19	0.003		16-May-21	0.004
21-May-19	0.002		16-May-21	0.006

01-Jun-19	0.002		17-May-21	0.004
06-Jun-19	0.011		17-May-21	0.005
10-Jun-19	0.001		17-May-21	0.004
13-Jun-19	0.003		17-May-21	0.005
17-Jun-19	0.002		18-May-21	0.002
22-Jun-19	0.001		18-May-21	0.004
01-Jul-19	0.0003		18-May-21	0.002
13-Jul-19	0.0004		18-May-21	0.004
05-Aug-19	0.001		19-May-21	0.261
19-Sep-19	0.050		19-May-21	0.565
20-Apr-20	0.031		19-May-21	0.261
20-Apr-20	0.031		19-May-21	0.565
16-May-20	0.001		20-May-21	0.003
16-May-20	0.001		20-May-21	0.004
19-May-20	0.001		20-May-21	0.003
19-May-20	0.001		20-May-21	0.004
31-May-20	0.001		19-Jun-21	0.004
31-May-20	0.001		19-Jun-21	0.004
02-Jun-20	0.003		20-Jun-21	0.002
02-Jun-20	0.003		20-Jun-21	0.002
11-Aug-20	0.008		03-Jul-21	0.003
11-Aug-20	0.008		03-Jul-21	0.003
30-Aug-20	0.006		11-Aug-21	0.004
03-Sep-20	0.007		11-Aug-21	0.004
03-Sep-20	0.007		06-Oct-21	0.004
08-Sep-20	0.004		06-Oct-21	0.004
08-Sep-20	0.004		08-May-22	0.005
09-Oct-20	0.016		05-Jun-22	0.001
02-May-21	0.016		03-Jul-22	0.003
06-May-21	0.006		03-Aug-22	0.015
06-May-21	0.006		04-Sep-22	0.003
07-May-21	0.036		07-Oct-22	0.008
07-May-21	0.027			

Table 3-17:
Station PGS – Ditch A Platinum Gulch Seep - Discharge Measurement Summary

Date	Discharge (m^3/s)		Date	Discharge (m^3/s)
13-Apr-19	0.004		01-Jun-19	0.003
14-Apr-19	0.005		06-Jun-19	0.006
14-Apr-19	0.006		06-Jun-19	0.006
15-Apr-19	0.005		10-Jun-19	0.001
16-Apr-19	0.005		10-Jun-19	0.001
17-Apr-19	0.003		13-Jun-19	0.005
18-Apr-19	0.001		13-Jun-19	0.005
19-Apr-19	0.000		17-Jun-19	0.005
21-Apr-19	0.003		17-Jun-19	0.005
23-Apr-19	0.001		19-May-20	0.002
29-Apr-19	0.005		19-May-20	0.002
01-May-19	0.007		11-Aug-20	0.004
02-May-19	0.003		11-Aug-20	0.004
03-May-19	0.002		03-Sep-20	0.004
04-May-19	0.001		03-Sep-20	0.004
05-May-19	0.002		11-Oct-20	0.003
08-May-19	0.017		11-Oct-20	0.003
09-May-19	0.013		02-Apr-21	0.056
10-May-19	0.013		02-Apr-21	0.056
12-May-19	0.011		02-Apr-21	0.056
13-May-19	0.010		02-Apr-21	0.056
13-May-19	0.010		03-Jul-21	0.001
16-May-19	0.010		03-Jul-21	0.001
16-May-19	0.010		08-Aug-21	0.001
17-May-19	0.006		08-Aug-21	0.001
17-May-19	0.006		06-Oct-21	0.002
18-May-19	0.011		06-Oct-21	0.002
18-May-19	0.011		23-Jun-22	0.004
20-May-19	0.009		03-Jul-22	0.003
20-May-19	0.009		03-Aug-22	0.015
21-May-19	0.009		04-Sep-22	0.003
21-May-19	0.009		07-Oct-22	0.003
01-Jun-19	0.003			

Table 3-18:
Station EPS/DB4 – Flows from Future Ditch B Outlet to LDSP – Discharge Measurement Summary

Date	Discharge (m^3/s)		Date	Discharge (m^3/s)
08-Apr-19	0.001		10-Apr-21	0.041
11-Apr-19	0.006		06-May-21	0.037
11-Apr-19	0.002		07-May-21	0.066
12-Apr-19	0.001		07-May-21	0.066
12-Apr-19	0.003		08-May-21	0.059
12-Apr-19	0.001		08-May-21	0.073
13-Apr-19	0.004		09-May-21	0.048
14-Apr-19	0.001		09-May-21	0.087
14-Apr-19	0.002		10-May-21	0.034
15-Apr-19	0.005		10-May-21	0.027
16-Apr-19	0.007		11-May-21	0.021
17-Apr-19	0.005		11-May-21	0.024
18-Apr-19	0.010		12-May-21	0.009
19-Apr-19	0.009		12-May-21	0.005
20-Apr-19	0.007		13-May-21	0.003
21-Apr-19	0.007		13-May-21	0.003
23-Apr-19	0.006		14-May-21	0.002
26-Apr-19	0.002		14-May-21	0.002
28-Apr-19	0.002		15-May-21	0.002
29-Apr-19	0.003		15-May-21	0.002
01-May-19	0.012		16-May-21	0.001
02-May-19	0.006		16-May-21	0.001
03-May-19	0.003		17-May-21	0.001
04-May-19	0.003		17-May-21	0.001
05-May-19	0.001		18-May-21	0.000
08-May-19	0.027		19-May-21	0.212
09-May-19	0.018		19-May-21	0.284
10-May-19	0.036		20-May-21	0.000
11-May-19	0.018		20-May-21	0.002
12-May-19	0.013		19-Jun-21	0.001
13-May-19	0.009		20-Jun-21	0.002
14-May-19	0.010		03-Jul-21	0.001
15-May-19	0.007		08-Aug-21	0.005
16-May-19	0.012		10-Sep-21	0.010
17-May-19	0.004		22-Oct-21	0.017
18-May-19	0.005		08-Nov-21	0.006
19-May-19	0.006		18-May-22	0.008
20-May-19	0.007		07-May-22	0.076
21-May-19	0.008		06-Jun-22	0.004
01-Jun-19	0.003		04-Jun-22	0.007
06-Jun-19	0.002		08-Jul-22	0.005
13-Jun-19	0.001		03-Aug-22	0.046
17-Jun-19	0.001		03-Sep-22	0.010
05-Aug-19	0.001		07-Oct-22	0.020
19-Sep-19	0.020		03-Nov-22	0.016
10-May-20	0.130		01-Dec-22	0.007
09-Oct-20	0.004			

Table 3-19:
Station UND – LDSP Underdrain – Discharge Measurement Summary

Date	Discharge (m^3/s)		Date	Discharge (m^3/s)
19-Jan-20	0.002		09-Jul-21	0.002
06-Feb-20	0.001		03-Aug-21	0.002
07-Mar-20	0.002		02-Sep-21	0.002
08-Apr-20	0.002		02-Oct-21	0.003
10-May-20	0.002		08-Nov-21	0.002
01-Jun-20	0.002		07-Dec-21	0.004
01-Jul-20	0.002		03-Jan-22	0.002
02-Aug-20	0.008		02-Feb-22	0.003
25-Aug-20	0.001		05-Mar-22	0.002
03-Sep-20	0.003		02-Apr-22	0.002
06-Oct-20	0.002		07-May-22	0.004
02-Nov-20	0.002		27-Jun-22	0.004
02-Dec-20	0.002		03-Jul-22	0.002
02-Jan-21	0.002		02-Aug-22	0.002
05-Feb-21	0.002		02-Sep-22	0.004
09-Mar-21	0.003		07-Oct-22	0.003
02-Apr-21	0.003		10-Nov-22	0.002
10-May-21	0.002		05-Dec-22	0.003
22-Jun-21	0.003			

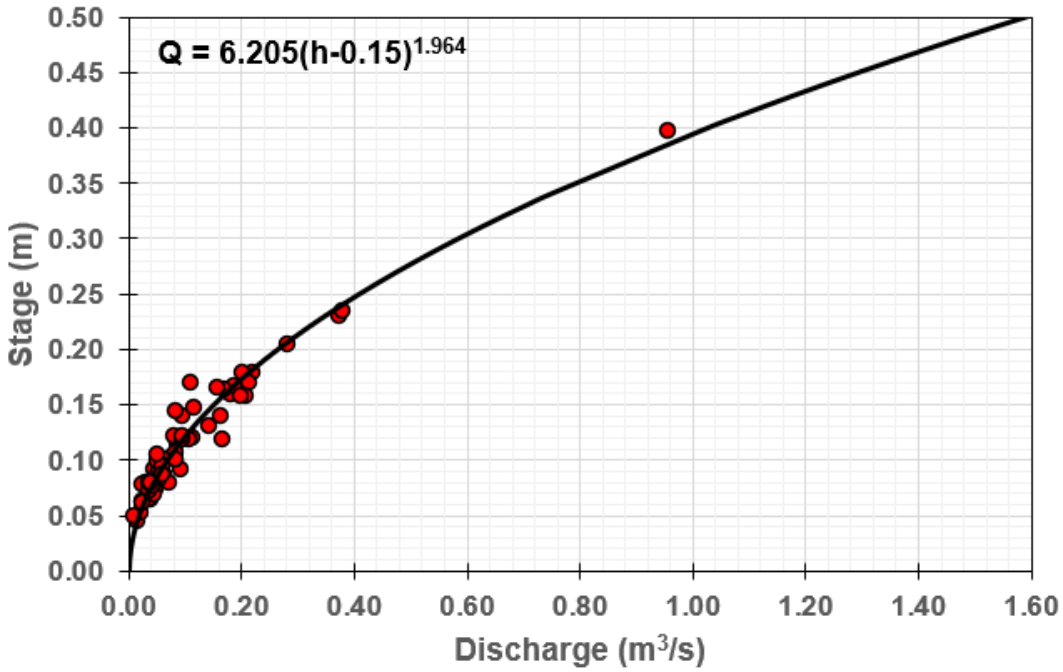


Figure 3-1: Rating curve for station W1 (2012 – 2022).

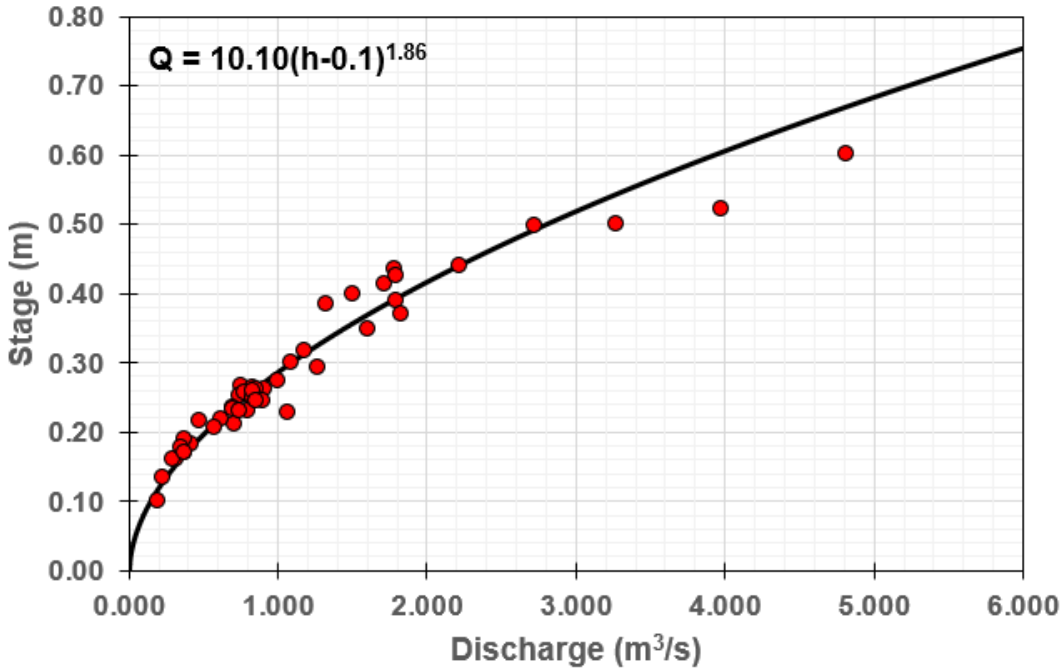


Figure 3-2: Rating curve for station W4 (2012 – 2022).

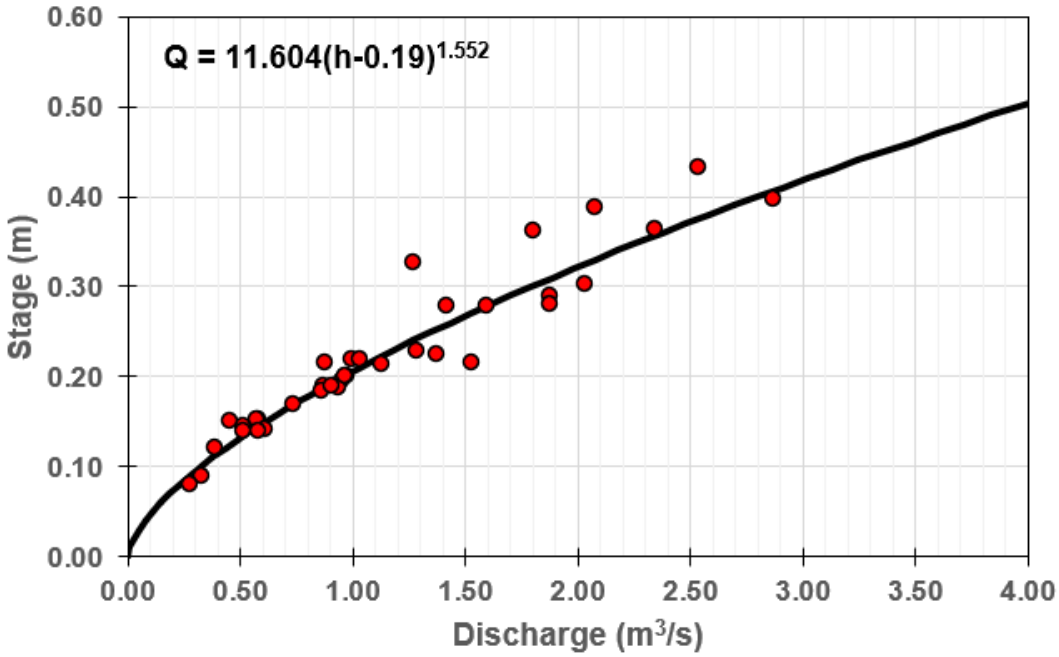


Figure 3-3: Rating curve for station W5 (2012 – 2022).

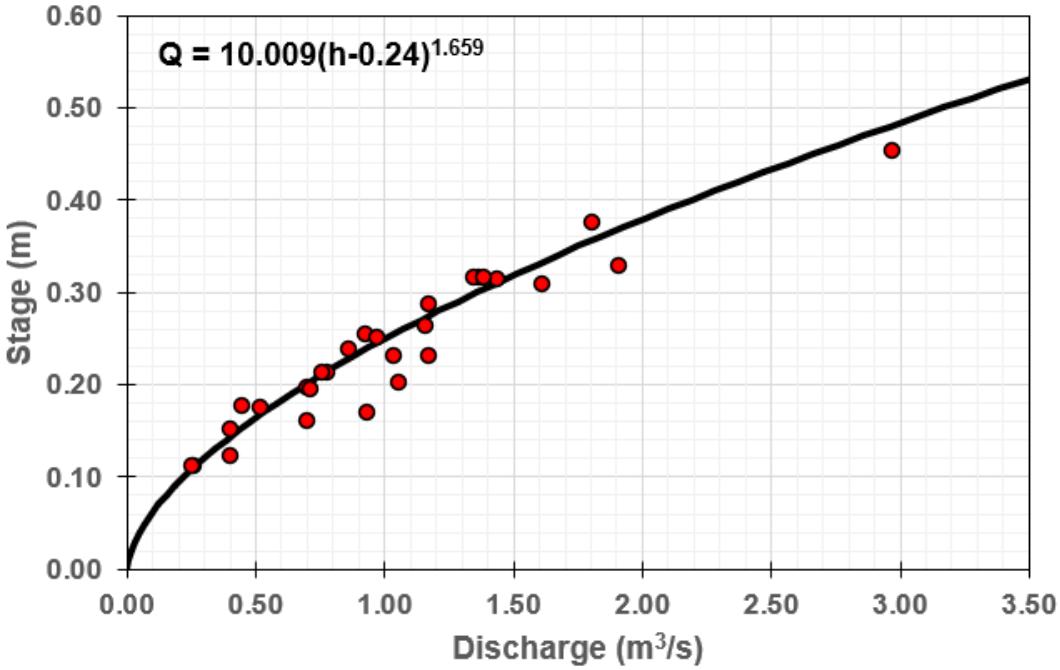


Figure 3-4: Rating curve for station W6 (2012 – 2022).

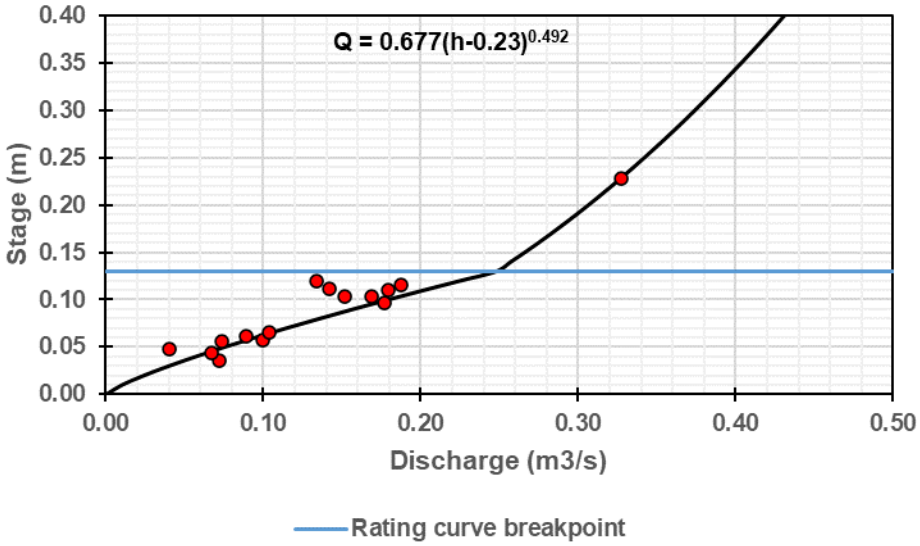


Figure 3-5: Preliminary rating curve for station W21 (2018 – 2022). A breakpoint in rating curve was introduced at 0.23 m to capture the effect of overbank flow.

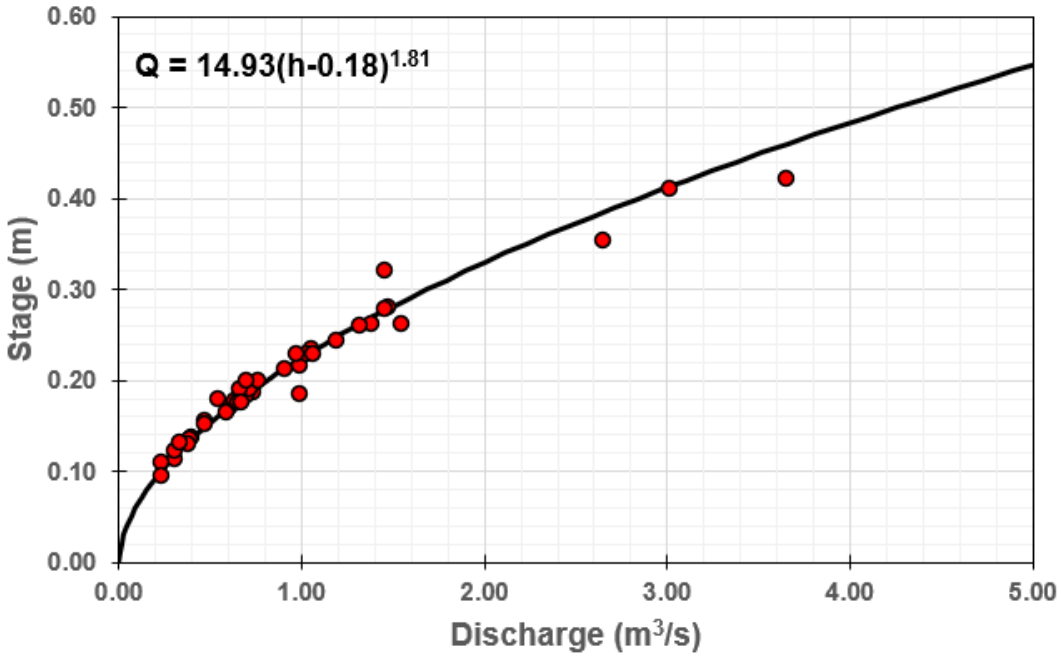


Figure 3-6: Rating curve for station W22 (2012 – 2022).

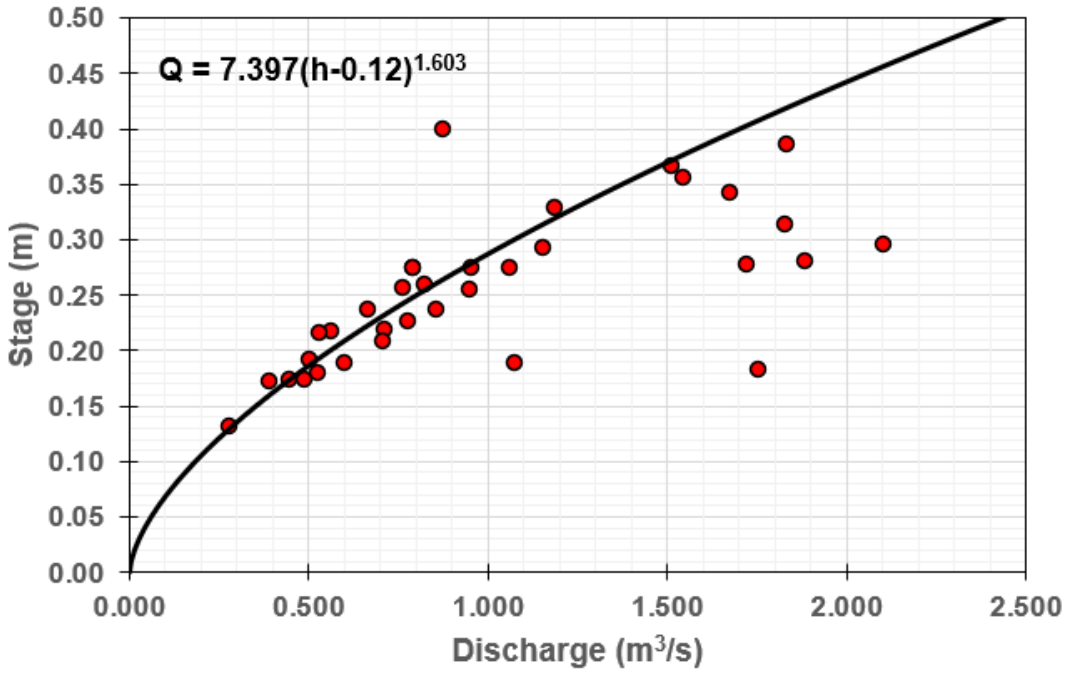


Figure 3-7: Rating curve for station W29 (2012 – 2022).

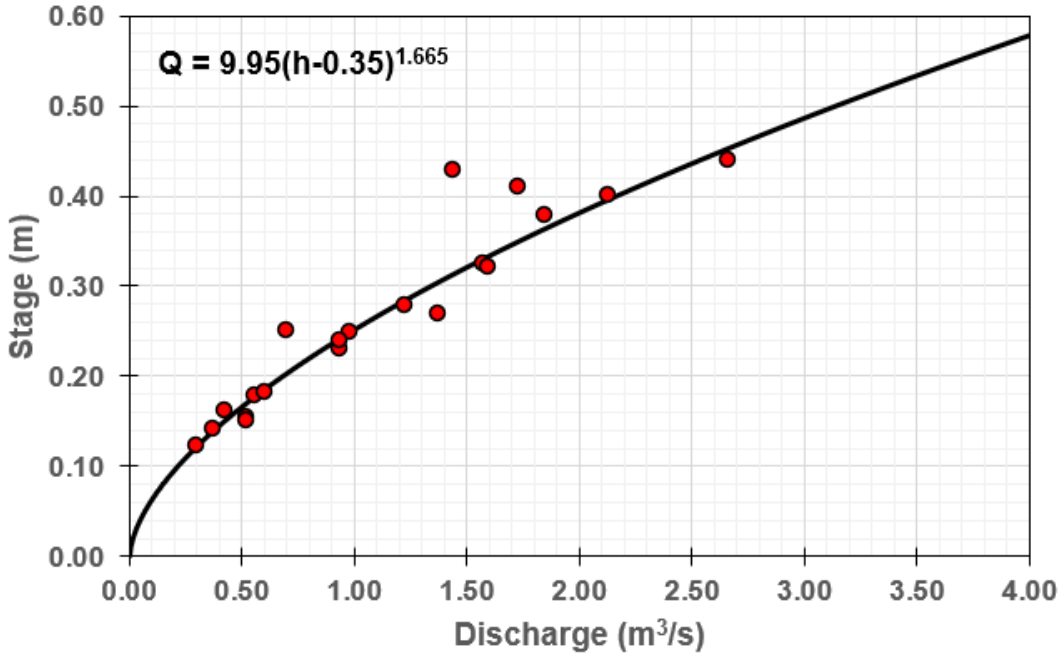


Figure 3-8: Rating curve for station W99 (2019 – 2022).

3.4 Winter Streamflow Interpolation

Due to extensive channel icing and complete freezing to the bed in some cases, reliable continuous water level data is not available for the winter season (mid-October to early May in most years). However, spot flow measurements collected during the winter water quality sampling trips are available for most years and most stations, with the exception of W26 and W27, which freeze to bed during the winter months. Where these measurements span the majority of the winter season, streamflows were estimated by interpolating between the spot flow measurements. This was done by assuming that mid-winter melt or rain events do not occur at site, and that the streamflows are a result of recession from the open-water season discharge regime to a steady-state baseflow driven by the local groundwater system discharging to the stream channel. This recession curve is defined by the equation (Maidment, 1993):

$$Q_t = Q_0\, e^{-kt}$$

Where:

Q_t = discharge at time t (m^3/s)

Q_0 = initial discharge (both Q_t and Q_0 are measured within the same straight segment

k = decay rate (negative for declining flows)

t = number of days between spot measurements (interpolation period)

The decay rate, denoted k, was unique to each pair of subsequent discharge measurements, and was commonly in the range of -1×10^{-3} to -0.5×10^{-5}.

4. Results

4. Results

4.1 Streamflow Records – Discharge

The computed flow records for all site stations listed in Table 2-1 are presented as average daily discharge time-series and plotted with spot discharge measurements and interpolated baseflows in Figure 4-1 through Figure 4-11. The same flow records are also presented as unit yield plots, with each plot showing annual data for all stations on a single plot (refer to Figure 4-13 to Figure 4-27). As a rating curve for W45 has not been developed, continuous water level data are presented instead for this station in Figure 4-10 for 2018-2022. Adjusted water levels in 2022 show considerable deviations from those measured for 2018 through 2020, likely due to continued channel instability. In order to measure streamflow at this station more accurately, W45 was instrumented with a Parshall flume in August 2022.

While discharge magnitude varies with watershed area (*i.e.,* larger basin areas result in higher discharge values), it is more often instructive to compare runoff and/or unit yields to remove the influence of watershed area. The variation in runoff and yields across the gauged basins at the Project site is relatively low, with unit yields averaging 14 ± 2 L/s/km^2 and an average runoff of 192 ± 40 mm for the open water season (Table 4-1).

W4 and W27 display slightly lower average unit yields than the other stations, and W1, W5, W29 and W99 yield slightly more water on average. There appears to be lower than average yields at W26, however, this result is biased lower by the absence of data for the month of May, which is typically the month with the highest proportion of annual runoff. W1 appears to experience the highest overall yields, and in particular, the highest magnitude freshet (in yield terms). Higher than average yields at this station are sustained throughout the seasonal falling limb from September through November.

Table 4-2 through Table 4-21 present the monthly summaries of streamflow as discharge, unit yields and runoff, by station. As noted in Section 2.2.3, reliable continuous water level data are not available for W29 for 2016 through 2019, and much of 2020.

Table 4-1:
Summary of monthly average discharge, unit yield and runoff for Project site hydrometric stations.

Station (Discharge Area)	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average/Total
W1	Average Discharge (m^3/s)	--	--	--	0.024	0.264	0.137	0.093	0.088	0.088	0.109	0.069	--	0.109
(6.8 km^2)	Average Yield ($L/s/km^2$)	--	--	--	3.5	38.9	20.1	13.7	12.9	12.9	16.0	10.1	--	16.0
	Runoff (mm)	--	--	--	5	61	50	36	33	33	23	4	--	245
W4	Average Discharge (m^3/s)	--	--	--	0.376	2.229	1.236	0.864	0.891	0.907	0.865	--	--	1.053
(76.9 km^2)	Average Yield ($L/s/km^2$)	--	--	--	4.9	29.0	16.1	11.2	11.6	11.8	11.3	--	--	13.7
	Runoff (mm)	--	--	--	1	56	40	30	30	31	18	--	--	207
W5	Average Discharge (m^3/s)	--	--	--	--	3.025	1.500	1.065	1.042	1.060	1.166	--	--	1.476
(97.5 km^2)	Average Yield ($L/s/km^2$)	--	--	--	--	31.0	15.4	10.9	10.7	10.9	12.1	--	--	15.2
	Runoff (mm)	--	--	--	--	62	38	29	28	28	15	--	--	200
W6	Average Discharge (m^3/s)	--	--	--	--	3.821	1.273	0.955	1.096	1.188	1.148	0.574	--	1.437
(100.9 km^2)	Average Yield ($L/s/km^2$)	--	--	--	--	31.5	10.7	8.7	10.5	11.2	9.9	5.7	--	12.6
	Runoff (mm)	--	--	--	--	64	29	24	28	30	15	3	--	193
W21	Average Discharge (m^3/s)	--	--	--	--	0.260	0.166	0.094	0.119	0.093	0.116	--	--	0.142
(10.1 km^2)	Average Yield ($L/s/km^2$)	--	--	--	--	25.7	17.5	9.9	13.5	9.9	11.9	--	--	14.8
	Runoff (mm)	--	--	--	--	49	33	19	15	16	13	--	--	145
W22	Average Discharge (m^3/s)	--	--	--	0.407	2.137	1.067	0.725	0.826	0.800	0.824	0.937	--	0.965
(66.8 km^2)	Average Yield ($L/s/km^2$)	--	--	--	6.1	32.0	16.0	10.8	12.4	12.0	12.3	14.0	--	14.4
	Runoff (mm)	--	--	--	9	60	40	28	30	30	17	15	--	228
W26	Average Discharge (m^3/s)	--	--	--	--	0.029	0.015	0.011	0.013	0.011	0.010	--	--	0.015
(1.3 km^2)	Average Yield ($L/s/km^2$)	--	--	--	--	22.3	11.3	8.6	10.1	8.5	7.8	--	--	11.4
	Runoff (mm)	--	--	--	--	40	24	23	27	21	9	--	--	144
W27	Average Discharge (m^3/s)	--	--	--	0.007	0.054	0.026	0.022	0.020	0.018	0.023	--	--	0.024
(2.7 km^2)	Average Yield ($L/s/km^2$)	--	--	--	2.5	20.0	9.5	8.3	7.4	6.6	8.5	--	--	9.0
	Runoff (mm)	--	--	--	3.0	38	23	19	19	17	9	--	--	127
W29	Average Discharge (m^3/s)	--	--	--	--	2.587	1.279	1.095	1.145	1.075	1.052	--	--	1.372
(8 km^2)	Average Yield ($L/s/km^2$)	--	--	--	--	30.1	14.9	12.7	13.3	12.5	12.2	--	--	15.9
	Runoff (mm)	--	--	--	--	43	32	34	35	32	19	--	--	195
W99	Average Discharge (m^3/s)	--	--	--	1.503	2.525	1.759	0.949	0.974	0.948	1.451	--	--	1.444
(90.1 km^2)	Average Yield ($L/s/km^2$)	--	--	--	17.0	28.6	19.9	10.7	11.0	10.7	16.4	--	--	16.4
	Runoff (mm)	--	--	--	19	56	51	28	30	28	20	--	--	230

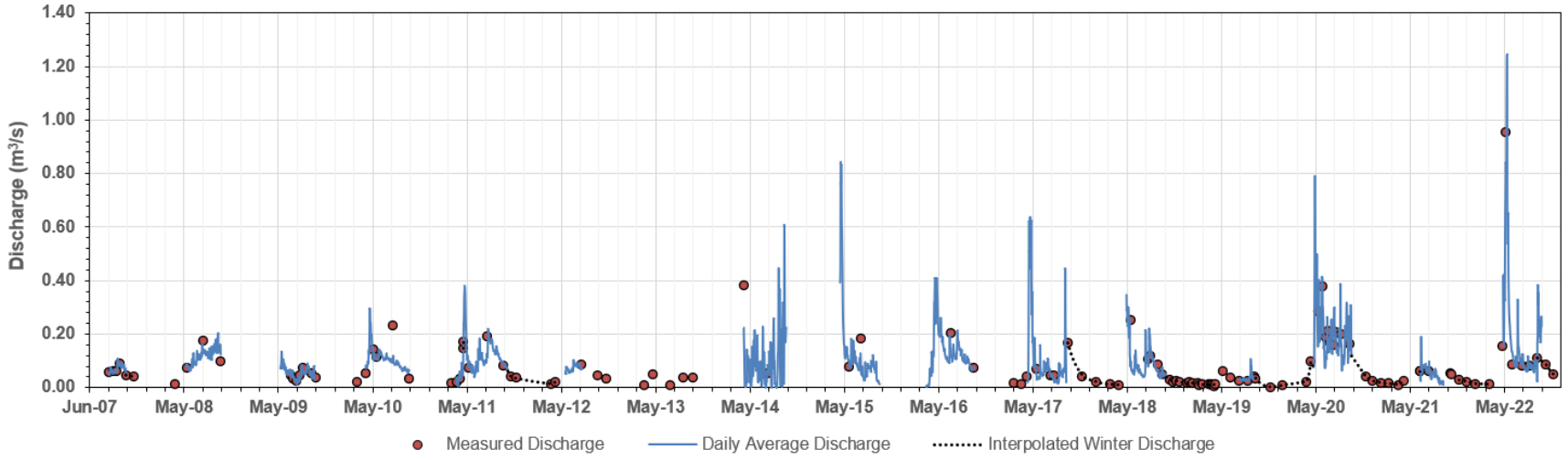
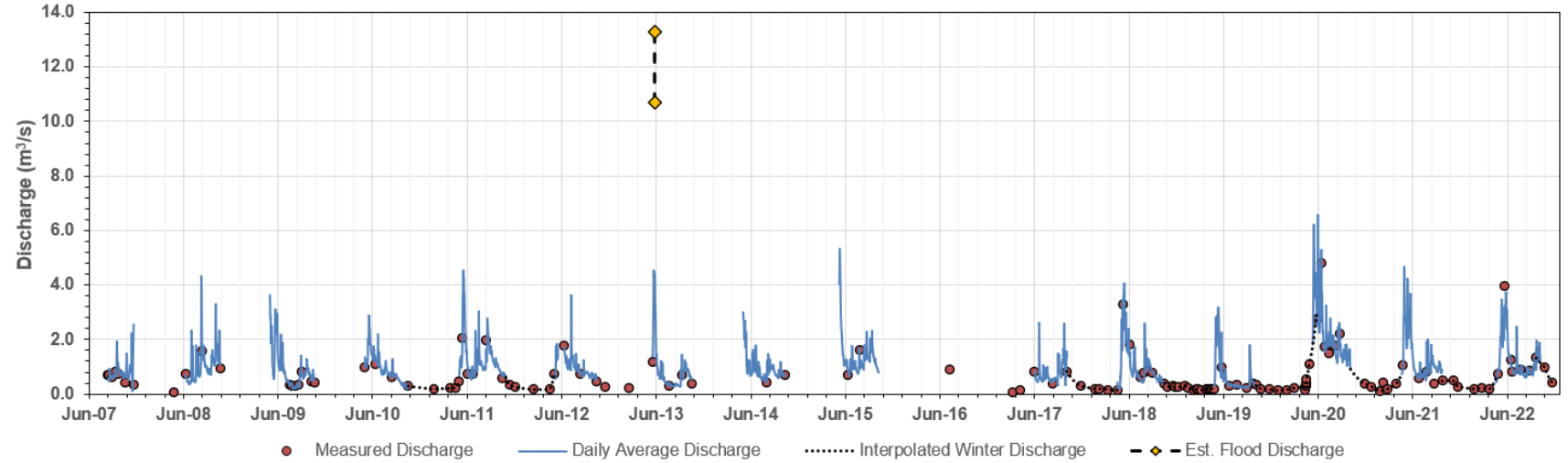
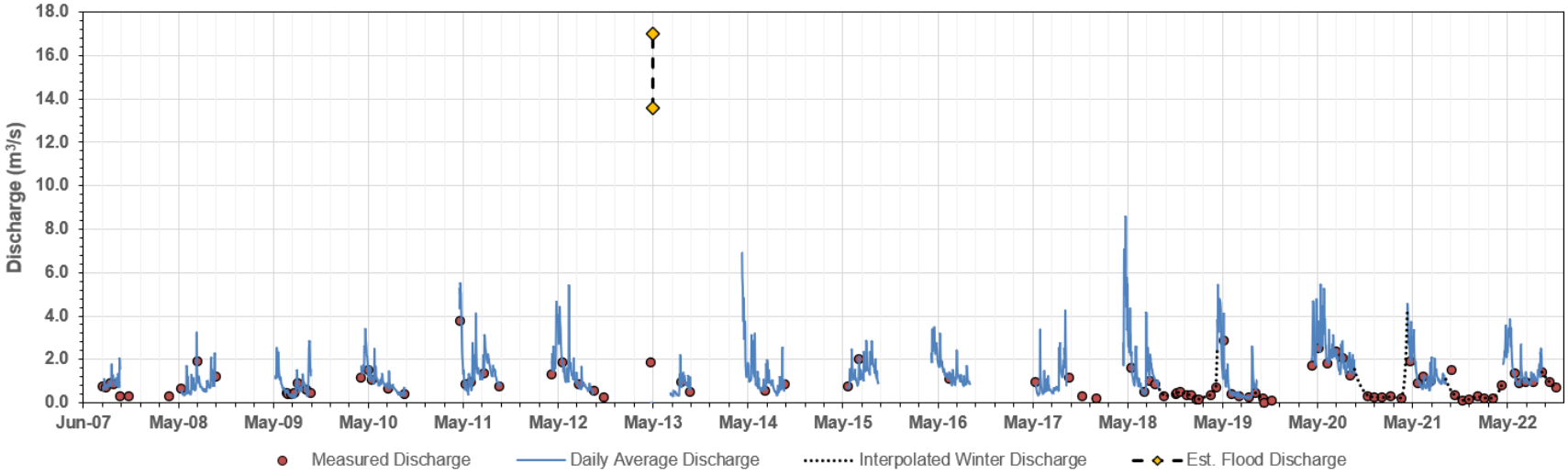


Figure 4-1: W1 Average daily discharge record (2007 to 2022).



Notes:
Values for May 29, 2013 are estimates based on high water marks and channel surveys at W29 extrapolated by drainage area to W4 (Laberge, 2013).

Figure 4-2: W4 Average daily discharge record (2007 to 2022).



Notes:
Values for May 29, 2013 are estimates based on high water marks and channel surveys at W29 extrapolated by drainage area to W5 (Laberge, 2013).

Figure 4-3: W5 Average daily discharge record (2007 to 2022).

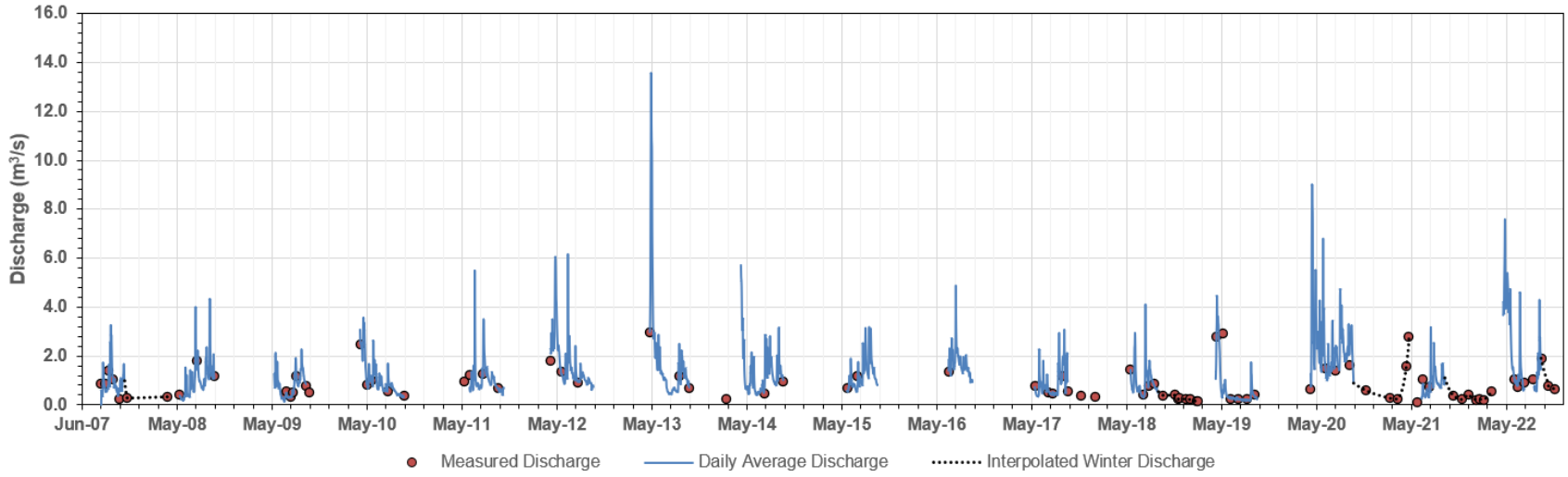


Figure 4-4: W6 Average daily discharge record (2007 to 2022).

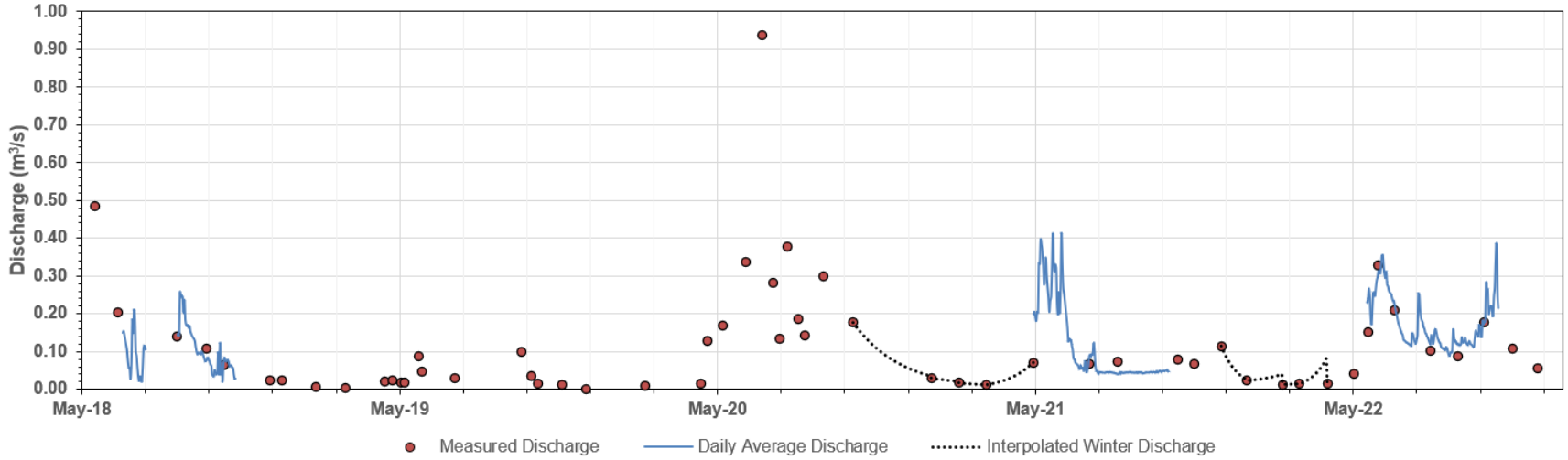
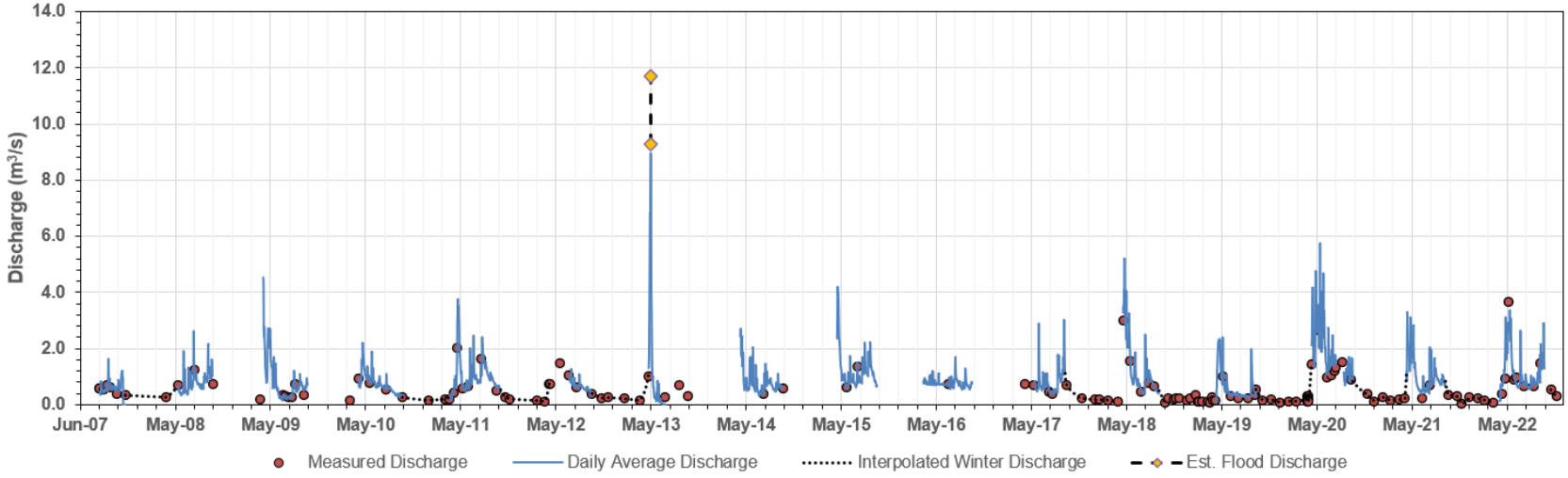


Figure 4-5: Preliminary W21 Average daily discharge record (2018 to 2022).



Notes:
Values for May 29, 2013 are estimates based on high water marks and channel surveys at W29 extrapolated by drainage area to W22 (Laberge, 2013).

Figure 4-6: W22 Average daily discharge record (2007 to 2022).

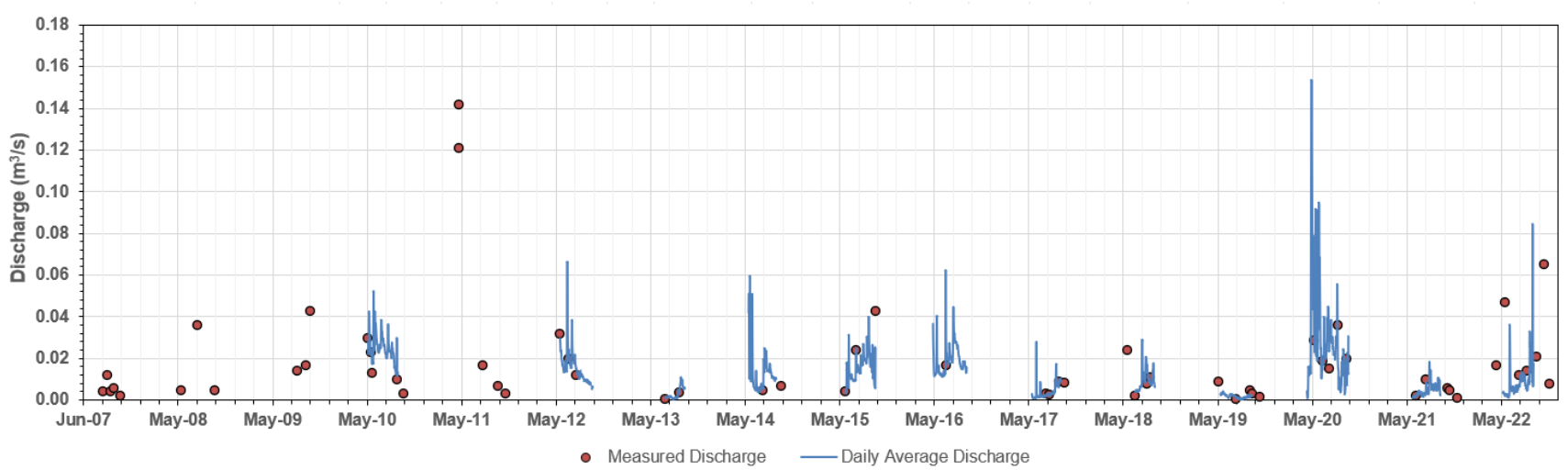


Figure 4-7: W26 Average daily discharge record (2007 to 2022).

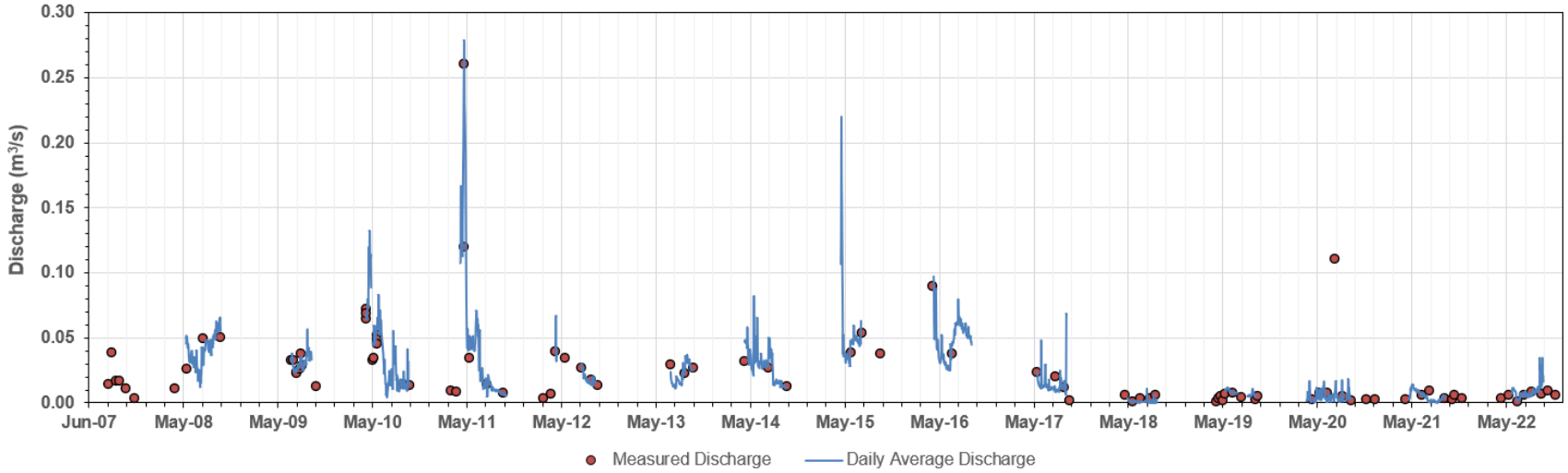
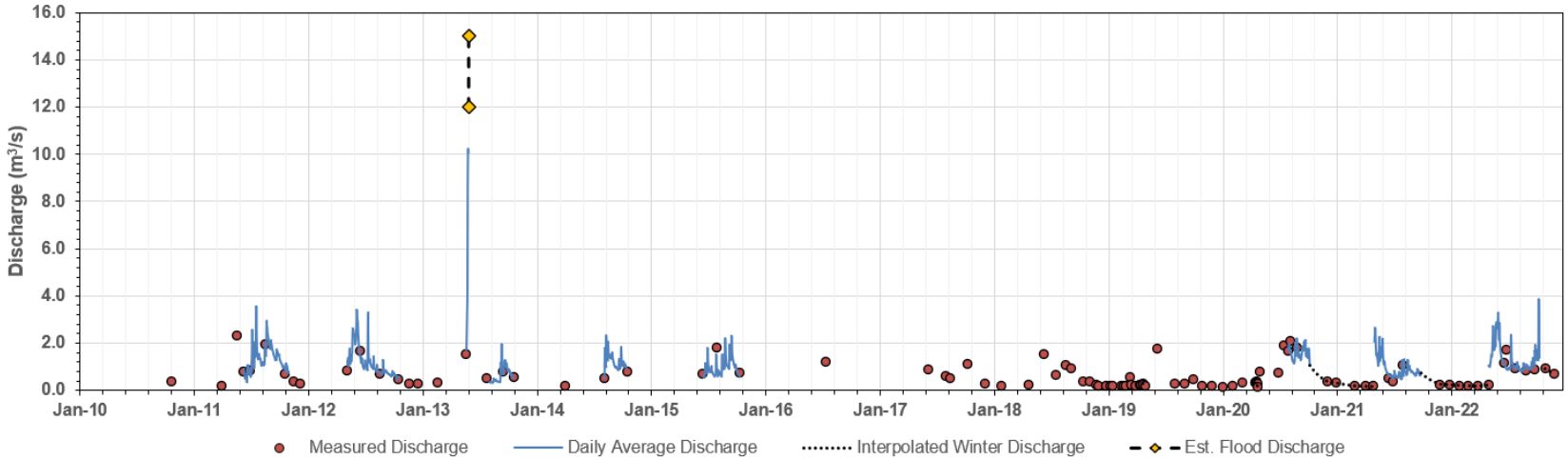
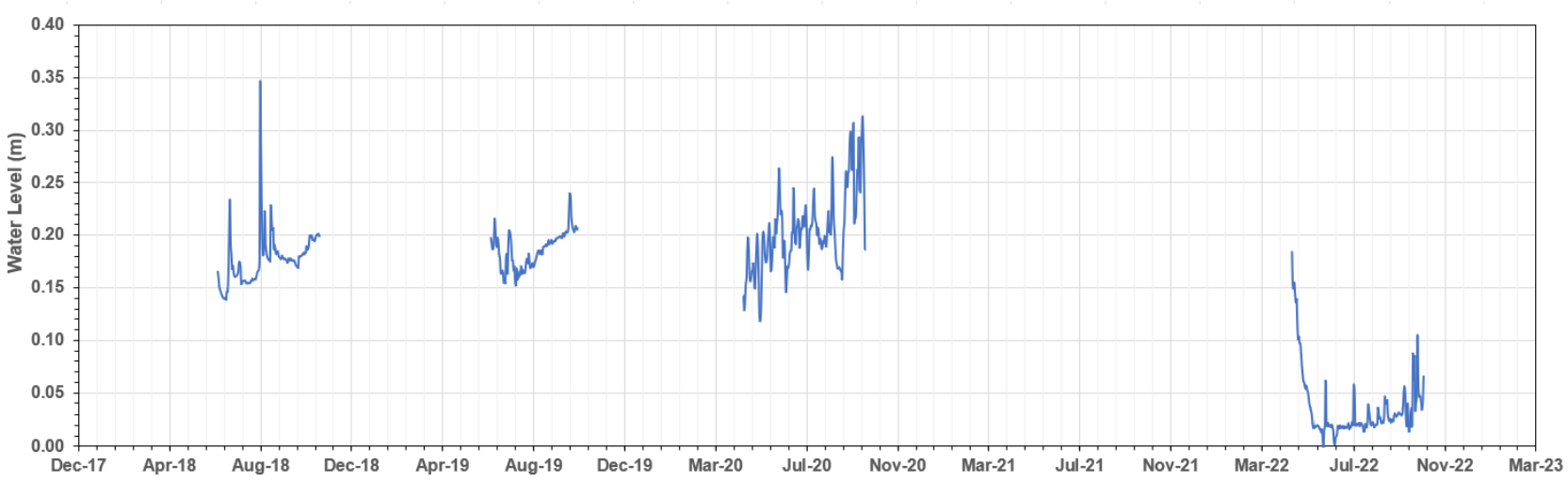


Figure 4-8: W27 Average daily discharge record (2007 to 2022).



Notes:
Values for May 29, 2013 are estimates based on high water marks and channel surveys at W29 (Laberge, 2013).

Figure 4-9: W29 Average daily discharge record (2011 to 2022).



Notes:
2021 water level data are affected by sensor error and are not shown. 2022 water level are biased low due to inferred channel scouring.

Figure 4-10: W45 Average daily water level record (2018 to 2022).

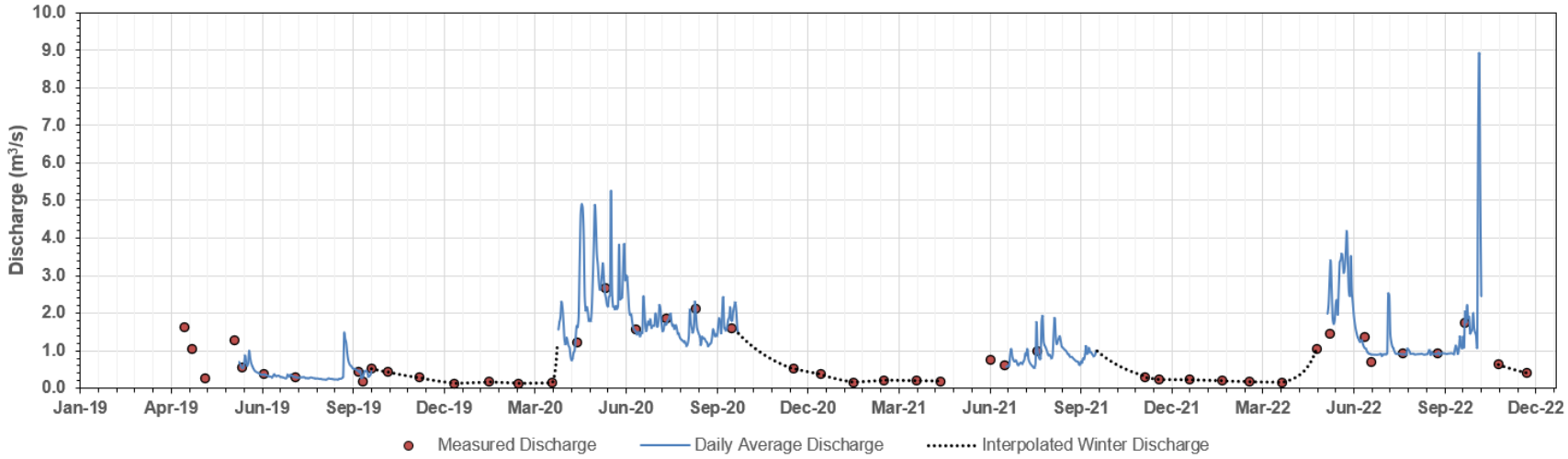


Figure 4-11: W99 Average daily discharge record (2019 to 2022).

4.2 Streamflow Records – Unit Yields

Period of record (Figure 4-12) and unit yield plots per year (Figure 4-13 through Figure 4-28) are presented for the eight hydrometric stations in this section.

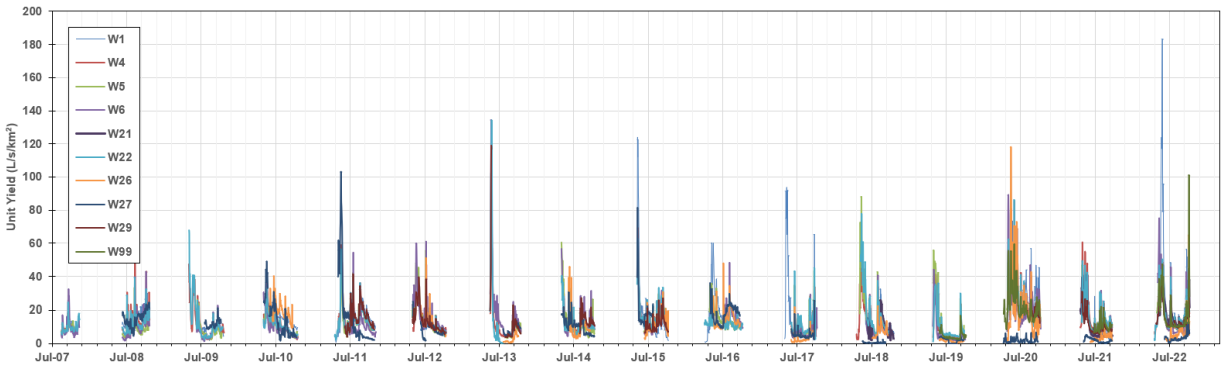


Figure 4-12: Average daily unit yield time-series for Project stations (2007-2022)

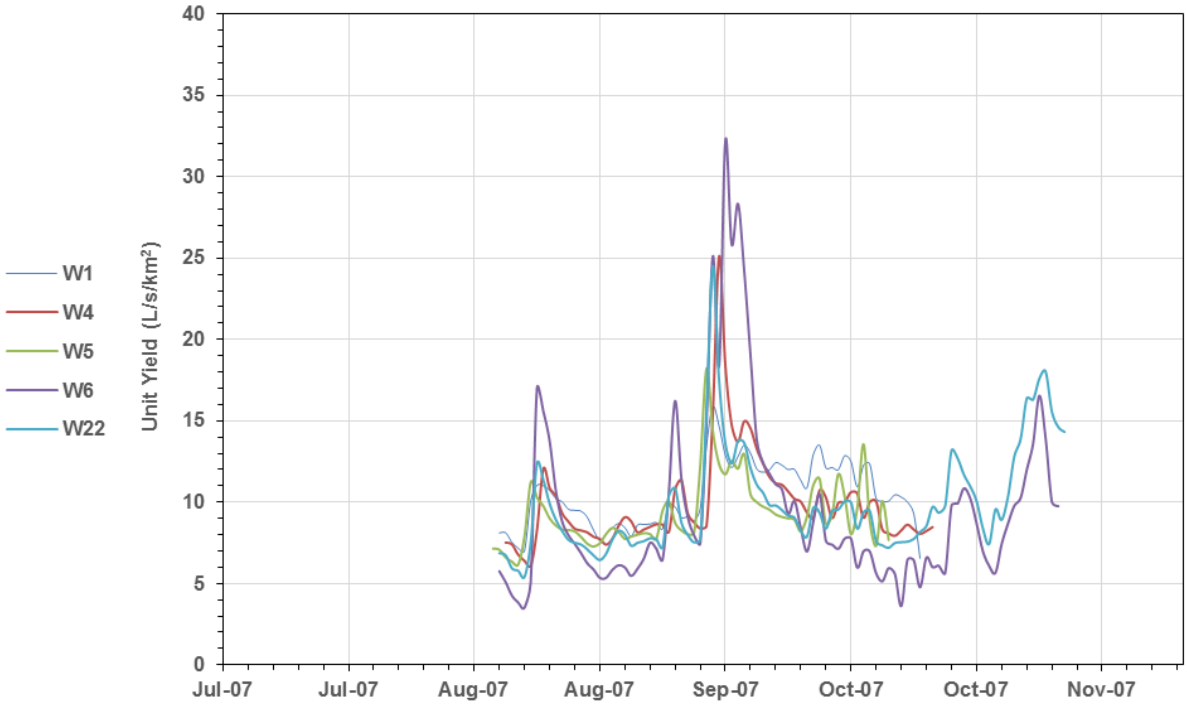


Figure 4-13: Average daily unit yield time-series for Project stations (2007)

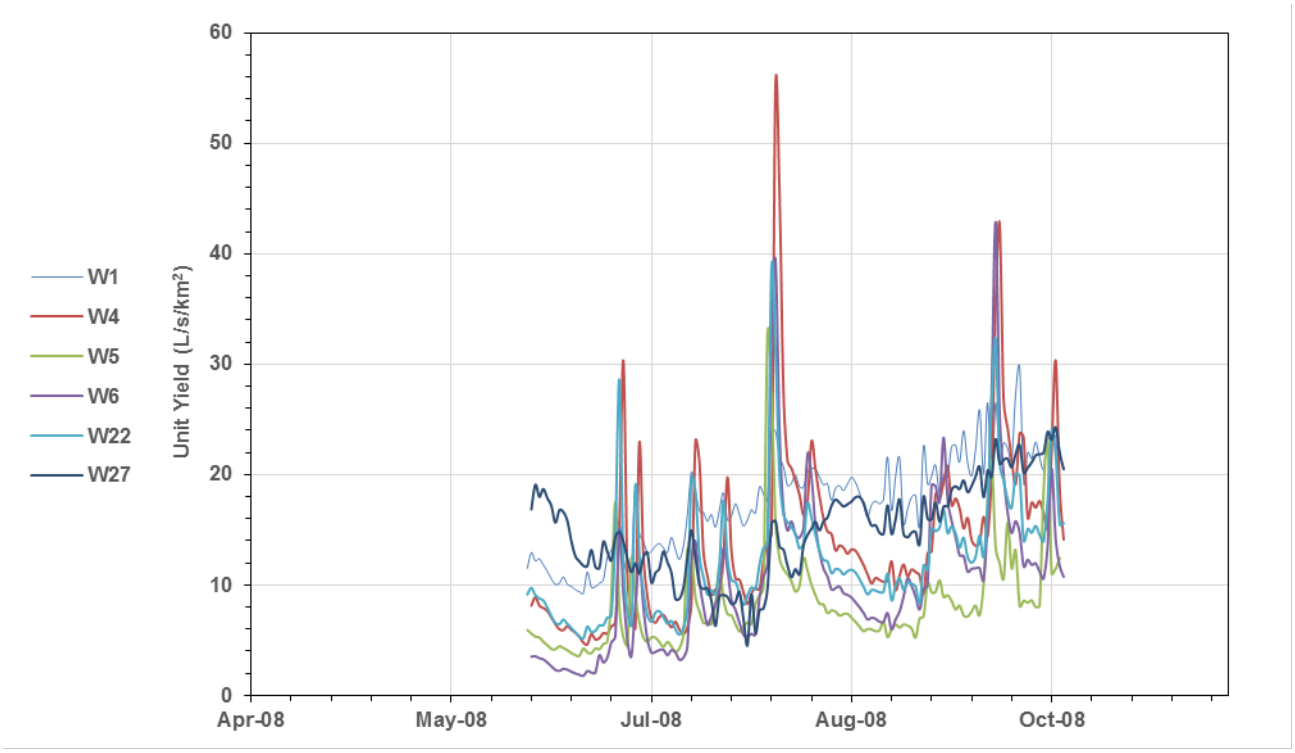


Figure 4-14: Average daily unit yield time-series for Project stations (2008)

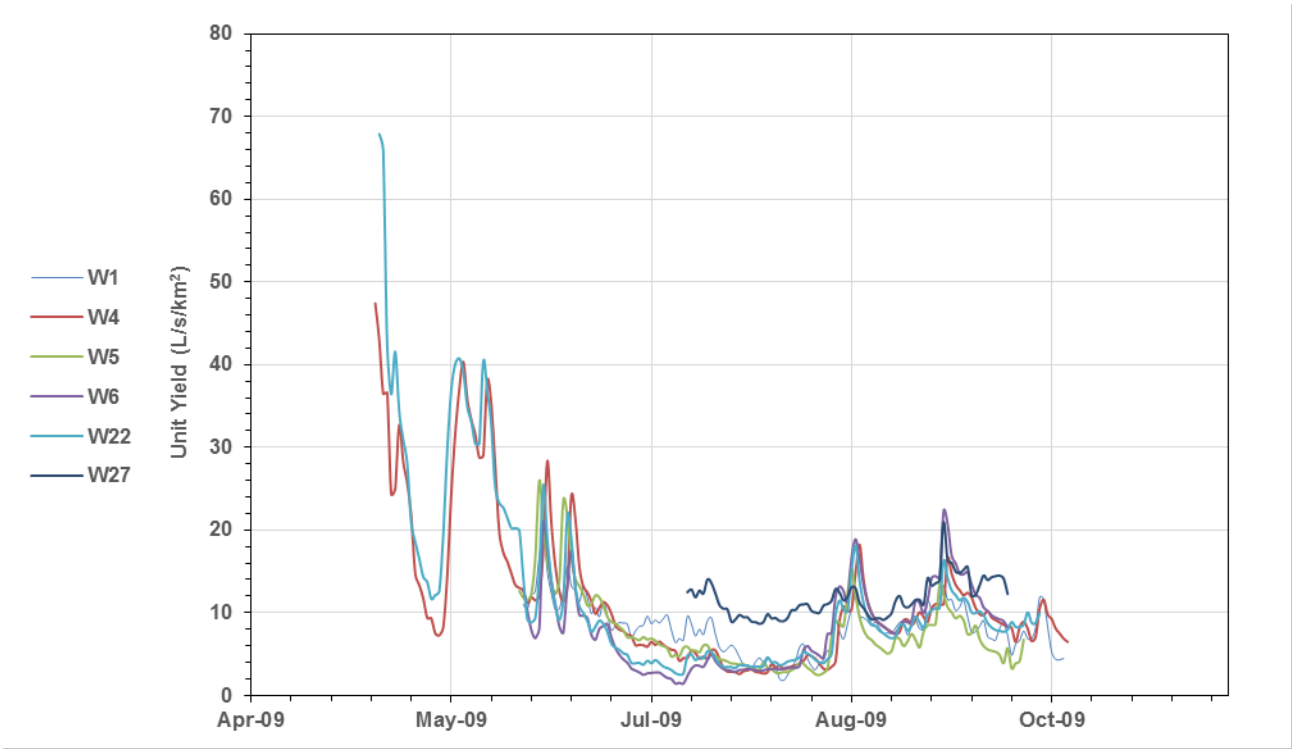


Figure 4-15: Average daily unit yield time-series for Project stations (2009)

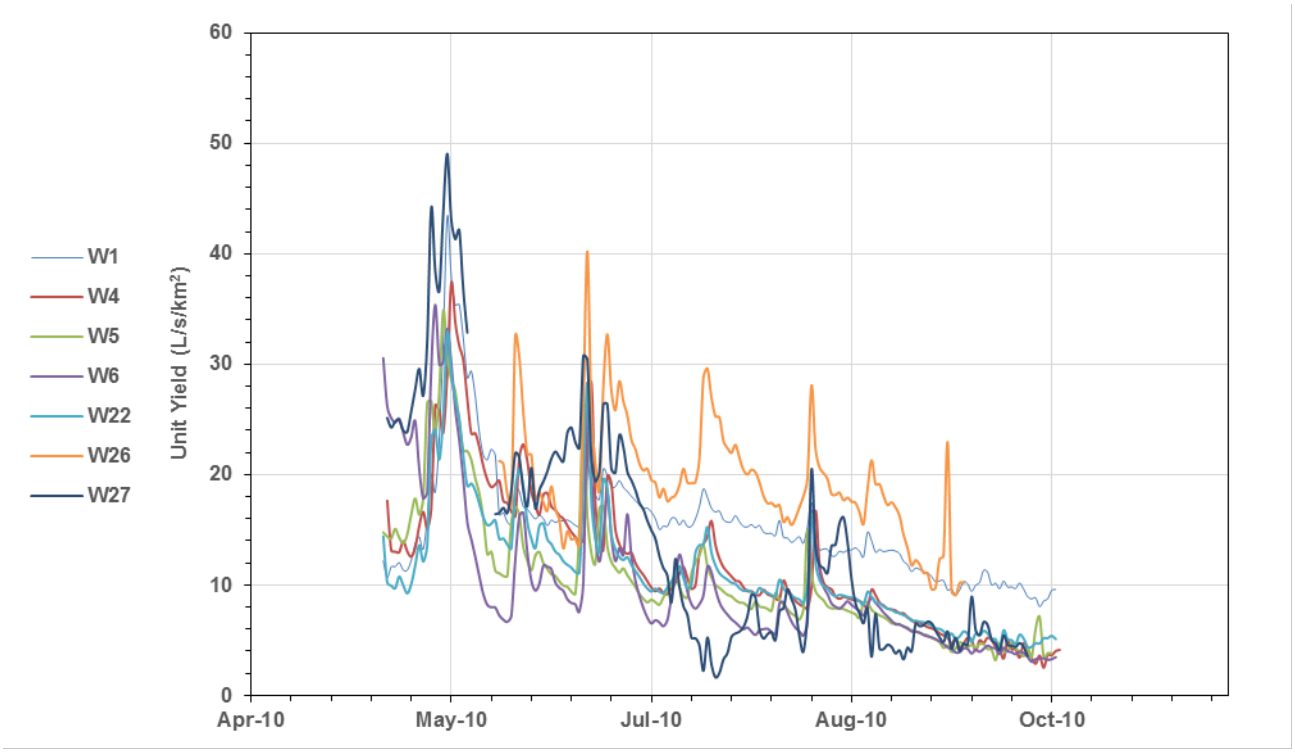


Figure 4-16: Average daily unit yield time-series for Project stations (2010)

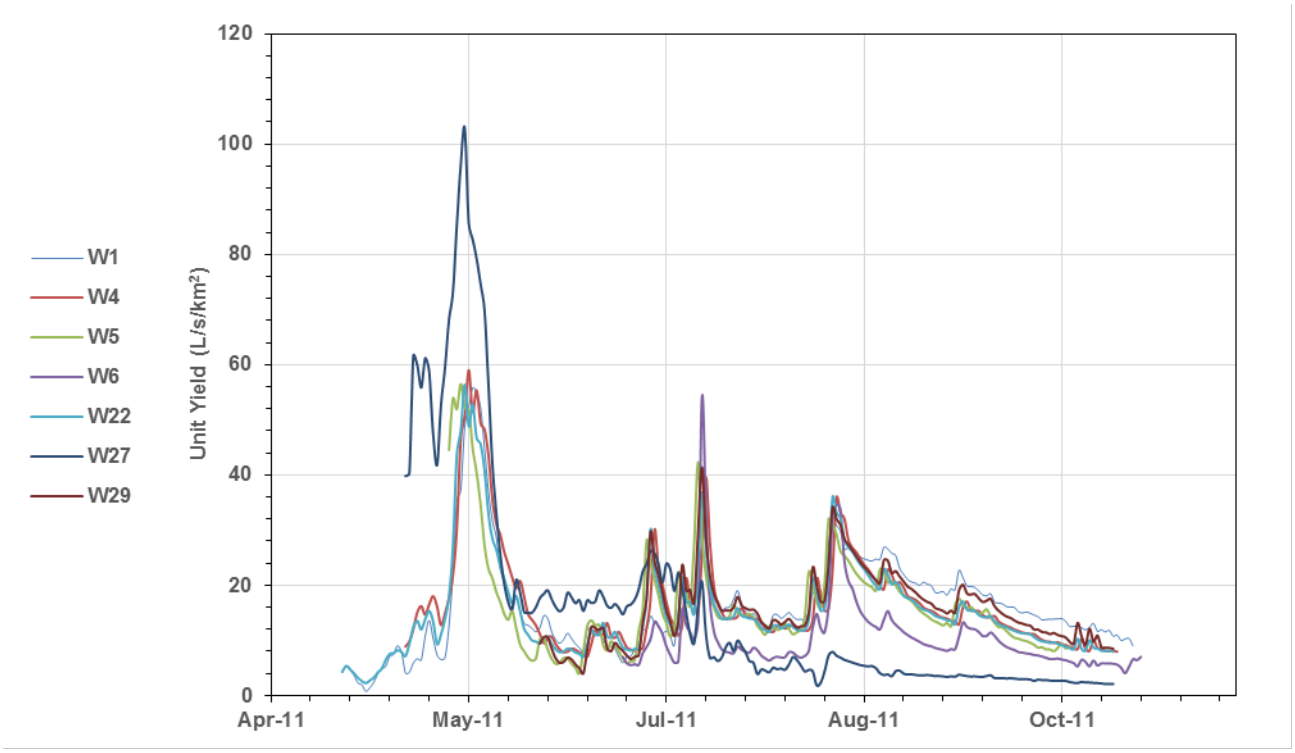


Figure 4-17: Average daily unit yield time-series for Project stations (2011)

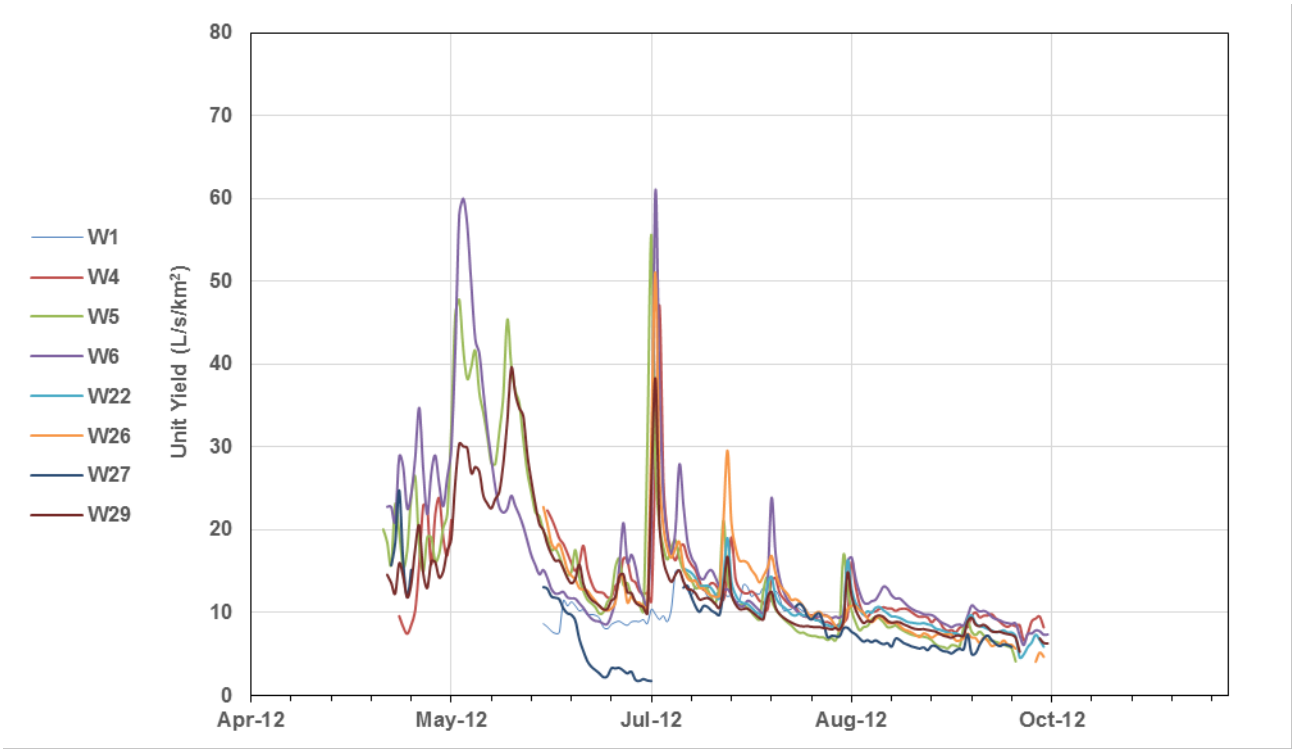


Figure 4-18: Average daily unit yield time-series for Project stations (2012)

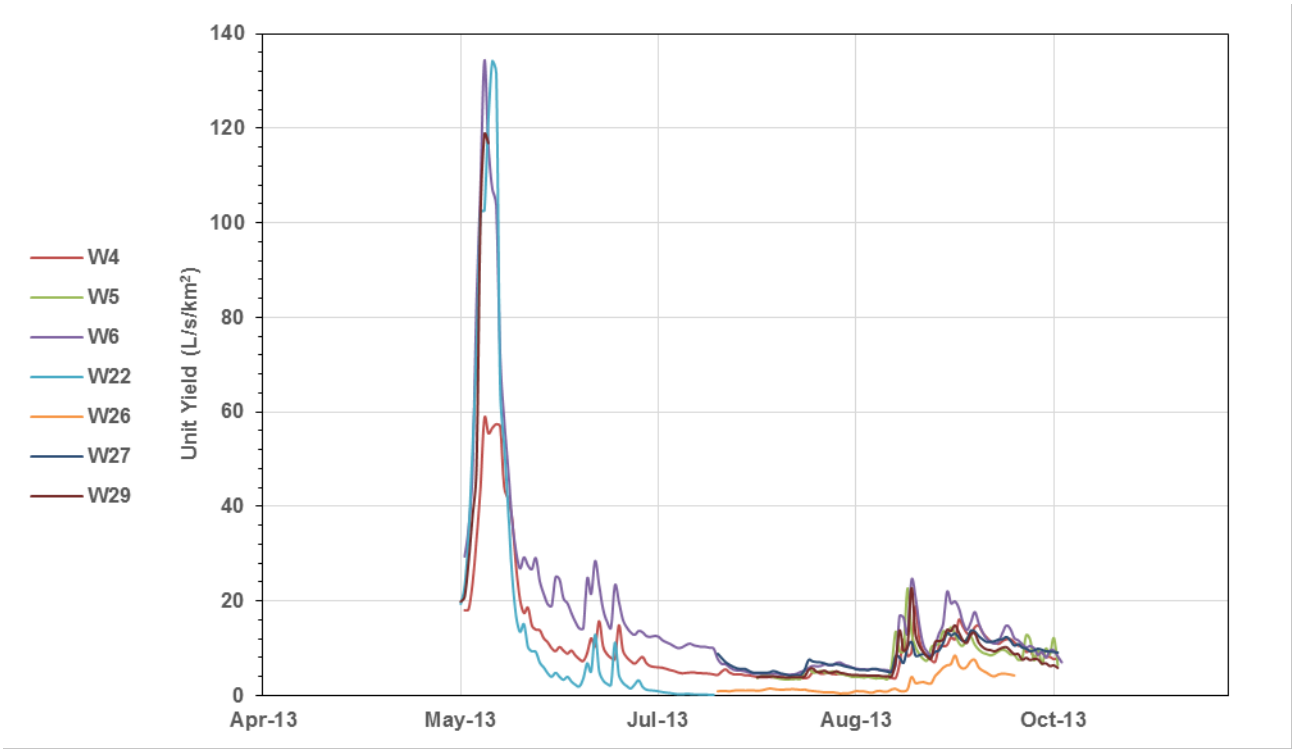


Figure 4-19: Average daily unit yield time-series for Project stations (2013)

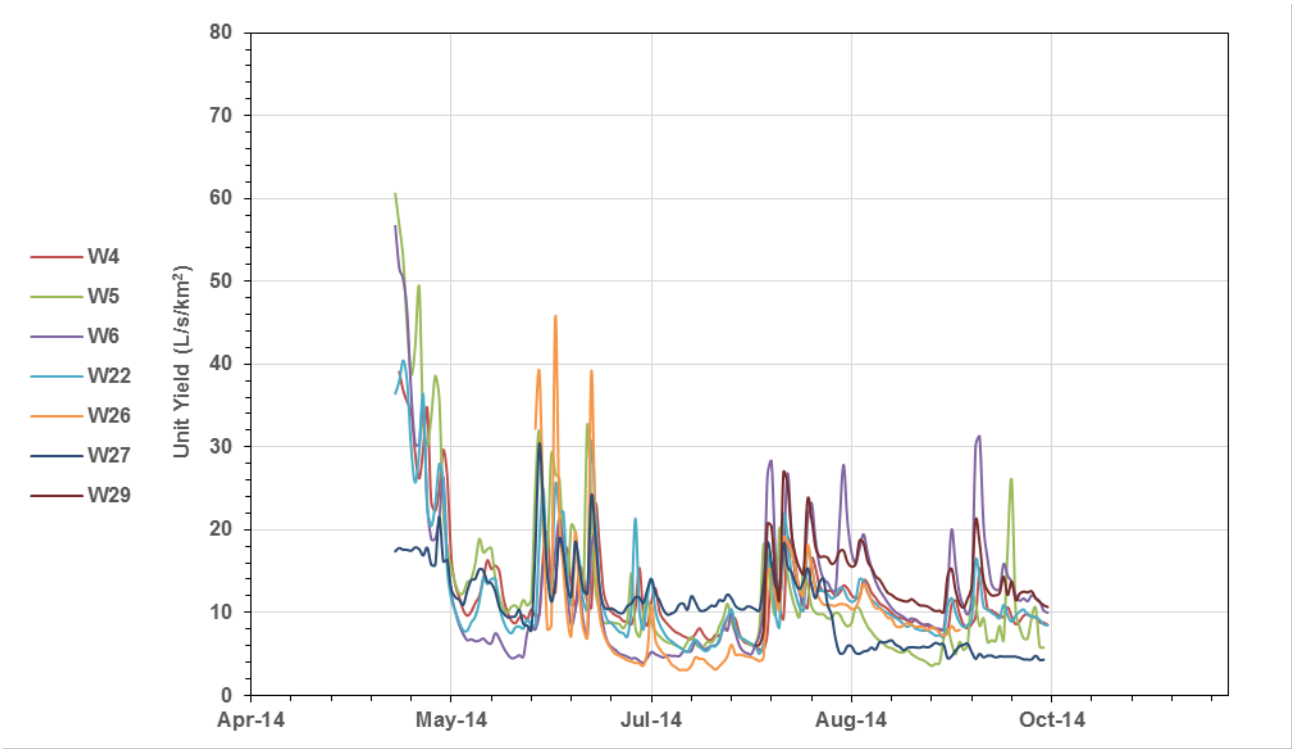


Figure 4-20: Average daily unit yield time-series for Project stations (2014)

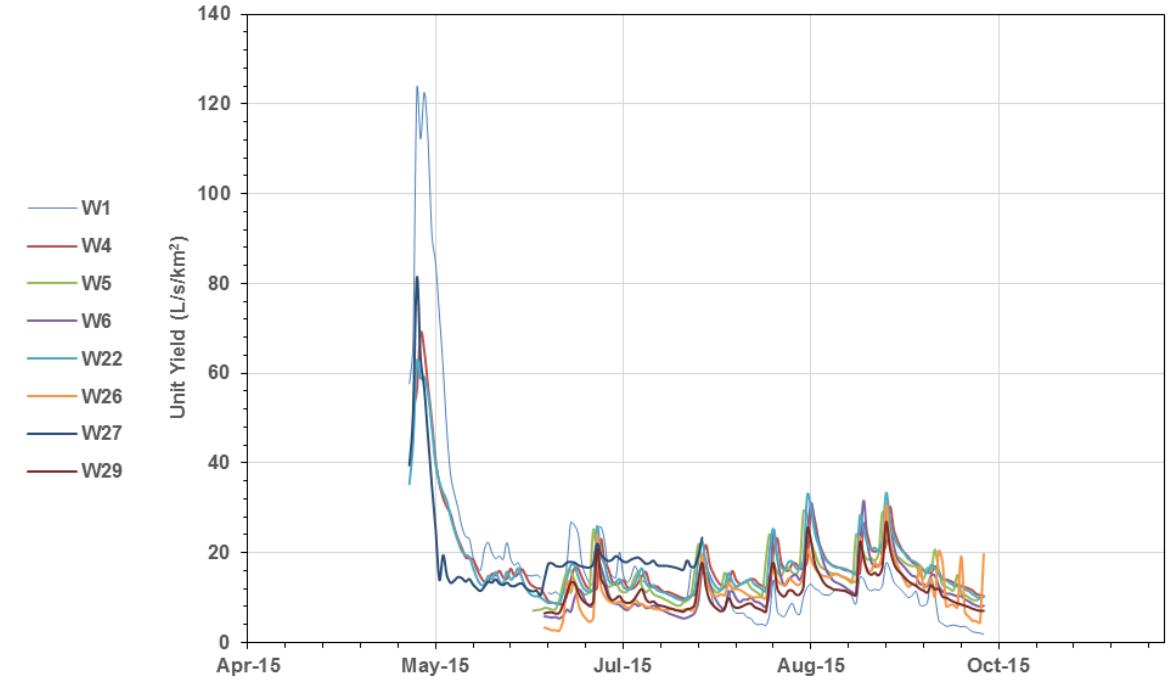


Figure 4-21: Average daily unit yield time-series for Project stations (2015)

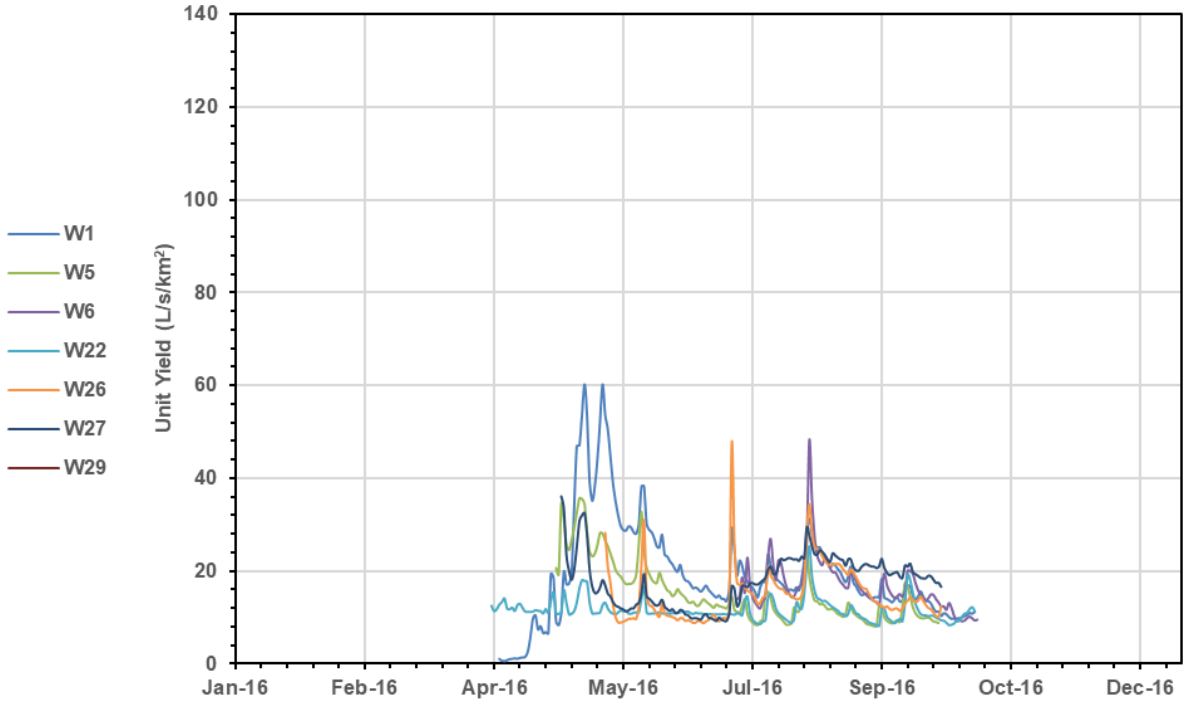


Figure 4-22: Average daily unit yield time-series for Project stations (2016)

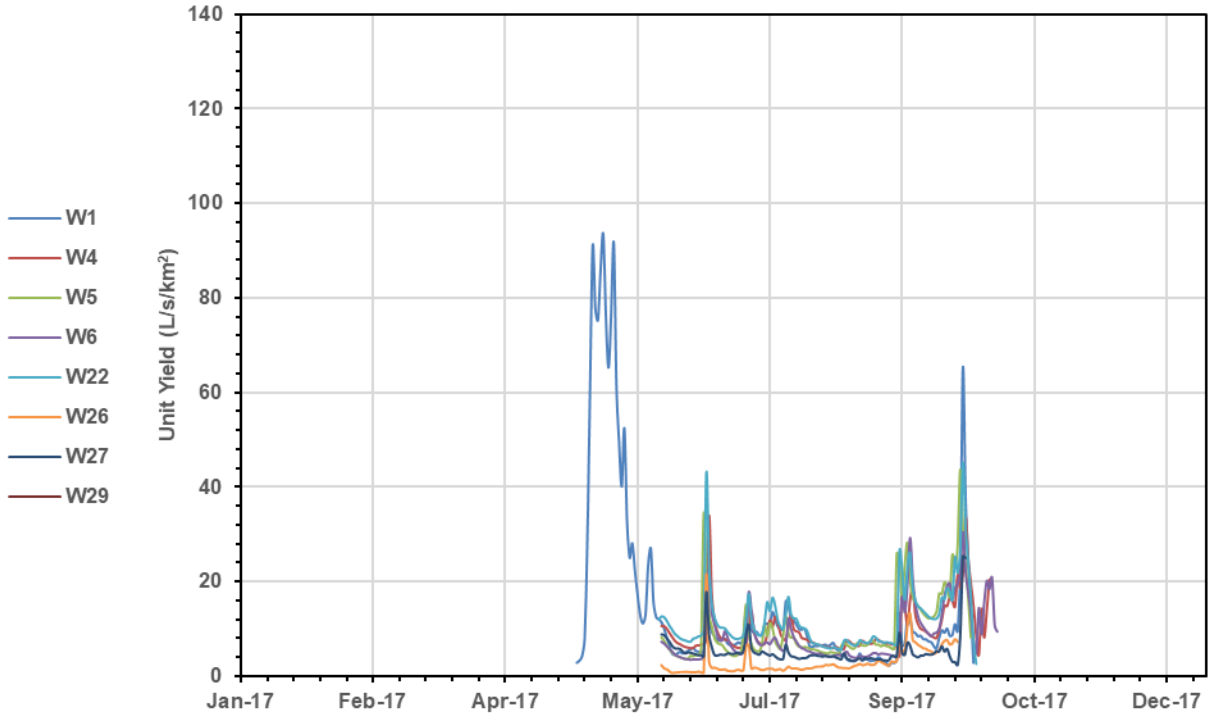


Figure 4-23: Average daily unit yield time-series for Project stations (2017)

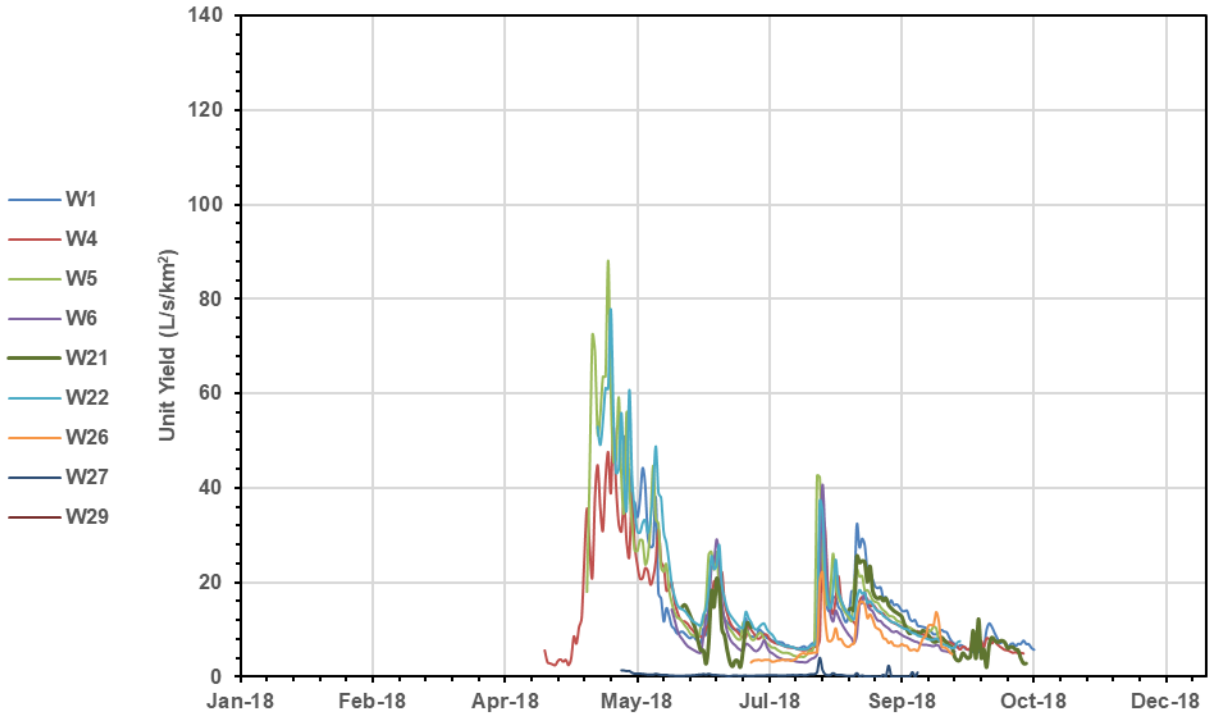


Figure 4-24: Average daily unit yield time-series for Project stations (2018)

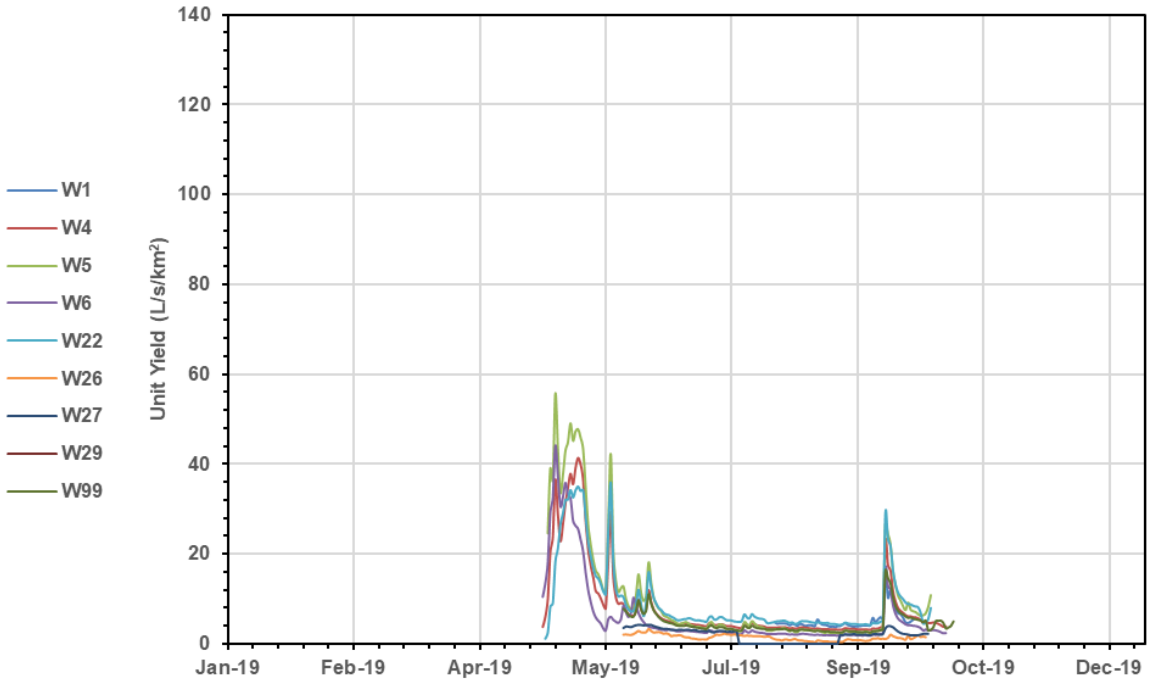


Figure 4-25: Average daily unit yield time-series for Project stations (2019)

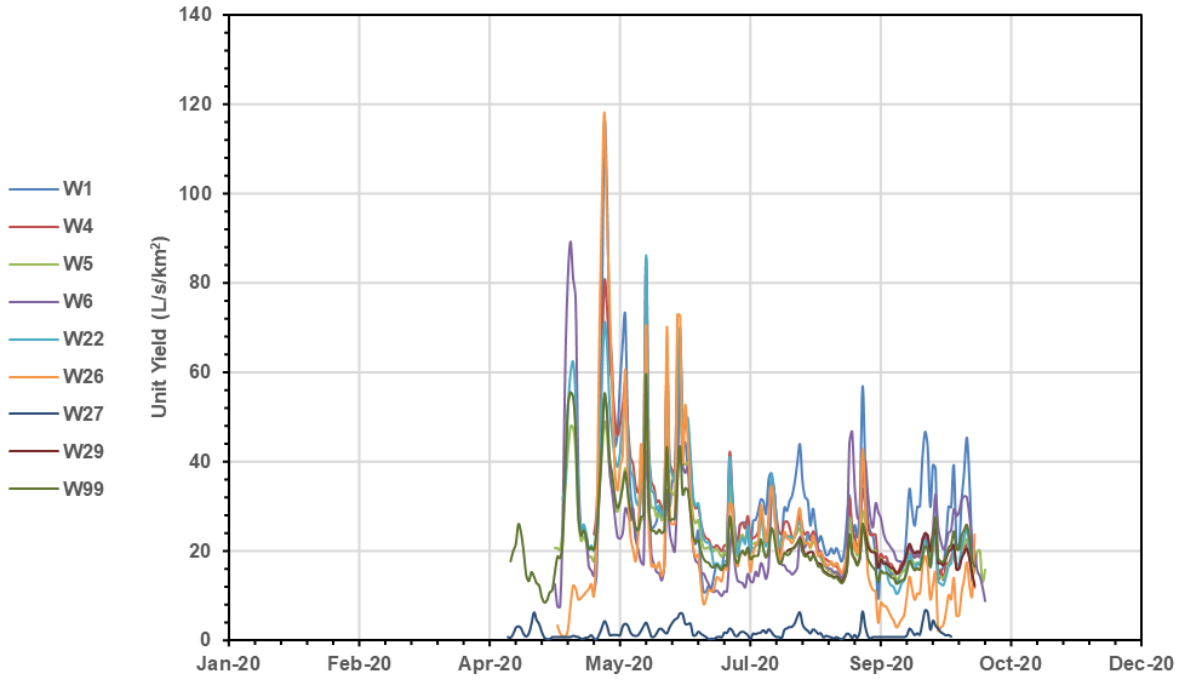


Figure 4-26: Average daily unit yield time-series for Project stations (2020)

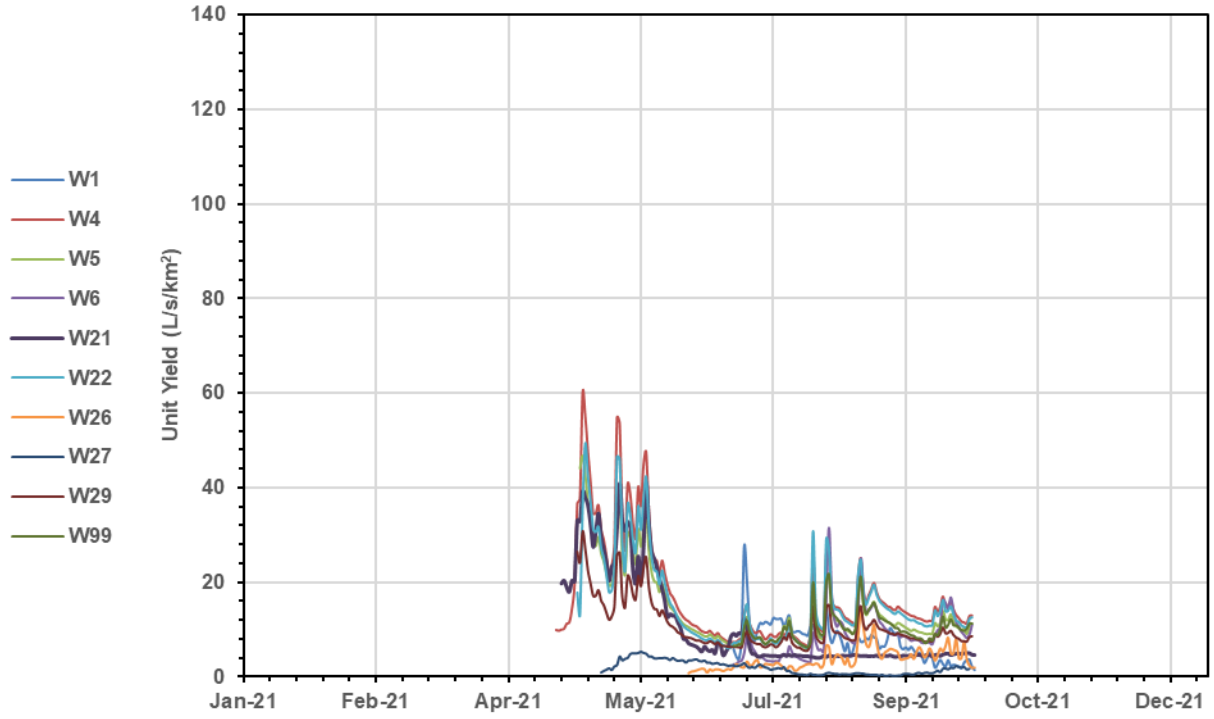


Figure 4-27: Average daily unit yield time-series for Project stations (2021)

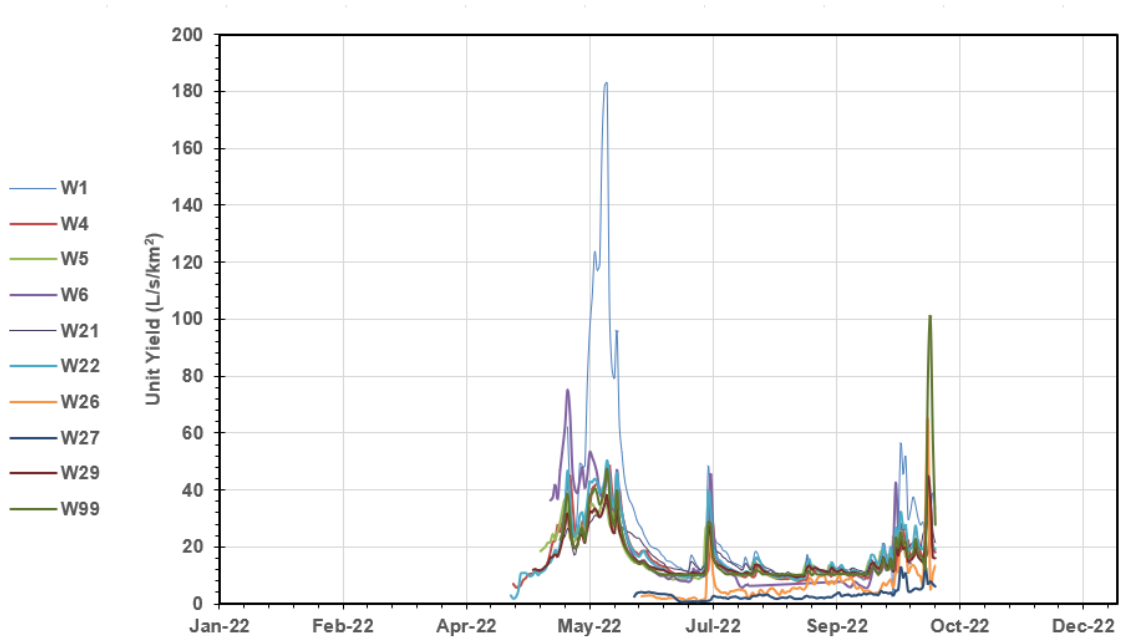


Figure 4-28: Average daily unit yield time-series for Project stations (2022)

4.3 Streamflow Records – Monthly Summary Tables

Monthly summary tables are presented for the ten hydrometric stations in this section.

Table 4-2:
W1 Summary statistics for 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	Average	--	--	--	--	--	--	--	0.062	0.074	0.077	--	--
	Maximum	--	--	--	--	--	--	--	0.096	0.128	0.097	--	--
	Minimum	--	--	--	--	--	--	--	0.044	0.049	0.042	--	--
2008	Average	--	--	--	--	--	0.074	0.102	0.130	0.133	0.154	--	--
	Maximum	--	--	--	--	--	0.106	0.184	0.207	0.251	0.265	--	--
	Minimum	--	--	--	--	--	0.054	0.067	0.091	0.085	0.075	--	--
2009	Average	--	--	--	--	--	0.083	0.054	0.035	0.063	0.049	--	--
	Maximum	--	--	--	--	--	0.244	0.083	0.099	0.109	0.117	--	--
	Minimum	--	--	--	--	--	0.012	0.012	0.002	0.026	0.006	--	--
2010	Average	--	--	--	--	0.149	0.117	0.114	0.097	0.078	0.065	--	--
	Maximum	--	--	--	--	0.344	0.195	0.148	0.164	0.126	0.085	--	--
	Minimum	--	--	--	--	0.060	0.092	0.090	0.075	0.054	0.047	--	--
2011	Average	--	--	--	0.024	0.151	0.075	0.104	0.133	0.143	0.094	0.069	--
	Maximum	--	--	--	0.045	0.482	0.138	0.257	0.290	0.215	0.124	0.091	--
	Minimum	--	--	--	0.003	0.017	0.026	0.034	0.072	0.117	0.063	0.053	--
2012	Average	--	--	--	--	--	0.064	0.075	0.079	--	--	--	--
	Maximum	--	--	--	--	--	0.095	0.123	0.096	--	--	--	--
	Minimum	--	--	--	--	--	0.047	0.052	0.066	--	--	--	--
2013	Average	--	--	--	--	--	--	--	--	--	--	--	--
	Maximum	--	--	--	--	--	--	--	--	--	--	--	--
	Minimum	--	--	--	--	--	--	--	--	--	--	--	--
2014	Average	--	--	--	--	0.076	0.091	0.066	0.091	0.120	0.217	--	--
	Maximum	--	--	--	--	0.781	0.273	0.284	0.289	0.557	0.719	--	--
	Minimum	--	--	--	--	0.000	0.000	0.000	0.000	0.000	0.000	--	--
2015	Average	--	--	--	--	0.433	0.120	0.103	0.056	0.080	0.026	--	--
	Maximum	--	--	--	--	1.304	0.295	0.202	0.250	0.172	0.086	--	--
	Minimum	--	--	--	--	0.116	0.067	0.001	0.022	0.033	0.010	--	--
2016	Average	--	--	--	0.024	0.231	0.163	0.121	0.138	0.096	0.070	--	--
	Maximum	--	--	--	0.104	0.583	0.326	0.346	0.255	0.148	0.093	--	--
	Minimum	--	--	--	0.002	0.033	0.095	0.083	0.089	0.061	0.055	--	--
2017	Average	--	--	--	--	0.335	0.066	0.068	0.036	0.055	0.212	--	--
	Maximum	--	--	--	--	1.006	0.281	0.198	0.076	0.289	0.535	--	--
	Minimum	--	--	--	--	0.001	0.025	0.038	0.017	0.008	0.000	--	--
2018	Average	--	--	--	--	0.269	0.116	0.062	0.115	0.078	0.048	--	--
	Maximum	--	--	--	--	0.415	0.474	0.148	0.311	0.131	0.131	--	--
	Minimum	--	--	--	--	0.169	0.039	0.032	0.033	0.025	0.018	--	--
2019	Average	--	--	--	--	--	--	--	0.029	0.039	--	--	--
	Maximum	--	--	--	--	--	--	--	0.045	0.166	--	--	--
	Minimum	--	--	--	--	--	--	--	0.020	0.021	--	--	--
2020	Average	--	--	--	--	0.415	0.242	0.159	0.189	0.168	0.196	--	--
	Maximum	--	--	--	--	1.147	0.707	0.346	0.503	0.378	0.328	--	--
	Minimum	--	--	--	--	0.049	0.086	0.050	0.113	0.048	0.086	--	--
2021	Average	--	--	--	--	--	--	0.075	0.055	0.033	0.019	--	--
	Maximum	--	--	--	--	--	--	0.250	0.157	0.094	0.034	--	--
	Minimum	--	--	--	--	--	--	0.016	0.022	0.006	0.007	--	--
2022	Average	--	--	--	--	0.34	0.44	0.12	0.08	0.08	0.22	--	--
	Maximum	--	--	--	--	1.03	1.79	0.66	0.19	0.16	0.45	--	--
	Minimum	--	--	--	--	0.12	0.10	0.07	0.05	0.05	0.00	--	--
All Years	Average	--	--	--	0.024	0.266	0.137	0.094	0.088	0.089	0.112	0.069	--
	Maximum	--	--	--	0.104	1.304	1.793	0.660	0.503	0.557	0.719	0.091	--
	Minimum	--	--	--	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.053	--

Table 4-3:
W1 Summary statistics for daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	# days with data	--	--	--	--	--	--	--	*18*	30	*20*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	*0.06*	0.07	*0.08*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	*9.03*	10.85	*11.14*	--	--
	Runoff (mm)	--	--	--	--	--	--	--	*14.0*	28.1	*19.3*	--	--
2008	# days with data	--	--	--	--	--	*22*	31	31	30	*20*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.07*	0.10	0.13	0.13	*0.15*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*10.85*	15.03	19.08	19.55	*22.64*	--	--
	Runoff (mm)	--	--	--	--	--	*20.6*	40.3	51.1	50.7	*39.1*	--	--
2009	# days with data	--	--	--	--	--	*23*	31	31	30	*21*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.08*	0.05	0.04	0.06	*0.05*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*12.19*	7.88	5.18	9.28	*7.21*	--	--
	Runoff (mm)	--	--	--	--	--	*24.2*	21.1	13.9	24.1	*13.1*	--	--
2010	# days with data	--	--	--	--	28	30	31	31	30	19	--	--
	Average Discharge (m^3/s)	--	--	--	--	0.15	0.12	0.11	0.10	0.08	0.07	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	21.54	17.20	16.72	14.25	11.43	9.61	--	--
	Runoff (mm)	--	--	--	--	52.1	44.6	44.8	38.2	29.6	15.8	--	--
2011	# days with data	--	--	--	*12*	31	30	31	31	30	31	*5*	--
	Average Discharge (m^3/s)	--	--	--	*0.02*	0.15	0.07	0.10	0.13	0.14	0.09	*0.07*	--
	Average Yield ($L/s/km^2$)	--	--	--	*3.38*	22.18	10.99	15.23	19.57	21.04	13.83	*10.10*	--
	Runoff (mm)	--	--	--	*3.5*	59.4	28.5	40.8	52.4	54.5	37.0	*4.4*	--
2012	# days with data	--	--	--	--	--	*18*	31	*18*	--	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.06*	0.08	*0.08*	--	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*9.33*	11.03	*11.54*	--	--	--	--
	Runoff (mm)	--	--	--	--	--	*14.5*	29.6	*17.9*	--	--	--	--
2013	# days with data	--	--	--	--	--	--	--	--	--	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	--	--	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	--	--	--	--	--
	Runoff (mm)	--	--	--	--	--	--	--	--	--	--	--	--
2014	# days with data	--	--	--	--	*23*	30	31	31	29	*17*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.07*	0.09	0.06	0.08	0.11	*0.20*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*10.85*	13.35	9.27	12.46	16.79	*29.78*	--	--
	Runoff (mm)	--	--	--	--	*21.6*	34.6	24.8	33.4	42.1	*43.7*	--	--
2015	# days with data	--	--	--	--	*18*	29	28	31	30	*14*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.43*	0.12	0.10	0.06	0.08	*0.03*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*63.51*	17.26	14.47	8.24	11.71	*3.78*	--	--
	Runoff (mm)	--	--	--	--	*98.8*	43.2	35.0	22.1	30.3	*4.6*	--	--
2016	# days with data	--	--	--	*19*	31	30	31	31	30	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	*0.02*	0.23	0.16	0.12	0.14	0.10	*0.07*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*3.59*	33.94	23.96	17.80	20.24	14.12	*10.32*	--	--
	Runoff (mm)	--	--	--	*5.9*	90.9	62.1	47.7	54.2	36.6	*11.6*	--	--
2017	# days with data	--	--	--	--	*24*	30	31	31	30	*5*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.33*	0.07	0.07	0.04	0.06	*0.20*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*48.73*	9.72	10.01	5.27	8.11	*28.95*	--	--
	Runoff (mm)	--	--	--	--	*101.1*	25.2	26.8	14.1	21.0	*12.5*	--	--
2018	# days with data	--	--	--	--	*6*	30	31	31	30	28	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.3*	0.1	0.1	0.1	0.1	0.0	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*40.9*	17.1	9.1	16.9	11.4	7.1	--	--
	Runoff (mm)	--	--	--	--	*21.2*	44.4	24.4	45.3	29.6	17.2	--	--
2019	# days with data	--	--	--	--	*14*	--	--	*26*	30	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	*0.0*	0.0	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	*4.3*	5.8	--	--	--
	Runoff (mm)	--	--	--	--	--	--	--	*9.6*	15.0	--	--	--
2020	# days with data	--	--	--	--	*12*	30	31	31	30	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.4*	0.2	0.2	0.2	0.2	*0.2*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*58.2*	35.6	23.4	27.8	24.8	*28.4*	--	--
	Runoff (mm)	--	--	--	--	*60.3*	92.2	62.6	74.5	64.2	*31.9*	--	--
2021	# days with data	--	--	--	--	--	--	*27*	31	30	*4*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	*0.1*	0.1	0.0	*0.0*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	*10.9*	8.1	4.8	*2.7*	--	--
	Runoff (mm)	--	--	--	--	--	--	*25.5*	21.8	12.3	*0.9*	--	--
2022	# days with data	--	--	--	--	*10.0*	30.0	31.0	31.0	30.0	*18.0*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.3*	0.4	0.1	0.1	0.1	*0.2*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*50.2*	64.2	17.0	12.1	11.6	*32.7*	--	--
	Runoff (mm)	--	--	--	--	*43.3*	166.3	45.6	32.5	30.2	*50.9*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	*0.024*	*0.264*	*0.137*	*0.093*	*0.088*	*0.088*	*0.109*	*0.069*	--
	Average Yield ($L/s/km^2$)	--	--	--	*3.5*	*38.9*	*20.1*	*13.7*	*12.9*	*12.9*	*16.0*	*10.1*	--
	Average Runoff (mm)	--	--	--	*4.7*	*61.0*	*50.0*	*36.1*	*33.0*	*33.5*	*22.9*	*4.4*	--

Table 4-4:
W4 Summary statistics for 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	Average	--	--	--	--	--	--	--	0.641	0.875	0.768	--	--
	Maximum	--	--	--	--	--	--	--	1.047	2.281	2.061	--	--
	Minimum	--	--	--	--	--	--	--	0.416	0.560	0.499	--	--
2008	Average	--	--	--	--	--	0.479	0.868	1.334	1.034	1.666	--	--
	Maximum	--	--	--	--	--	0.742	4.241	6.649	2.237	5.001	--	--
	Minimum	--	--	--	--	--	0.307	0.378	0.543	0.594	0.614	--	--
2009	Average	--	--	--	--	1.949	1.109	0.406	0.426	0.795	0.654	--	--
	Maximum	--	--	--	--	5.288	3.115	0.706	1.565	1.473	1.230	--	--
	Minimum	--	--	--	--	0.060	0.554	0.090	0.159	0.531	0.296	--	--
2010	Average	--	--	--	--	1.619	1.355	0.879	0.723	0.492	0.306	--	--
	Maximum	--	--	--	--	3.059	2.780	1.338	1.558	0.833	0.497	--	--
	Minimum	--	--	--	--	0.764	0.921	0.643	0.555	0.021	0.021	--	--
2011	Average	--	--	--	--	2.218	0.845	1.301	1.430	1.268	0.768	--	--
	Maximum	--	--	--	--	5.350	1.764	3.743	3.321	1.986	1.220	--	--
	Minimum	--	--	--	--	0.614	0.492	0.573	0.802	0.942	0.564	--	--
2012	Average	--	--	--	--	1.224	1.211	1.271	0.833	0.726	0.662	--	--
	Maximum	--	--	--	--	2.086	1.871	4.834	1.484	0.899	0.846	--	--
	Minimum	--	--	--	--	0.475	0.817	0.781	0.591	0.544	0.405	--	--
2013	Average	--	--	--	--	3.341	1.065	0.420	0.317	0.749	0.753	--	--
	Maximum	--	--	--	--	7.034	3.902	0.818	0.421	1.903	0.996	--	--
	Minimum	--	--	--	--	1.155	0.540	0.287	0.259	0.265	0.465	--	--
2014	Average	--	--	--	--	1.664	1.004	0.671	0.899	0.759	0.727	--	--
	Maximum	--	--	--	--	4.388	2.274	2.035	2.456	1.311	1.041	--	--
	Minimum	--	--	--	--	0.614	0.625	0.488	0.383	0.452	0.579	--	--
2015	Average	--	--	--	--	2.781	1.014	1.019	1.271	1.470	0.962	--	--
	Maximum	--	--	--	--	7.008	1.510	2.324	3.133	2.699	1.373	--	--
	Minimum	--	--	--	--	1.144	0.566	0.690	0.825	1.004	0.717	--	--
2016	Average	--	--	--	--	--	--	--	--	--	--	--	--
	Maximum	--	--	--	--	--	--	--	--	--	--	--	--
	Minimum	--	--	--	--	--	--	--	--	--	--	--	--
2017	Average	--	--	--	--	--	0.718	0.665	0.522	0.934	1.254	--	--
	Maximum	--	--	--	--	--	5.411	1.431	0.771	2.545	2.904	--	--
	Minimum	--	--	--	--	--	0.408	0.412	0.404	0.309	0.168	--	--
2018	Average	--	--	--	0.237	1.987	1.266	0.687	1.088	0.693	0.488	--	--
	Maximum	--	--	--	0.592	5.742	2.623	2.121	4.161	1.091	1.247	--	--
	Minimum	--	--	--	0.150	0.136	0.597	0.377	0.384	0.263	0.304	--	--
2019	Average	--	--	--	--	1.814	0.645	0.319	0.267	0.472	0.366	--	--
	Maximum	--	--	--	--	4.105	3.468	0.424	0.329	2.905	0.504	--	--
	Minimum	--	--	--	--	0.178	0.304	0.239	0.224	0.220	0.219	--	--
2020	Average	--	--	--	--	4.136	3.206	1.954	1.710	1.522	1.340	--	--
	Maximum	--	--	--	--	8.079	9.600	3.664	3.049	2.650	1.871	--	--
	Minimum	--	--	--	--	1.531	1.812	1.430	1.041	0.901	0.839	--	--
2021	Average	--	--	--	--	2.494	1.342	0.689	1.137	0.946	0.849	--	--
	Maximum	--	--	--	--	6.680	5.005	1.832	3.573	1.366	1.034	--	--
	Minimum	--	--	--	--	0.666	0.525	0.439	0.409	0.700	0.687	--	--
2022	Average	--	--	--	0.477	1.651	2.020	0.947	0.766	0.868	1.466	--	--
	Maximum	--	--	--	0.600	4.411	3.932	4.051	1.266	1.539	5.991	--	--
	Minimum	--	--	--	0.395	0.403	0.881	0.648	0.558	0.653	0.435	--	--
All Years	Average	--	--	--	0.357	2.240	1.234	0.864	0.891	0.907	0.869	--	--
	Maximum	--	--	--	0.600	8.079	9.600	4.834	6.649	2.905	5.991	--	--
	Minimum	--	--	--	0.150	0.060	0.304	0.090	0.159	0.021	0.021	--	--

Table 4-5:
W4 Summary statistics for daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	# days with data	--	--	--	--	--	--	--	*18*	30	31	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	*0.64*	0.87	0.77	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	*8.30*	11.38	9.98	--	--
	Runoff (mm)	--	--	--	--	--	--	--	*12.9*	29.5	26.7	--	--
2008	# days with data	--	--	--	--	--	*22*	31	31	30	*21*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.48*	0.87	1.34	1.03	*1.65*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*6.30*	11.29	17.40	13.45	*21.48*	--	--
	Runoff (mm)	--	--	--	--	--	*12.0*	30.2	46.6	34.9	*39.0*	--	--
2009	# days with data	--	--	--	--	31	30	31	31	30	*21*	--	--
	Average Discharge (m^3/s)	--	--	--	--	2.01	1.11	0.41	0.43	0.80	*0.65*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	26.12	14.42	5.28	5.54	10.34	*8.48*	--	--
	Runoff (mm)	--	--	--	--	70.0	37.4	14.1	14.8	26.8	*15.4*	--	--
2010	# days with data	--	--	--	--	28	30	31	31	30	*19*	--	--
	Average Discharge (m^3/s)	--	--	--	--	1.61	1.35	0.88	0.72	0.49	*0.31*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	20.96	17.62	11.43	9.40	6.40	*3.98*	--	--
	Runoff (mm)	--	--	--	--	50.7	45.7	30.6	25.2	16.6	*6.5*	--	--
2011	# days with data	--	--	--	--	28	30	31	31	30	31	--	--
	Average Discharge (m^3/s)	--	--	--	--	2.18	0.85	1.30	1.43	1.27	0.77	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	28.41	10.99	16.91	18.60	16.49	9.99	--	--
	Runoff (mm)	--	--	--	--	68.7	28.5	45.3	49.8	42.7	26.8	--	--
2012	# days with data	--	--	--	--	*14*	*18*	31	31	30	*16*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*1.23*	*1.23*	1.27	0.83	0.73	*0.66*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*16.02*	*15.93*	16.53	10.83	9.44	*8.57*	--	--
	Runoff (mm)	--	--	--	--	*19.4*	*24.8*	44.3	29.0	24.5	*11.9*	--	--
2013	# days with data	--	--	--	--	*11*	30	31	31	30	*19*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*3.26*	1.07	0.42	0.32	0.75	*0.75*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*42.39*	13.85	5.46	4.12	9.75	*9.72*	--	--
	Runoff (mm)	--	--	--	--	*40.3*	35.9	14.6	11.0	25.3	*15.9*	--	--
2014	# days with data	--	--	--	--	*25*	30	31	31	30	*17*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*1.69*	1.00	0.67	0.90	0.76	*0.72*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*21.93*	13.06	8.73	11.69	9.87	*9.42*	--	--
	Runoff (mm)	--	--	--	--	*47.4*	33.8	23.4	31.3	25.6	*13.8*	--	--
2015	# days with data	--	--	--	--	*18*	30	31	31	30	*14*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*2.81*	1.01	1.02	1.27	1.47	*0.96*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*36.55*	13.18	13.24	16.53	19.11	*12.45*	--	--
	Runoff (mm)	--	--	--	--	*56.8*	34.2	35.5	44.3	49.5	*15.1*	--	--
2016	# days with data	--	--	--	--	--	--	--	--	--	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	--	--	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	--	--	--	--	--
	Runoff (mm)	--	--	--	--	--	--	--	--	--	--	--	--
2017	# days with data	--	--	--	--	--	*23*	31	31	30	*11*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.72*	0.67	0.52	0.93	*1.26*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*9.39*	8.65	6.78	12.14	*16.37*	--	--
	Runoff (mm)	--	--	--	--	--	*18.7*	23.2	18.2	31.5	*15.6*	--	--
2018	# days with data	--	--	--	*6*	31	30	31	31	30	*24*	--	--
	Average Discharge (m^3/s)	--	--	--	*0.3*	2.0	1.3	0.7	1.1	0.7	*0.5*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*3.3*	25.8	16.5	8.9	14.1	9.0	*6.3*	--	--
	Runoff (mm)	--	--	--	*1.7*	69.2	42.7	23.9	37.9	23.4	*13.1*	--	--
2019	# days with data	--	--	--	--	*26*	30	31	31	30	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*1.8*	0.6	0.3	0.3	0.5	*0.4*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*23.3*	8.4	4.2	3.5	6.1	*4.7*	--	--
	Runoff (mm)	--	--	--	--	*52.3*	21.7	11.1	9.3	15.9	*5.3*	--	--
2020	# days with data	--	--	--	--	*12*	30	31	31	30	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*4.0*	3.2	2.0	1.7	1.5	*1.3*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*52.4*	41.7	25.4	22.2	19.8	*17.2*	--	--
	Runoff (mm)	--	--	--	--	*54.3*	108.0	68.1	59.6	51.3	*19.3*	--	--
2021	# days with data	--	--	--	--	31	30	31	31	30	*3*	--	--
	Average Discharge (m^3/s)	--	--	--	--	2.5	1.3	0.7	1.1	0.9	*0.9*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	32.4	17.5	9.0	14.8	12.3	*11.1*	--	--
	Runoff (mm)	--	--	--	--	86.9	45.2	24.0	39.6	31.9	*2.9*	--	--
2022	# days with data	--	--	--	*2.0*	31.0	30.0	31.0	31.0	30.0	*18.0*	--	--
	Average Discharge (m^3/s)	--	--	--	*0.5*	1.7	2.0	0.9	0.8	0.9	*1.5*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*6.5*	21.5	26.3	12.3	10.0	11.3	*19.0*	--	--
	Runoff (mm)	--	--	--	*1.1*	57.5	68.1	33.0	26.7	29.2	*29.5*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	*0.376*	2.229	1.236	0.864	0.891	0.907	*0.865*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*4.9*	29.0	16.1	11.2	11.6	11.8	*11.3*	--	--
	Average Runoff (mm)	--	--	--	*1.4*	56.1	39.8	30.1	30.4	30.6	*18.1*	--	--

Table 4-6:
W5 Summary statistics for 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	Average	--	--	--	--	--	--	--	0.788	0.970	1.083	--	--
	Maximum	--	--	--	--	--	--	--	1.221	2.065	2.135	--	--
	Minimum	--	--	--	--	--	--	--	0.548	0.679	0.678	--	--
2008	Average	--	--	--	--	--	0.431	0.726	0.994	0.703	1.202	--	--
	Maximum	--	--	--	--	--	0.622	3.599	4.574	1.228	4.904	--	--
	Minimum	--	--	--	--	--	0.315	0.336	0.490	0.463	0.410	--	--
2009	Average	--	--	--	--	--	1.425	0.589	0.474	0.768	1.187	--	--
	Maximum	--	--	--	--	--	3.461	0.944	1.669	1.508	2.903	--	--
	Minimum	--	--	--	--	--	0.825	0.225	0.156	0.441	0.156	--	--
2010	Average	--	--	--	--	1.990	1.273	0.991	0.817	0.569	0.423	--	--
	Maximum	--	--	--	--	3.623	3.180	1.428	1.709	0.910	0.916	--	--
	Minimum	--	--	--	--	1.060	0.817	0.742	0.623	0.124	0.081	--	--
2011	Average	--	--	--	--	3.554	0.859	1.681	1.756	1.625	0.984	--	--
	Maximum	--	--	--	--	7.146	1.682	4.928	3.588	2.631	1.586	--	--
	Minimum	--	--	--	--	1.273	0.264	0.447	0.934	1.117	0.551	--	--
2012	Average	--	--	--	--	2.599	2.119	1.626	0.924	0.734	0.621	--	--
	Maximum	--	--	--	--	6.239	5.160	6.883	1.996	1.007	0.794	--	--
	Minimum	--	--	--	--	0.819	0.837	0.871	0.566	0.497	0.344	--	--
2013	Average	--	--	--	--	--	--	--	0.417	0.933	0.893	--	--
	Maximum	--	--	--	--	--	--	--	0.623	3.880	2.321	--	--
	Minimum	--	--	--	--	--	--	--	0.284	0.315	0.579	--	--
2014	Average	--	--	--	--	2.916	1.625	0.769	1.055	0.615	0.926	--	--
	Maximum	--	--	--	--	7.135	4.536	2.807	3.277	1.323	3.345	--	--
	Minimum	--	--	--	--	1.072	0.801	0.488	0.542	0.322	0.496	--	--
2015	Average	--	--	--	--	--	1.066	1.227	1.541	1.762	1.237	--	--
	Maximum	--	--	--	--	--	1.860	2.965	3.814	3.041	3.056	--	--
	Minimum	--	--	--	--	--	0.627	0.734	0.953	1.258	0.883	--	--
2016	Average	--	--	--	--	2.540	1.685	1.152	1.202	1.007	--	--	--
	Maximum	--	--	--	--	4.003	3.725	1.790	2.854	2.334	--	--	--
	Minimum	--	--	--	--	1.578	1.112	0.771	0.755	0.731	--	--	--
2017	Average	--	--	--	--	--	0.772	0.724	0.584	1.557	2.392	--	--
	Maximum	--	--	--	--	--	6.140	1.729	0.840	4.196	4.631	--	--
	Minimum	--	--	--	--	--	0.279	0.360	0.395	0.522	0.231	--	--
2018	Average	--	--	--	--	4.921	1.951	0.857	1.614	1.015	--	--	--
	Maximum	--	--	--	--	11.424	4.799	3.145	6.815	1.708	--	--	--
	Minimum	--	--	--	--	1.471	0.743	0.354	0.323	0.504	--	--	--
2019	Average	--	--	--	--	3.299	1.102	0.381	0.283	0.685	0.701	--	--
	Maximum	--	--	--	--	6.205	5.798	0.594	0.434	4.118	1.664	--	--
	Minimum	--	--	--	--	1.026	0.324	0.153	0.132	0.170	0.315	--	--
2020	Average	--	--	--	--	3.048	3.227	2.253	1.963	1.772	1.737	--	--
	Maximum	--	--	--	--	5.699	7.265	3.659	3.110	2.920	2.568	--	--
	Minimum	--	--	--	--	1.523	2.110	1.719	1.281	1.231	1.136	--	--
2021	Average	--	--	--	--	2.857	1.405	0.799	1.211	1.039	0.978	--	--
	Maximum	--	--	--	--	5.954	4.142	2.022	3.141	1.468	1.161	--	--
	Minimum	--	--	--	--	1.668	0.685	0.566	0.486	0.820	0.826	--	--
2022	Average	--	--	--	--	2.479	2.154	1.142	1.055	1.220	1.955	--	--
	Maximum	--	--	--	--	4.242	4.127	4.570	1.631	2.077	2.626	--	--
	Minimum	--	--	--	--	1.538	0.915	0.742	0.778	0.919	0.546	--	--
All Years	Average	--	--	--	--	3.020	1.507	1.065	1.042	1.061	1.166	--	--
	Maximum	--	--	--	--	11.424	7.265	6.883	6.815	4.196	4.904	--	--
	Minimum	--	--	--	--	0.819	0.264	0.153	0.132	0.124	0.081	--	--

Table 4-7:
W5 Summary statistics for daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	# days with data	--	--	--	--	--	--	--	*18*	30	*20*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	*0.79*	0.97	*1.09*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	*8.06*	9.94	*11.22*	--	--
	Runoff (mm)	--	--	--	--	--	--	--	*12.5*	25.8	*19.4*	--	--
2008	# days with data	--	--	--	--	--	*21*	31	31	30	*21*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.43*	0.73	1.00	0.70	*1.20*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*4.46*	7.44	10.22	7.21	*12.33*	--	--
	Runoff (mm)	--	--	--	--	--	*8.1*	19.9	27.4	18.7	*22.4*	--	--
2009	# days with data	--	--	--	--	--	*23*	31	31	30	*22*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*1.42*	0.59	0.47	0.77	*1.19*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*14.56*	6.04	4.86	7.88	*12.19*	--	--
	Runoff (mm)	--	--	--	--	--	*28.9*	16.2	13.0	20.4	*23.2*	--	--
2010	# days with data	--	--	--	--	28	30	31	31	30	*19*	--	--
	Average Discharge (m^3/s)	--	--	--	--	1.99	1.27	0.99	0.82	0.57	*0.42*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	20.36	13.06	10.16	8.38	5.83	*4.32*	--	--
	Runoff (mm)	--	--	--	--	49.3	33.8	27.2	22.4	15.1	*7.1*	--	--
2011	# days with data	--	--	--	--	*15*	30	31	31	30	*21*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*3.59*	0.86	1.68	1.76	1.62	*0.98*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*36.82*	8.81	17.24	18.01	16.67	*10.09*	--	--
	Runoff (mm)	--	--	--	--	*47.7*	22.8	46.2	48.2	43.2	*18.3*	--	--
2012	# days with data	--	--	--	--	27	30	31	31	30	*10*	--	--
	Average Discharge (m^3/s)	--	--	--	--	2.59	2.12	1.63	0.92	0.73	*0.61*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	26.52	21.73	16.68	9.47	7.53	*6.29*	--	--
	Runoff (mm)	--	--	--	--	61.9	56.3	44.7	25.4	19.5	*5.4*	--	--
2013	# days with data	--	--	--	--	--	--	--	27	30	*20*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	0.42	0.93	*0.89*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	4.26	9.57	*9.09*	--	--
	Runoff (mm)	--	--	--	--	--	--	--	9.9	24.8	*15.7*	--	--
2014	# days with data	--	--	--	--	*25*	30	31	31	30	*17*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*3.03*	1.63	0.77	1.05	0.62	*0.92*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*31.09*	16.67	7.88	10.81	6.31	*9.41*	--	--
	Runoff (mm)	--	--	--	--	*67.2*	43.2	21.1	29.0	16.4	*13.8*	--	--
2015	# days with data	--	--	--	--	--	*15*	31	31	30	*14*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.98*	1.23	1.54	1.76	*1.23*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*10.01*	12.58	15.81	18.07	*12.63*	--	--
	Runoff (mm)	--	--	--	--	--	*13.0*	33.7	42.3	46.8	*15.3*	--	--
2016	# days with data	--	--	--	--	28	*30*	31	31	30	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	2.54	*1.69*	1.15	1.20	1.01	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	26.01	*17.28*	11.81	12.32	10.33	--	--	--
	Runoff (mm)	--	--	--	--	62.9	*44.8*	31.6	33.0	26.8	--	--	--
2017	# days with data	--	--	--	--	--	*22*	31	31	30	*5*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.77*	0.72	0.58	1.56	*2.39*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*7.92*	7.42	5.99	15.97	*24.54*	--	--
	Runoff (mm)	--	--	--	--	--	*15.1*	19.9	16.1	41.4	*10.6*	--	--
2018	# days with data	--	--	--	--	*20*	30	31	31	*28*	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	*4.9*	2.0	0.9	1.6	*1.0*	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*49.9*	20.0	8.8	16.6	*10.3*	--	--	--
	Runoff (mm)	--	--	--	--	*86.2*	51.9	23.6	44.3	*24.9*	--	--	--
2019	# days with data	--	--	--	--	*24*	30	31	31	30	*7*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*3.3*	1.1	0.4	0.3	0.7	*0.7*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*33.7*	11.3	3.9	2.9	7.0	*7.4*	--	--
	Runoff (mm)	--	--	--	--	*69.8*	29.3	10.5	7.8	18.2	*4.5*	--	--
2020	# days with data	--	--	--	--	27	30	31	31	30	*17*	--	--
	Average Discharge (m^3/s)	--	--	--	--	3.0	3.2	2.3	2.0	1.8	*1.7*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	31.0	33.1	23.1	20.1	18.2	*17.8*	--	--
	Runoff (mm)	--	--	--	--	72.3	85.8	61.9	53.9	47.1	*26.1*	--	--
2021	# days with data	--	--	--	--	*24*	30	31	31	30	*3*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*2.9*	1.4	0.8	1.2	1.0	*1.0*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*29.7*	14.4	8.2	12.4	10.7	*10.2*	--	--
	Runoff (mm)	--	--	--	--	*61.6*	37.3	21.9	33.3	27.6	*2.7*	--	--
2022	# days with data	--	--	--	--	*21.0*	30.0	31.0	31.0	30.0	*8.0*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*2.5*	2.2	1.1	1.1	1.2	*1.9*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*25.2*	22.1	11.7	10.8	12.5	*19.8*	--	--
	Runoff (mm)	--	--	--	--	*45.8*	57.3	31.4	29.0	32.4	*13.7*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	--	*3.025*	1.500	1.065	1.042	1.060	*1.166*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*31.0*	15.4	10.9	10.7	10.9	*12.1*	--	--
	Average Runoff (mm)	--	--	--	--	*62.5*	37.7	29.3	28.0	28.1	*15.0*	--	--

Table 4-8:
W6 Summary statistics for 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	Average	--	--	--	--	--	--	--	0.783	1.303	0.725	--	--
	Maximum	--	--	--	--	--	--	--	2.057	4.249	1.494	--	--
	Minimum	--	--	--	--	--	--	--	0.299	0.467	0.239	--	--
2008	Average	--	--	--	--	--	0.274	0.741	1.340	1.121	1.665	--	--
	Maximum	--	--	--	--	--	0.545	1.780	4.636	2.652	5.172	--	--
	Minimum	--	--	--	--	--	0.136	0.265	0.456	0.542	0.675	--	--
2009	Average	--	--	--	--	--	1.063	0.318	0.647	1.223	0.964	--	--
	Maximum	--	--	--	--	--	2.266	0.675	1.988	2.509	1.118	--	--
	Minimum	--	--	--	--	--	0.617	0.038	0.267	0.724	0.709	--	--
2010	Average	--	--	--	--	2.213	1.181	0.946	0.779	0.578	0.379	--	--
	Maximum	--	--	--	--	4.325	2.817	1.811	1.840	0.948	0.544	--	--
	Minimum	--	--	--	--	0.746	0.626	0.580	0.509	0.247	0.112	--	--
2011	Average	--	--	--	--	--	0.626	1.180	1.350	1.101	0.708	0.569	--
	Maximum	--	--	--	--	--	1.207	6.749	3.864	1.630	1.169	0.722	--
	Minimum	--	--	--	--	--	0.535	0.525	0.591	0.797	0.340	0.385	--
2012	Average	--	--	--	--	3.349	1.506	1.854	1.183	1.048	0.842	--	--
	Maximum	--	--	--	--	7.528	2.769	7.120	2.681	1.367	1.054	--	--
	Minimum	--	--	--	--	1.511	0.814	0.991	0.912	0.803	0.497	--	--
2013	Average	--	--	--	--	8.676	2.479	1.055	0.546	1.308	1.084	--	--
	Maximum	--	--	--	--	17.947	6.767	1.754	0.738	2.809	2.429	--	--
	Minimum	--	--	--	--	2.496	1.337	0.489	0.412	0.499	0.686	--	--
2014	Average	--	--	--	--	2.106	1.034	0.892	1.661	1.282	1.324	--	--
	Maximum	--	--	--	--	6.637	2.706	2.186	3.689	3.653	2.651	--	--
	Minimum	--	--	--	--	0.572	0.419	0.375	0.834	0.774	0.960	--	--
2015	Average	--	--	--	--	--	0.765	0.879	1.402	1.722	1.039	--	--
	Maximum	--	--	--	--	--	1.269	2.255	3.733	3.688	1.635	--	--
	Minimum	--	--	--	--	--	0.486	0.508	0.712	1.046	0.784	--	--
2016	Average	--	--	--	--	--	--	1.788	2.057	1.541	1.046	--	--
	Maximum	--	--	--	--	--	--	2.992	5.348	2.116	1.688	--	--
	Minimum	--	--	--	--	--	--	1.177	1.367	1.073	0.686	--	--
2017	Average	--	--	--	--	--	0.677	0.778	0.462	1.294	1.566	--	--
	Maximum	--	--	--	--	--	3.127	1.958	0.635	3.253	3.264	--	--
	Minimum	--	--	--	--	--	0.295	0.440	0.371	0.389	0.328	--	--
2018	Average	--	--	--	--	--	1.145	0.672	1.239	0.763	--	--	--
	Maximum	--	--	--	--	--	3.203	3.131	4.880	1.221	--	--	--
	Minimum	--	--	--	--	--	0.468	0.278	0.266	0.383	--	--	--
2019	Average	--	--	--	--	2.108	0.487	0.263	0.209	0.418	0.311	--	--
	Maximum	--	--	--	--	5.138	1.077	0.370	0.272	2.821	0.452	--	--
	Minimum	--	--	--	--	0.280	0.247	0.181	0.166	0.162	0.161	--	--
2020	Average	--	--	--	--	3.701	2.621	1.597	2.183	2.364	2.382	--	--
	Maximum	--	--	--	--	10.881	8.308	3.721	6.007	4.427	3.357	--	--
	Minimum	--	--	--	--	0.496	1.239	0.938	1.370	1.703	0.848	--	--
2021	Average	--	--	--	--	--	--	0.450	1.159	0.981	0.910	--	--
	Maximum	--	--	--	--	--	--	1.102	4.140	1.848	1.151	--	--
	Minimum	--	--	--	--	--	--	0.198	0.240	0.659	0.785	--	--
2022	Average	--	--	--	--	4.834	2.664	1.255	0.640	0.969	2.430	--	--
	Maximum	--	--	--	--	8.752	5.893	5.980	0.734	2.342	5.050	--	--
	Minimum	--	--	--	--	3.288	0.891	0.561	0.550	0.498	0.932	--	--
All Years	Average	--	--	--	--	3.855	1.271	0.978	1.103	1.188	1.158	0.903	--
	Maximum	--	--	--	--	17.947	8.308	7.120	6.007	4.427	5.172	1.788	--
	Minimum	--	--	--	--	0.280	0.136	0.038	0.166	0.162	0.112	0.385	--

Table 4-9:
W6 Summary statistics for daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	# days with data	--	--	--	--	--	--	--	*18*	30	31	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	*0.78*	1.30	0.73	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	*7.70*	12.91	7.19	--	--
	Runoff (mm)	--	--	--	--	--	--	--	*12.0*	33.5	19.2	--	--
2008	# days with data	--	--	--	--	--	*21*	31	31	30	*21*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.28*	0.74	1.34	1.12	*1.66*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*2.74*	7.35	13.31	11.11	*16.41*	--	--
	Runoff (mm)	--	--	--	--	--	*5.0*	19.7	35.7	28.8	*29.8*	--	--
2009	# days with data	--	--	--	--	--	*23*	31	31	30	*7*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*1.07*	0.32	0.65	1.22	*0.96*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*10.60*	3.15	6.41	12.12	*9.48*	--	--
	Runoff (mm)	--	--	--	--	--	*21.1*	8.4	17.2	31.4	*5.7*	--	--
2010	# days with data	--	--	--	--	28	30	31	31	30	*19*	--	--
	Average Discharge (m^3/s)	--	--	--	--	2.23	1.18	0.95	0.78	0.58	*0.38*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	22.09	11.71	9.37	7.72	5.73	*3.75*	--	--
	Runoff (mm)	--	--	--	--	53.4	30.3	25.1	20.7	14.9	*6.1*	--	--
2011	# days with data	--	--	--	--	--	*2*	31	31	30	31	*7*	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.65*	1.18	1.35	1.10	0.71	*0.57*	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*6.42*	11.69	13.38	10.91	7.02	*5.69*	--
	Runoff (mm)	--	--	--	--	--	*1.1*	31.3	35.8	28.3	18.8	*3.4*	--
2012	# days with data	--	--	--	--	27	30	31	31	30	*17*	--	--
	Average Discharge (m^3/s)	--	--	--	--	3.33	1.51	1.85	1.18	1.05	*0.84*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	32.98	14.92	18.37	11.72	10.38	*8.32*	--	--
	Runoff (mm)	--	--	--	--	76.9	38.7	49.2	31.4	26.9	*12.2*	--	--
2013	# days with data	--	--	--	--	*10*	30	31	31	30	*20*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*8.43*	2.48	1.06	0.55	1.31	*1.08*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*83.51*	24.57	10.46	5.41	12.96	*10.66*	--	--
	Runoff (mm)	--	--	--	--	*72.2*	63.7	28.0	14.5	33.6	*18.4*	--	--
2014	# days with data	--	--	--	--	*25*	30	31	31	30	*17*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*2.20*	1.03	0.56	1.58	1.28	*1.32*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*21.84*	10.25	5.57	15.62	12.71	*13.05*	--	--
	Runoff (mm)	--	--	--	--	*47.2*	26.6	14.9	41.8	32.9	*19.2*	--	--
2015	# days with data	--	--	--	--	--	*12*	31	31	30	*14*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.75*	0.88	1.40	1.72	*1.03*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*7.48*	8.71	13.89	17.06	*10.26*	--	--
	Runoff (mm)	--	--	--	--	--	*7.8*	23.3	37.2	44.2	*12.4*	--	--
2016	# days with data	--	--	--	--	--	--	*19*	31	30	*14*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	*1.78*	2.06	1.54	*1.05*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	*17.6*	20.4	15.3	*10.4*	--	--
	Runoff (mm)	--	--	--	--	--	--	*28.9*	54.6	39.6	*12.5*	--	--
2017	# days with data	--	--	--	--	--	*22*	31	31	30	*14*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.68*	0.78	0.46	1.29	*1.54*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*6.72*	7.71	4.58	12.82	*15.28*	--	--
	Runoff (mm)	--	--	--	--	--	*12.8*	20.6	12.3	33.2	*18.5*	--	--
2018	# days with data	--	--	--	--	--	*18*	31	31	28	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*1.2*	0.7	1.2	0.8	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*11.4*	6.7	12.3	7.6	--	--	--
	Runoff (mm)	--	--	--	--	--	*17.8*	17.8	32.9	18.3	--	--	--
2019	# days with data	--	--	--	--	*26*	*30*	31	31	30	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*2.1*	*0.5*	0.3	0.2	0.4	*0.3*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*20.7*	*4.8*	2.6	2.1	4.1	*3.0*	--	--
	Runoff (mm)	--	--	--	--	*46.6*	*12.5*	7.0	5.6	10.7	*3.4*	--	--
2020	# days with data	--	--	--	--	27	30	31	31	30	*17*	--	--
	Average Discharge (m^3/s)	--	--	--	--	3.6	2.6	1.6	2.2	2.4	*2.3*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	36.0	26.0	15.8	21.6	23.4	*23.1*	--	--
	Runoff (mm)	--	--	--	--	84.1	67.3	42.4	57.8	60.7	*33.9*	--	--
2021	# days with data	--	--	--	--	--	--	*27*	31	30	*3*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	*0.4*	1.2	1.0	*0.9*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	*4.4*	11.5	9.7	*9.3*	--	--
	Runoff (mm)	--	--	--	--	--	--	*10.3*	30.8	25.2	*2.4*	--	--
2022	# days with data	--	--	--	--	*17.0*	30.0	31.0	*4.0*	*21.0*	*8.0*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*4.8*	2.7	1.3	*0.6*	*1.0*	*2.4*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*3.5*	2.0	0.9	*0.5*	*0.7*	*1.7*	--	--
	Runoff (mm)	--	--	--	--	*70.4*	68.4	33.3	*2.2*	*17.3*	*16.2*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	--	*3.821*	*1.273*	0.955	1.096	1.188	*1.148*	*0.574*	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*31.5*	*10.7*	8.7	10.5	11.2	*9.9*	*5.7*	--
	Average Runoff (mm)	--	--	--	--	*64.4*	*28.7*	24.0	27.6	30.0	*15.3*	*3.4*	--

Table 4-10:
W21 Summary statistics for preliminary 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	Average	--	--	--	--	--	0.114	0.074	0.200	0.098	0.060	--	--
	Maximum	--	--	--	--	--	0.295	0.270	0.349	0.187	0.251	--	--
	Minimum	--	--	--	--	--	0.003	0.009	0.127	0.000	0.000	--	--
2021	Average	--	--	--	--	0.281	0.135	0.058	0.044	0.046	0.049	--	--
	Maximum	--	--	--	--	0.525	0.500	0.199	0.059	0.063	0.063	--	--
	Minimum	--	--	--	--	0.139	0.012	0.010	0.030	0.032	0.034	--	--
2022	Average	--	--	--	--	0.241	0.251	0.148	0.121	0.132	0.240	--	--
	Maximum	--	--	--	--	0.324	0.370	0.316	0.228	0.226	0.393	--	--
	Minimum	--	--	--	--	0.141	0.126	0.101	0.078	0.100	0.123	--	--
All Years	Average	--	--	--	--	0.261	0.167	0.093	0.122	0.092	0.116	--	--
	Maximum	--	--	--	--	0.525	0.500	0.316	0.349	0.226	0.393	--	--
	Minimum	--	--	--	--	0.139	0.003	0.009	0.030	0.000	0.000	--	--

Table 4-11:
W21 Summary statistics for preliminary daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	# days with data	--	--	--	--	--	*14*	13	*13*	30	25	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.12*	0.07	*0.20*	0.10	0.06	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*14.35*	9.20	*24.30*	12.04	7.37	--	--
	Runoff (mm)	--	--	--	--	--	*1.2*	0.8	*2.1*	1.0	0.6	--	--
2021	# days with data	--	--	--	--	31	30	31	*31*	30	*4*	--	--
	Average Discharge (m^3/s)	--	--	--	--	0.3	0.1	0.1	*0.0*	0.1	*0.1*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	27.7	13.3	5.8	*4.3*	4.6	*4.8*	--	--
	Runoff (mm)	--	--	--	--	74.2	34.6	15.4	*11.6*	11.8	*1.7*	--	--
2022	# days with data	--	--	--	--	*12.0*	30.0	31.0	31.0	30.0	*18.0*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.2*	0.3	0.1	0.1	0.1	*0.2*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*23.8*	24.9	14.7	12.0	13.1	*23.7*	--	--
	Runoff (mm)	--	--	--	--	*24.7*	64.5	39.3	32.1	33.9	*36.8*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	--	*0.26*	0.17	0.09	0.12	0.09	*0.12*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*25.7*	17.5	9.9	13.5	9.9	*11.9*	--	--
	Average Runoff (mm)	--	--	--	--	*49.4*	33.4	18.5	15.3	15.6	*13.0*	--	--

Table 4-12:
W22 Summary statistics for 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	Average	--	--	--	--	--	--	--	0.518	0.701	0.608	0.937	--
	Maximum	--	--	--	--	--	--	--	0.927	1.951	1.028	1.342	--
	Minimum	--	--	--	--	--	--	--	0.320	0.425	0.440	0.558	--
2008	Average	--	--	--	--	--	0.462	0.727	0.943	0.788	1.233	--	--
	Maximum	--	--	--	--	--	0.685	3.198	3.928	1.335	2.773	--	--
	Minimum	--	--	--	--	--	0.297	0.324	0.469	0.495	0.473	--	--
2009	Average	--	--	--	--	2.070	0.959	0.273	0.404	0.658	0.638	--	--
	Maximum	--	--	--	--	5.340	2.355	0.474	1.312	1.222	1.010	--	--
	Minimum	--	--	--	--	0.193	0.330	0.056	0.186	0.433	0.371	--	--
2010	Average	--	--	--	--	1.164	1.024	0.749	0.642	0.451	0.338	--	--
	Maximum	--	--	--	--	2.395	2.510	1.112	1.296	0.675	0.474	--	--
	Minimum	--	--	--	--	0.503	0.693	0.578	0.520	0.106	0.112	--	--
2011	Average	--	--	--	0.257	1.596	0.696	1.121	1.244	1.103	0.668	--	--
	Maximum	--	--	--	0.485	4.473	1.354	3.075	2.889	1.728	1.061	--	--
	Minimum	--	--	--	0.125	0.405	0.428	0.499	0.698	0.819	0.491	--	--
2012	Average	--	--	--	--	--	--	0.929	0.699	0.594	0.466	--	--
	Maximum	--	--	--	--	--	--	2.003	1.259	0.757	0.600	--	--
	Minimum	--	--	--	--	--	--	0.729	0.519	0.460	0.190	--	--
2013	Average	--	--	--	--	5.565	0.654	0.062	--	--	--	--	--
	Maximum	--	--	--	--	20.630	4.736	0.362	--	--	--	--	--
	Minimum	--	--	--	--	1.179	0.105	0.002	--	--	--	--	--
2014	Average	--	--	--	--	1.365	0.927	0.548	0.785	0.649	0.649	--	--
	Maximum	--	--	--	--	3.143	2.561	2.737	2.543	1.197	0.904	--	--
	Minimum	--	--	--	--	0.467	0.457	0.310	0.245	0.385	0.523	--	--
2015	Average	--	--	--	--	2.432	0.870	0.896	1.121	1.328	0.841	--	--
	Maximum	--	--	--	--	5.322	1.503	2.104	2.911	2.408	1.206	--	--
	Minimum	--	--	--	--	1.002	0.531	0.574	0.701	0.978	0.620	--	--
2016	Average	--	--	--	0.796	0.845	0.750	0.732	0.851	0.719	0.660	--	--
	Maximum	--	--	--	1.455	1.513	1.426	1.407	2.104	1.464	0.906	--	--
	Minimum	--	--	--	0.660	0.581	0.660	0.531	0.543	0.507	0.426	--	--
2017	Average	--	--	--	--	--	0.793	0.753	0.478	1.041	1.429	--	--
	Maximum	--	--	--	--	--	5.287	1.474	0.729	2.846	3.330	--	--
	Minimum	--	--	--	--	--	0.431	0.471	0.321	0.404	0.060	--	--
2018	Average	--	--	--	--	3.335	1.543	0.717	1.024	0.598	--	--	--
	Maximum	--	--	--	--	7.264	3.547	2.252	3.745	0.925	--	--	--
	Minimum	--	--	--	--	1.951	0.668	0.346	0.337	0.315	--	--	--
2019	Average	--	--	--	--	1.473	0.687	0.368	0.319	0.560	0.433	--	--
	Maximum	--	--	--	--	2.680	3.371	0.524	0.398	2.951	1.129	--	--
	Minimum	--	--	--	--	0.015	0.289	0.275	0.254	0.248	0.169	--	--
2020	Average	--	--	--	--	2.781	2.727	1.556	1.584	1.083	1.210	--	--
	Maximum	--	--	--	--	5.840	8.811	3.101	1.899	1.986	1.752	--	--
	Minimum	--	--	--	--	1.175	1.592	1.009	1.346	0.650	0.703	--	--
2021	Average	--	--	--	--	2.051	1.019	0.544	1.035	0.843	0.775	--	--
	Maximum	--	--	--	--	4.661	3.685	1.159	3.670	1.176	0.921	--	--
	Minimum	--	--	--	--	0.509	0.407	0.350	0.345	0.608	0.635	--	--
2022	Average	--	--	--	0.143	1.327	1.829	0.894	0.741	0.877	1.614	--	--
	Maximum	--	--	--	0.247	3.904	3.743	4.661	1.355	1.645	4.987	--	--
	Minimum	--	--	--	0.075	0.094	0.758	0.564	0.521	0.641	0.260	--	--
All Years	Average	--	--	--	0.399	2.167	1.067	0.724	0.826	0.799	0.826	0.937	--
	Maximum	--	--	--	1.455	20.630	8.811	4.661	3.928	2.951	4.987	1.342	--
	Minimum	--	--	--	0.075	0.015	0.105	0.002	0.186	0.106	0.060	0.558	--

Table 4-13:
W22 Summary statistics for daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	# days with data	--	--	--	--	--	--	--	*18*	30	31	*12*	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	*0.52*	0.70	0.61	*0.94*	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	*7.71*	10.49	9.10	*14.02*	--
	Runoff (mm)	--	--	--	--	--	--	--	*12.0*	27.2	24.4	*14.5*	--
2008	# days with data	--	--	--	--	--	*22*	31	31	30	*21*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.47*	0.73	0.94	0.79	*1.23*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*6.99*	10.88	14.14	11.80	*18.39*	--	--
	Runoff (mm)	--	--	--	--	--	*13.3*	29.1	37.9	30.6	*33.4*	--	--
2009	# days with data	--	--	--	--	29	30	31	31	30	*20*	--	--
	Average Discharge (m^3/s)	--	--	--	--	2.10	0.96	0.27	0.40	0.66	*0.64*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	31.46	14.36	4.08	6.05	9.84	*9.56*	--	--
	Runoff (mm)	--	--	--	--	78.8	37.2	10.9	16.2	25.5	*16.5*	--	--
2010	# days with data	--	--	--	--	28	30	31	31	30	*19*	--	--
	Average Discharge (m^3/s)	--	--	--	--	1.16	1.02	0.75	0.64	0.45	*0.34*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	17.36	15.34	11.22	9.61	6.75	*5.07*	--	--
	Runoff (mm)	--	--	--	--	42.0	39.8	30.0	25.7	17.5	*8.3*	--	--
2011	# days with data	--	--	--	*12*	31	30	31	31	30	31	--	--
	Average Discharge (m^3/s)	--	--	--	*0.27*	1.60	0.70	1.12	1.24	1.10	0.67	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*3.98*	23.90	10.42	16.78	18.63	16.52	10.00	--	--
	Runoff (mm)	--	--	--	*4.1*	64.0	27.0	44.9	49.9	42.8	26.8	--	--
2012	# days with data	--	--	--	--	--	--	*14*	31	30	*16*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	*0.93*	0.70	0.59	*0.46*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	*13.95*	10.46	8.89	*6.95*	--	--
	Runoff (mm)	--	--	--	--	--	--	*16.9*	28.0	23.0	*9.6*	--	--
2013	# days with data	--	--	--	--	*11*	30	24	--	--	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	*5.22*	0.65	0.06	--	--	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*78.11*	9.79	0.92	--	--	--	--	--
	Runoff (mm)	--	--	--	--	*74.2*	25.4	1.9	--	--	--	--	--
2014	# days with data	--	--	--	--	25	30	31	31	30	*17*	--	--
	Average Discharge (m^3/s)	--	--	--	--	1.41	0.93	0.55	0.79	0.65	*0.65*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	21.06	13.88	8.20	11.75	9.72	*9.68*	--	--
	Runoff (mm)	--	--	--	--	45.5	36.0	22.0	31.5	25.2	*14.2*	--	--
2015	# days with data	--	--	--	--	*18*	29	31	31	30	*14*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*2.43*	0.86	0.90	1.12	1.33	*0.84*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*36.38*	12.93	13.42	16.79	19.88	*12.51*	--	--
	Runoff (mm)	--	--	--	--	*56.6*	32.4	35.9	45.0	51.5	*15.1*	--	--
2016	# days with data	--	--	--	*22*	31	30	31	31	30	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	*0.80*	0.84	0.75	0.73	0.85	0.72	*0.66*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*11.9*	12.6	11.2	11.0	12.7	10.8	*9.9*	--	--
	Runoff (mm)	--	--	--	*22.6*	33.6	29.1	29.3	34.1	27.9	*11.2*	--	--
2017	# days with data	--	--	--	--	--	*23*	31	31	30	*6*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.79*	0.75	0.48	1.04	*1.42*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*11.88*	11.27	7.16	15.58	*21.29*	--	--
	Runoff (mm)	--	--	--	--	--	*23.6*	30.2	19.2	40.4	*11.0*	--	--
2018	# days with data	--	--	--	--	*16*	30	31	31	30	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	*3.3*	1.5	0.7	1.0	0.6	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*50.1*	23.1	10.7	15.3	9.0	--	--	--
	Runoff (mm)	--	--	--	--	*69.2*	59.9	28.7	41.1	23.2	--	--	--
2019	# days with data	--	--	--	--	*25*	30	31	31	30	*7*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*1.4*	0.7	0.4	0.3	0.6	*0.4*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*21.5*	10.3	5.5	4.8	8.4	*6.6*	--	--
	Runoff (mm)	--	--	--	--	*46.4*	26.7	14.7	12.8	21.7	*4.0*	--	--
2020	# days with data	--	--	--	--	*24*	30	31	10	23	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*2.8*	2.7	1.6	1.6	1.1	*1.2*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*41.3*	40.8	23.3	23.7	16.2	*17.9*	--	--
	Runoff (mm)	--	--	--	--	*85.7*	105.8	62.4	20.5	32.3	*20.1*	--	--
2021	# days with data	--	--	--	--	*25*	30	31	31	30	*3*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*2.0*	1.0	0.5	1.0	0.8	*0.8*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*30.3*	15.3	8.1	15.5	12.6	*11.7*	--	--
	Runoff (mm)	--	--	--	--	*65.5*	39.5	21.8	41.5	32.7	*3.0*	--	--
2022	# days with data	--	--	--	*2.0*	31.0	30.0	31.0	31.0	30.0	*18.0*	--	--
	Average Discharge (m^3/s)	--	--	--	*0.2*	1.3	1.8	0.9	0.7	0.9	*1.6*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*2.4*	19.9	27.4	13.4	11.1	13.1	*24.0*	--	--
	Runoff (mm)	--	--	--	*0.4*	53.2	71.0	35.9	29.7	34.0	*37.3*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	*0.407*	2.137	1.067	0.725	0.826	0.800	*0.824*	*0.937*	--
	Average Yield ($L/s/km^2$)	--	--	--	*6.1*	32.0	16.0	10.8	12.4	12.0	*12.3*	*14.0*	--
	Average Runoff (mm)	--	--	--	*9.1*	59.6	40.5	27.7	29.7	30.4	*16.8*	*14.5*	--

Table 4-14:
W26 Summary statistics for 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	Average	--	--	--	--	--	0.028	0.029	0.024	0.019	--	--	--
	Maximum	--	--	--	--	--	0.079	0.044	0.041	0.063	--	--	--
	Minimum	--	--	--	--	--	0.013	0.019	0.016	0.010	--	--	--
2011	Average	--	--	--	--	--	--	--	--	--	--	--	--
	Maximum	--	--	--	--	--	--	--	--	--	--	--	--
	Minimum	--	--	--	--	--	--	--	--	--	--	--	--
2012	Average	--	--	--	--	--	0.019	0.022	0.016	0.010	0.008	--	--
	Maximum	--	--	--	--	--	0.032	0.094	0.024	0.014	0.010	--	--
	Minimum	--	--	--	--	--	0.012	0.013	0.009	0.007	0.004	--	--
2013	Average	--	--	--	--	--	--	0.001	0.001	0.005	0.006	--	--
	Maximum	--	--	--	--	--	--	0.002	0.003	0.012	0.007	--	--
	Minimum	--	--	--	--	--	--	0.001	0.000	0.000	0.004	--	--
2014	Average	--	--	--	--	--	0.022	0.006	0.015	0.012	--	--	--
	Maximum	--	--	--	--	--	0.094	0.019	0.042	0.019	--	--	--
	Minimum	--	--	--	--	--	0.006	0.003	0.005	0.008	--	--	--
2015	Average	--	--	--	--	--	0.009	0.012	0.017	0.021	0.012	--	--
	Maximum	--	--	--	--	--	0.027	0.047	0.031	0.044	0.058	--	--
	Minimum	--	--	--	--	--	0.003	0.005	0.012	0.015	0.005	--	--
2016	Average	--	--	--	--	0.018	0.015	0.020	0.026	0.017	--	--	--
	Maximum	--	--	--	--	0.060	0.071	0.143	0.050	0.022	--	--	--
	Minimum	--	--	--	--	0.010	0.010	0.011	0.017	0.012	--	--	--
2017	Average	--	--	--	--	--	0.003	0.002	0.003	0.008	--	--	--
	Maximum	--	--	--	--	--	0.080	0.029	0.005	0.033	--	--	--
	Minimum	--	--	--	--	--	0.000	0.001	0.001	0.001	--	--	--
2018	Average	--	--	--	--	--	--	0.005	0.013	0.010	--	--	--
	Maximum	--	--	--	--	--	--	0.008	0.054	0.030	--	--	--
	Minimum	--	--	--	--	--	--	0.003	0.005	0.005	--	--	--
2019	Average	--	--	--	--	--	0.003	0.002	0.001	0.001	0.002	--	--
	Maximum	--	--	--	--	--	0.005	0.003	0.003	0.005	0.003	--	--
	Minimum	--	--	--	--	--	0.002	0.001	0.000	0.000	0.001	--	--
2020	Average	--	--	--	--	0.041	0.043	0.025	0.028	0.013	0.014	--	--
	Maximum	--	--	--	--	0.182	0.176	0.052	0.065	0.059	0.039	--	--
	Minimum	--	--	--	--	0.001	0.013	0.008	0.018	0.000	0.002	--	--
2021	Average	--	--	--	--	--	0.002	0.003	0.006	0.007	0.003	--	--
	Maximum	--	--	--	--	--	0.004	0.007	0.025	0.026	0.007	--	--
	Minimum	--	--	--	--	--	0.000	0.000	0.001	0.003	0.001	--	--
2022	Average	--	--	--	--	--	0.005	0.007	0.008	0.011	0.024	--	--
	Maximum	--	--	--	--	--	0.008	0.101	0.017	0.018	0.107	--	--
	Minimum	--	--	--	--	--	0.002	0.001	0.003	0.005	0.004	--	--
All Years	Average	--	--	--	--	0.029	0.015	0.011	0.013	0.011	0.010	--	--
	Maximum	--	--	--	--	0.182	0.176	0.143	0.065	0.063	0.107	--	--
	Minimum	--	--	--	--	0.001	0.000	0.000	0.000	0.000	0.001	--	--

Table 4-15:
W26 Summary statistics for daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	# days with data	--	--	--	--	--	29	31	31	26	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	0.03	0.03	0.02	0.02	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	21.44	22.18	18.71	14.30	--	--	--
	Runoff (mm)	--	--	--	--	--	53.7	59.4	50.1	32.1	--	--	--
2011	# days with data	--	--	--	--	--	--	--	--	--	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	--	--	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	--	--	--	--	--
	Runoff (mm)	--	--	--	--	--	--	--	--	--	--	--	--
2012	# days with data	--	--	--	--	--	*18*	31	31	30	*12*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.02*	0.02	0.02	0.01	*0.01*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*14.56*	17.00	12.00	7.83	*5.85*	--	--
	Runoff (mm)	--	--	--	--	--	*22.6*	45.5	32.1	20.3	*6.1*	--	--
2013	# days with data	--	--	--	--	--	--	7	31	30	*8*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	0.00	0.00	0.00	*0.01*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	0.98	0.97	3.61	*4.42*	--	--
	Runoff (mm)	--	--	--	--	--	--	0.6	2.6	9.4	*3.1*	--	--
2014	# days with data	--	--	--	--	--	*20*	31	31	25	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.02*	0.01	0.01	0.01	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*17.19*	4.50	11.19	8.98	--	--	--
	Runoff (mm)	--	--	--	--	--	*29.7*	12.0	30.0	19.4	--	--	--
2015	# days with data	--	--	--	--	--	*12*	31	31	30	*14*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.01*	0.01	0.02	0.02	*0.01*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*6.55*	9.00	12.87	16.26	*10.48*	--	--
	Runoff (mm)	--	--	--	--	--	*6.8*	24.1	34.5	42.2	*12.7*	--	--
2016	# days with data	--	--	--	--	*9*	30	31	31	30	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.02*	0.01	0.02	0.03	0.02	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*13.97*	11.38	15.46	20.21	12.73	--	--	--
	Runoff (mm)	--	--	--	--	*10.9*	29.5	41.4	54.1	33.0	--	--	--
2017	# days with data	--	--	--	--	--	*22*	31	31	29	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.00*	0.00	0.00	0.01	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*2.12*	1.74	2.12	5.99	--	--	--
	Runoff (mm)	--	--	--	--	--	*4.0*	4.7	5.7	15.0	--	--	--
2018	# days with data	--	--	--	--	--	--	*19*	31	*27*	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	*0.0*	0.0	*0.0*	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	*3.5*	9.7	*7.5*	--	--	--
	Runoff (mm)	--	--	--	--	--	--	*5.8*	26.0	*17.6*	--	--	--
2019	# days with data	--	--	--	--	--	*24*	*31*	31	*30*	*5*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.0*	0.0	0.0	0.0	*0.0*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*2.3*	1.6	0.8	1.0	*1.6*	--	--
	Runoff (mm)	--	--	--	--	--	*4.8*	4.3	2.2	2.7	*0.7*	--	--
2020	# days with data	--	--	--	--	*26*	*30*	*31*	31	*30*	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.0*	*0.0*	0.0	0.0	0.0	*0.0*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*30.6*	*32.9*	19.6	21.5	10.1	*10.9*	--	--
	Runoff (mm)	--	--	--	--	*68.6*	*85.3*	52.5	57.6	26.1	*12.3*	--	--
2021	# days with data	--	--	--	--	--	*13*	31	31	30	*4*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.0*	0.0	0.0	0.0	*0.0*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*1.3*	2.2	4.9	5.2	*2.5*	--	--
	Runoff (mm)	--	--	--	--	--	*1.5*	5.9	13.2	13.4	*0.9*	--	--
2022	# days with data	--	--	--	--	--	*10.0*	31.0	31.0	30.0	*18.0*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.0*	0.0	0.0	0.0	*0.0*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*3.6*	5.7	6.3	8.5	*18.5*	--	--
	Runoff (mm)	--	--	--	--	--	*3.1*	15.3	16.9	22.0	*28.8*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	--	*0.029*	*0.015*	0.011	0.013	0.011	*0.010*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*22.3*	*11.3*	8.6	10.1	8.5	*7.8*	--	--
	Average Runoff (mm)	--	--	--	--	*39.7*	*24.1*	22.6	27.1	21.1	*9.2*	--	--

Table 4-16:
W27 Summary statistics for 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	Average	--	--	--	--	--	--	--	--	--	--	--	--
	Maximum	--	--	--	--	--	--	--	--	--	--	--	--
	Minimum	--	--	--	--	--	--	--	--	--	--	--	--
2008	Average	--	--	--	--	--	0.040	0.030	0.037	0.045	0.058	--	--
	Maximum	--	--	--	--	--	0.061	0.053	0.059	0.062	0.075	--	--
	Minimum	--	--	--	--	--	0.003	0.001	0.001	0.022	0.024	--	--
2009	Average	--	--	--	--	--	--	0.031	0.028	0.034	0.038	--	--
	Maximum	--	--	--	--	--	--	0.048	0.079	0.082	0.046	--	--
	Minimum	--	--	--	--	--	--	0.021	0.021	0.021	0.028	--	--
2010	Average	--	--	--	--	0.090	0.057	0.029	0.025	0.014	0.016	--	--
	Maximum	--	--	--	--	0.146	0.115	0.070	0.076	0.074	0.105	--	--
	Minimum	--	--	--	--	0.011	0.037	0.001	0.006	0.001	0.001	--	--
2011	Average	--	--	--	--	0.160	0.046	0.041	0.014	0.010	0.007	--	--
	Maximum	--	--	--	--	0.335	0.070	0.111	0.044	0.014	0.010	--	--
	Minimum	--	--	--	--	0.037	0.032	0.011	0.003	0.008	0.005	--	--
2012	Average	--	--	--	--	0.047	--	0.030	0.023	0.016	0.017	--	--
	Maximum	--	--	--	--	0.128	--	0.315	0.036	0.040	0.021	--	--
	Minimum	--	--	--	--	0.018	--	0.021	0.015	0.012	0.015	--	--
2013	Average	--	--	--	--	--	--	0.018	0.015	0.025	0.028	--	--
	Maximum	--	--	--	--	--	--	0.030	0.061	0.123	0.035	--	--
	Minimum	--	--	--	--	--	--	0.014	0.010	0.012	0.021	--	--
2014	Average	--	--	--	--	0.042	0.037	0.030	0.031	0.015	0.012	--	--
	Maximum	--	--	--	--	0.088	0.144	0.050	0.097	0.020	0.014	--	--
	Minimum	--	--	--	--	0.027	0.012	0.024	0.012	0.010	0.010	--	--
2015	Average	--	--	--	--	0.081	0.039	0.049	--	--	--	--	--
	Maximum	--	--	--	--	0.304	0.052	0.241	--	--	--	--	--
	Minimum	--	--	--	--	0.005	0.027	0.041	--	--	--	--	--
2016	Average	--	--	--	--	0.053	0.033	0.041	0.06	0.05	--	--	--
	Maximum	--	--	--	--	0.123	0.064	0.127	0.14	0.07	--	--	--
	Minimum	--	--	--	--	0.029	0.024	0.023	0.05	0.04	--	--	--
2017	Average	--	--	--	--	--	0.017	0.013	0.01	0.01	0.07	--	--
	Maximum	--	--	--	--	--	0.100	0.095	0.03	0.10	0.08	--	--
	Minimum	--	--	--	--	--	0.010	0.009	0.01	0.01	0.05	--	--
2018	Average	--	--	--	--	0.00	0.001	0.001	0.00	0.00	--	--	--
	Maximum	--	--	--	--	0.01	0.016	0.004	0.02	0.04	--	--	--
	Minimum	--	--	--	--	0.00	0.000	0.000	0.00	0.00	--	--	--
2019	Average	--	--	--	--	--	0.010	0.008	--	0.006	0.006	--	--
	Maximum	--	--	--	--	--	0.013	0.011	--	0.012	0.007	--	--
	Minimum	--	--	--	--	--	0.007	0.006	--	0.004	0.004	--	--
2020	Average	--	--	--	0.007	0.002	0.007	0.003	0.006	0.004	0.002	--	--
	Maximum	--	--	--	0.020	0.013	0.020	0.013	0.028	0.025	0.004	--	--
	Minimum	--	--	--	0.000	0.000	0.000	0.000	0.000	0.000	0.000	--	--
2021	Average	--	--	--	--	0.009	0.010	0.005	0.001	0.003	0.004	--	--
	Maximum	--	--	--	--	0.020	0.016	0.095	0.013	0.009	0.005	--	--
	Minimum	--	--	--	--	0.001	0.004	0.000	0.000	0.000	0.003	--	--
2022	Average	--	--	--	--	--	0.010	0.005	0.006	0.009	0.018	--	--
	Maximum	--	--	--	--	--	0.015	0.013	0.024	0.023	0.089	--	--
	Minimum	--	--	--	--	--	0.003	0.001	0.003	0.004	0.006	--	--
All Years	Average	--	--	--	0.007	0.054	0.026	0.022	0.020	0.018	0.023	--	--
	Maximum	--	--	--	0.020	0.335	0.144	0.315	0.138	0.123	0.105	--	--
	Minimum	--	--	--	0.000	0.000	0.000	0.000	0.000	0.000	0.000	--	--

Table 4-17:
W27 Summary statistics for daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2007	# days with data	--	--	--	--	--	--	--	--	--	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	--	--	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	--	--	--	--	--
	Runoff (mm)	--	--	--	--	--	--	--	--	--	--	--	--
2008	# days with data	--	--	--	--	--	*21*	31	31	30	*21*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.040*	0.030	0.036	0.045	*0.058*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*14.77*	10.94	13.22	16.75	*21.50*	--	--
	Runoff (mm)	--	--	--	--	--	*26.8*	29.3	35.4	43.4	*39.0*	--	--
2009	# days with data	--	--	--	--	--	--	*13*	31	30	*7*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	*0.032*	0.028	0.034	*0.038*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	*11.70*	10.42	12.44	*14.01*	--	--
	Runoff (mm)	--	--	--	--	--	--	*13.1*	27.9	32.2	*8.5*	--	--
2010	# days with data	--	--	--	--	*21*	30	31	31	30	*19*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.090*	0.057	0.029	0.025	0.014	*0.016*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*33.21*	21.18	10.70	9.36	5.31	*5.94*	--	--
	Runoff (mm)	--	--	--	--	*60.3*	54.9	28.6	25.1	13.8	*9.7*	--	--
2011	# days with data	--	--	--	--	27	30	31	31	30	31	--	--
	Average Discharge (m^3/s)	--	--	--	--	0.159	0.045	0.041	0.014	0.010	0.007	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	58.90	16.85	15.25	5.29	3.71	2.64	--	--
	Runoff (mm)	--	--	--	--	137.4	43.7	40.9	14.2	9.6	7.1	--	--
2012	# days with data	--	--	--	--	*6*	--	*11*	*17*	30	*8*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.046*	--	*0.030*	*0.023*	0.016	*0.017*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*16.99*	--	*11.16*	*8.59*	5.96	*6.38*	--	--
	Runoff (mm)	--	--	--	--	*8.8*	--	*10.6*	*12.6*	15.5	*4.4*	--	--
2013	# days with data	--	--	--	--	--	--	*7*	31	30	*19*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	*0.018*	0.015	0.025	*0.028*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	*6.79*	5.58	9.35	*10.46*	--	--
	Runoff (mm)	--	--	--	--	--	--	*4.1*	14.9	24.2	*17.2*	--	--
2014	# days with data	--	--	--	--	*25*	30	31	31	30	*16*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.042*	0.037	0.030	0.031	0.016	*0.012*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*15.56*	13.86	11.08	11.41	5.75	*4.57*	--	--
	Runoff (mm)	--	--	--	--	*33.6*	35.9	29.7	30.6	14.9	*6.3*	--	--
2015	# days with data	--	--	--	--	*18*	30	31	--	--	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.081*	0.039	0.049	--	--	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*30.12*	14.30	18.14	--	--	--	--	--
	Runoff (mm)	--	--	--	--	*46.8*	37.1	48.6	--	--	--	--	--
2016	# days with data	--	--	--	--	*26*	30	31	31	30	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	*0.054*	0.033	0.041	0.06	0.05	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*20.03*	12.07	15.33	22.93	19.61	--	--	--
	Runoff (mm)	--	--	--	--	*45.0*	31.3	41.0	61.4	50.8	--	--	--
2017	# days with data	--	--	--	--	--	*22*	31	31	30	*2*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.017*	0.013	0.01	0.01	*0.07*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*6.40*	4.95	3.86	4.77	*25.15*	--	--
	Runoff (mm)	--	--	--	--	--	*12.2*	13.3	10.3	12.4	*4.3*	--	--
2018	# days with data	--	--	--	--	7	*30*	31	31	14	--	--	--
	Average Discharge (m^3/s)	--	--	--	--	0.0	*0.0*	0.0	0.0	0.0	--	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	1.0	*0.4*	0.3	0.5	0.4	--	--	--
	Runoff (mm)	--	--	--	--	0.6	*1.0*	0.7	1.3	0.5	--	--	--
2019	# days with data	--	--	--	--	--	*24*	21	--	30	*6*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.0*	0.0	--	0.0	*0.0*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*3.7*	2.8	--	2.3	*2.1*	--	--
	Runoff (mm)	--	--	--	--	--	*7.6*	5.1	--	6.1	*1.1*	--	--
2020	# days with data	--	--	--	*14*	31.0	*30*	31	31.0	30	*4*	--	--
	Average Discharge (m^3/s)	--	--	--	*0.0*	0.0	*0.0*	0.0	0.0	0.0	*0.0*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*2.5*	1.1	*2.7*	1.3	2.0	1.9	*1.2*	--	--
	Runoff (mm)	--	--	--	*3.0*	3.0	*7.0*	3.4	5.5	4.8	*0.4*	--	--
2021	# days with data	--	--	--	--	16	*30*	31	31	30	*2*	--	--
	Average Discharge (m^3/s)	--	--	--	--	0.0	*0.0*	0.0	0.0	0.0	*0.0*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	3.2	*3.6*	1.8	0.5	1.0	*1.6*	--	--
	Runoff (mm)	--	--	--	--	4.5	*9.3*	4.9	1.3	2.5	*0.3*	--	--
2022	# days with data	--	--	--	--	--	*13.0*	31.0	31.0	30.0	*18.0*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.010*	0.005	0.006	0.009	*0.018*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*3.716*	1.715	2.315	3.154	*6.749*	--	--
	Runoff (mm)	--	--	--	--	--	*4.174*	4.593	6.201	8.174	*10.496*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	*0.007*	*0.054*	0.026	0.022	0.020	0.018	*0.023*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*2.5*	*20.0*	9.5	8.3	7.4	6.6	*8.5*	--	--
	Average Runoff (mm)	--	--	--	*3.0*	*37.8*	22.6	18.5	19.0	17.1	*9.1*	--	--

Table 4-18:
W29 Summary statistics for 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2011	Average	--	--	--	--	--	0.720	1.561	1.662	1.606	1.003	--	--
	Maximum	--	--	--	--	--	1.269	4.466	3.312	2.407	1.629	--	--
	Minimum	--	--	--	--	--	0.229	0.441	0.914	1.223	0.623	--	--
2012	Average	--	--	--	--	1.690	1.736	1.222	0.823	0.714	0.638	--	--
	Maximum	--	--	--	--	3.259	3.766	4.497	1.429	0.881	0.786	--	--
	Minimum	--	--	--	--	0.653	0.823	0.786	0.656	0.577	0.432	--	--
2013	Average	--	--	--	--	5.019	--	--	0.380	0.866	0.711	--	--
	Maximum	--	--	--	--	13.604	--	--	0.535	2.818	0.935	--	--
	Minimum	--	--	--	--	1.370	--	--	0.308	0.328	0.448	--	--
2014	Average	--	--	--	--	--	--	--	1.467	1.110	1.063	--	--
	Maximum	--	--	--	--	--	--	--	4.955	2.568	1.703	--	--
	Minimum	--	--	--	--	--	--	--	0.495	0.692	0.864	--	--
2015	Average	--	--	--	--	--	0.789	0.856	0.954	1.249	0.771	--	--
	Maximum	--	--	--	--	--	1.460	2.406	3.023	2.477	1.275	--	--
	Minimum	--	--	--	--	--	0.494	0.543	0.007	0.859	0.582	--	--
2018	Average	--	--	--	--	--	1.642	1.259	1.689	0.710	1.346	--	--
	Maximum	--	--	--	--	--	1.985	1.984	2.888	1.673	2.623	--	--
	Minimum	--	--	--	--	--	1.144	0.493	0.620	0.177	0.356	--	--
2020	Average	--	--	--	--	--	--	--	1.561	1.663	1.550	--	--
	Maximum	--	--	--	--	--	--	--	2.403	2.395	2.069	--	--
	Minimum	--	--	--	--	--	--	--	1.086	1.244	0.023	--	--
2021	Average	--	--	--	--	1.656	0.938	0.597	0.845	0.733	0.691	--	--
	Maximum	--	--	--	--	3.434	2.697	1.605	2.059	0.962	0.800	--	--
	Minimum	--	--	--	--	0.922	0.472	0.421	0.383	0.568	0.606	--	--
2022	Average	--	--	--	--	1.708	1.860	1.068	0.945	1.033	1.732	--	--
	Maximum	--	--	--	--	3.305	3.490	3.813	1.342	1.571	6.071	--	--
	Minimum	--	--	--	--	0.866	0.962	0.795	0.774	0.844	0.526	--	--
All Years	Average	--	--	--	--	2.518	1.281	1.094	1.147	1.076	1.056	--	--
	Maximum	--	--	--	--	13.604	3.766	4.497	4.955	2.818	6.071	--	--
	Minimum	--	--	--	--	0.653	0.229	0.421	0.007	0.177	0.023	--	--

Table 4-19:
W29 Summary statistics for daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2011	# days with data	--	--	--	--	--	*23*	31	31	30	31	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.72*	1.56	1.66	1.61	1.00	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*8.39*	18.12	19.31	18.66	11.65	--	--
	Runoff (mm)	--	--	--	--	--	*16.7*	48.5	51.7	48.4	31.2	--	--
2012	# days with data	--	--	--	--	*27*	30	31	31	30	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*1.68*	1.74	1.22	0.82	0.71	*0.62*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*19.52*	20.16	14.19	9.55	8.29	*7.21*	--	--
	Runoff (mm)	--	--	--	--	*45.5*	52.3	38.0	25.6	21.5	*8.1*	--	--
2013	# days with data	--	--	--	--	*8*	--	--	28	30	*19*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*5.30*	--	--	0.38	0.87	*0.71*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*61.54*	--	--	4.40	10.06	*8.21*	--	--
	Runoff (mm)	--	--	--	--	*42.5*	--	--	10.6	26.1	*13.5*	--	--
2014	# days with data	--	--	--	--	--	--	--	27	30	*17*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	1.44	1.11	*1.06*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	16.74	12.89	*12.31*	--	--
	Runoff (mm)	--	--	--	--	--	--	--	39.1	33.4	*18.1*	--	--
2015	# days with data	--	--	--	--	--	*12*	31	31	30	*14*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.78*	0.86	0.95	1.25	*0.77*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*9.04*	9.94	11.09	14.51	*8.90*	--	--
	Runoff (mm)	--	--	--	--	--	*9.4*	26.6	29.7	37.6	*10.8*	--	--
2018	# days with data	--	--	--	--	--	*19*	31	31	30	29	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*1.6*	1.3	1.7	0.7	1.4	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*19.0*	14.6	19.6	8.2	15.7	--	--
	Runoff (mm)	--	--	--	--	--	*31.3*	39.2	52.5	21.4	39.3	--	--
2020	# days with data	--	--	--	--	--	--	--	30	30	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	--	1.6	1.7	*1.5*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	--	18.2	19.3	*17.9*	--	--
	Runoff (mm)	--	--	--	--	--	--	--	47.1	50.1	*20.1*	--	--
2021	# days with data	--	--	--	--	*25*	30	31	31	30	*3*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*1.7*	0.9	0.6	0.9	0.7	*0.7*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*19.5*	10.9	6.9	9.8	8.5	*8.1*	--	--
	Runoff (mm)	--	--	--	--	*42.0*	28.3	18.6	26.3	22.1	*2.1*	--	--
2022	# days with data	--	--	--	--	*24.0*	30.0	31.0	31.0	30.0	*18.0*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*1.7*	1.9	1.1	0.9	1.0	*1.7*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*19.7*	21.6	12.4	11.0	12.0	*20.0*	--	--
	Runoff (mm)	--	--	--	--	*40.8*	56.0	33.2	29.4	31.1	*31.1*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	--	*2.587*	1.279	1.095	1.145	1.075	*1.052*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*30.1*	14.9	12.7	13.3	12.5	*12.2*	--	--
	Average Runoff (mm)	--	--	--	--	*42.7*	32.3	34.0	34.7	32.4	*19.4*	--	--

Table 4-20:
W99 Summary statistics for 15-minute discharge record. All values are in m^3/s.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	Average	--	--	--	--	--	0.571	0.321	0.270	0.470	0.401	--	--
	Maximum	--	--	--	--	--	1.084	0.421	0.332	2.164	0.888	--	--
	Minimum	--	--	--	--	--	0.314	0.230	0.208	0.201	0.070	--	--
2020	Average	--	--	--	1.499	2.657	2.558	1.695	1.580	1.486	1.889	--	--
	Maximum	--	--	--	2.753	6.503	7.986	2.726	2.537	2.765	2.357	--	--
	Minimum	--	--	--	0.728	0.641	1.594	1.290	1.098	1.050	1.386	--	--
2021	Average	--	--	--	--	--	--	0.732	1.121	0.853	0.952	--	--
	Maximum	--	--	--	--	--	--	2.013	2.983	1.223	1.097	--	--
	Minimum	--	--	--	--	--	--	0.510	0.480	0.562	0.824	--	--
2022	Average	--	--	--	--	2.41	2.09	1.05	0.93	0.98	2.58	--	--
	Maximum	--	--	--	--	4.30	4.67	4.68	1.22	1.72	9.64	--	--
	Minimum	--	--	--	--	1.56	0.85	0.78	0.81	0.83	0.40	--	--
All Years	Average	--	--	--	1.499	2.535	1.739	0.950	0.974	0.948	1.455	--	--
	Maximum	--	--	--	2.753	6.503	7.986	4.683	2.983	2.765	9.643	--	--
	Minimum	--	--	--	0.728	0.641	0.314	0.230	0.208	0.201	0.070	--	--

Table 4-21:
W99 Summary statistics for daily discharge, unit yield and runoff. Months with incomplete data in italics.

Year	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	# days with data	--	--	--	--	--	*24*	31	31	30	*16*	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	*0.57*	0.32	0.27	0.47	*0.40*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	*6.50*	3.64	3.06	5.32	*4.56*	--	--
	Runoff (mm)	--	--	--	--	--	*13.5*	9.7	8.2	13.8	*6.3*	--	--
2020	# days with data	--	--	--	*13*	31	*30*	31	31	30	*13*	--	--
	Average Discharge (m^3/s)	--	--	--	*1.50*	2.66	*2.62*	1.69	1.58	1.49	*1.87*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*17.02*	30.09	*29.63*	19.19	17.89	16.83	*21.17*	--	--
	Runoff (mm)	--	--	--	*19.1*	80.6	*76.8*	51.4	47.9	43.6	*23.8*	--	--
2021	# days with data	--	--	--	--	--	--	27.0	31.0	30.0	3.0	--	--
	Average Discharge (m^3/s)	--	--	--	--	--	--	*0.7*	1.1	0.9	*1.0*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	--	--	*8.3*	12.7	9.7	*10.9*	--	--
	Runoff (mm)	--	--	--	--	--	--	*19.3*	34.0	25.0	*2.8*	--	--
2022	# days with data	--	--	--	--	*13.0*	30.0	31.0	31.0	30.0	*18.0*	--	--
	Average Discharge (m^3/s)	--	--	--	--	*2.4*	2.1	1.1	0.9	1.0	*2.6*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	--	*27.1*	23.6	11.9	10.5	11.1	*29.2*	--	--
	Runoff (mm)	--	--	--	--	*30.4*	61.3	31.9	28.1	28.9	*45.3*	--	--
All Years	Average Discharge (m^3/s)	--	--	--	*1.503*	*2.525*	*1.759*	*0.949*	*0.974*	*0.948*	*1.451*	--	--
	Average Yield ($L/s/km^2$)	--	--	--	*17.0*	*28.6*	*19.9*	10.7	11.0	10.7	*16.4*	--	--
	Average Runoff (mm)	--	--	--	*19.1*	*55.5*	*50.5*	28.1	29.5	27.8	*19.6*	--	--

5. Effluent Discharge

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5. Effluent Discharge

Water management infrastructure for the Project is designed to convey site contact water via Ditch C, which joins Haggart Creek above the W4 station. When discharging in 2022, flows via Ditch C were monitored continuously with a flow meter. Salt dilution and Rhodamine WT dye dilution measurements are made periodically downstream of Ditch C to confirm the instantaneous discharge values. Total monthly discharge volumes are then calculated from the continuous flows metered via totalizer. Daily surveys of Event Pond water level are used to evaluate potential erroneous data. The total volume of water discharged from the LDSP in 2022 was 164,666 m^3, over two discharge events in June 25-July 16 (108,486 m^3) and August 29-September 4 (56,180 m^3; Table 5-1).

Table 5-1:
Monthly Discharge Totals from Lower Dublin South Pond (2022)

Month	Discharge (m^3)
June	35,177
July	73,309
August	16,607
September	39,573
Total	164,666

6. Adaptive Management Reporting

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6. Adaptive Management Reporting

6.1 Background and Approach

The Water Use License (WUL) QZ14-041-1 requires that all streamflow and discharge data collected in accordance with the Environmental Monitoring, Surveillance and Adaptive Management Plan (EMSAMP) be presented in the annual report. To capture any potential alterations to the baseline streamflow signature in Haggart Creek, a three-tiered threshold scheme has been developed for the adaptive management of surface water flow. The thresholds provided in Table 2.4-1 of the EMSAMP are different for the ice-free and ice-affected seasons and are based on the median baseflows established for hydrometric stations W4 and W29 over the baseline period that encompassed the period August 2007 to August 2017. Note that the W29 station has been replaced by the W99 station, which has a 3% larger drainage area (Table 4-1). To account for this difference, the W29 baseline values have been adjusted upward by a factor of 1.03 to represent baseline conditions at W99. In addition, the rating curve for the W99 station has much lower error than the W29 curve, reflective of the more stable channel at the former station (Table 3-1).

The table describes four types of responses (*i.e.*, notification, review, evaluation and action) when each threshold is reached. The thresholds are based on an assumed level of effect to the wetted useable area in the stream channel based on the measured flow reduction from the median monthly baseflows at Haggart Creek hydrometric stations W4 and W99. While the affect of flow reduction, measured as a decrease in river stage, will be different for each channel reach due to varying width:depth ratios (as reflected in a stage rating curve, for example), generally streams with high width:depth ratios (such as Haggart Creek) have small changes in wetted useable area (or width) per unit decrease in flow. Thus, the three-tiered thresholds of 30%, 40% and 50% in reduction in flow from the median baseflow during the ice-free season reflect the affect of channel morphology on flow and wetted useable area (VGC, 2020).

For the ice-covered season, the three performance thresholds are set as a 20% reduction (from baseline) in median monthly baseflow for two consecutive monitoring events (Threshold 1), 20% for three consecutive events (Threshold 2), and 25% for two consecutive monitoring months (Threshold 3).

6.2 Results for 2022

Flow values presented in Table 6-1 and Figure 6-1 for the months of May through September inclusive are median values, derived from continuous time-series discharge data. Flow data for October are still representative of open water conditions, however ice

begins to form on local streams mid-month, and therefore the October value is the median of the first 10-14 days of the month, prior to freezing. In 2022, eighteen days of continuous data are available upon which to calculate the October median monthly flow, covering the usual period of open channel flow. The flow values reported for the months of November through April are based on one to two manual measurements (when possible), and therefore the deviation between baseline values and reported values for the current year may be higher due to limited baseline records and infrequent flow measurements taken in challenging conditions (*i.e.*, under ice). Note that there is much less inter- and intra-annual variability in the winter low flows, as they are primarily driven by groundwater discharge to the stream channels.

2022 was slightly wetter than an 'average' water year, which is reflected in the site climate record (see 2022 Climate Data Report). Overall, the 2022 water year (October 2021 to September 2022) was characterized by slightly cooler winter and spring air temperatures than normal and average summer air temperatures. The peak spring snowpack at site was the second highest on record (164 mm SWE at the Camp station and 425 mm at Potato Hills) and was followed by much higher than average summer rainfall in May through September, leading to elevated streamflows across the Project site throughout the open water season. At the regional scale, annual average air temperature at the Mayo A climate station (-2.4°C) was slightly cooler than the 1991-2021 annual average (-2.2°C). Peak spring snowpacks in the region were significantly higher than the historical average by 75% to 200%. The much higher than normal snowpack was followed by a wet summer in 2022, with the tenth highest May-September total precipitation on record at the Mayo A climate station, placing it in the 86th percentile. Overall, the 2022 water year received 25% more precipitation than the 1991-2021 average at the Mayo A climate station.

In 2022, streamflows were lower than the median baseline condition in seven of twelve months at W99 yet were consistently elevated above baseline at W4 in all months except February, May and August, noting that the percent differences from baseline for these months are negligible (*i.e.*, < 10%). However, the lower flows at W99 relative to baseline only meet the Threshold 1 criteria in April, noting that the reduction only exceeds the threshold of -20% by 1%, below the accepted margin of streamflow measurement error of 5% (Table 6-1). In addition, April is represented by a single measurement made on the 4th, and is more representative of winter low-flow conditions than the median April value, which is influenced by rising freshet flows from low elevation snow melt.

Given that streamflows are elevated above baseline at W4, it is unlikely that water management practices in the Dublin Creek catchment are resulting in the noted lower streamflows at the W99 station. However, flows from Platinum Gulch, Suttles Gulch and Eagle Pup that would normally report to lower Eagle Creek (W45) are being diverted to

the LDSP, which may account for a portion of the reduction in streamflows noted at W99 in July through September. Unfortunately, the W45 does not have a reliable rating curve for the majority of 2022, and therefore this mechanism cannot be confirmed with any degree of certainty. Note that a Parshall flume has been installed at this station to improve data quality for future assessments. Several factors should be considered when assessing deviations from the baseline (2010-2017) streamflow regime in Haggart Creek.

- W99 discharges in 2022 appear to be generally in line with the high spring snowpack, but lower than expected given the high summer precipitation recorded at site;
- The streamflow record for W99 is higher quality than that for W29, due to a more robust rating curve and greater channel stability at W99 (see Table 3-1);
- Comparison to baseline flows is complicated by use of scaled W29 data to represent baseline at W99, due to the more limited record period at the latter station that does not include the baseline period; and,
- There is insufficient record length for W99 at this point to determine a cause for this discrepancy.

Table 6-1:
Median monthly streamflows for the baseline (2007-2017) period and for 2022, for Haggart Creek stations W4 and W29.

Month	Baseline (2007-2017)			2022			Percent Difference[1]		
	W4	W29	W99	W4	W29	W99	W4	W29	W99
Jan	0.187	N/A	0.258	0.260	0.236	0.228	39%	N/A	-11%
Feb	0.193	0.350	0.232	0.180	0.210	0.197	-6%	-40%	-15%
Mar	0.133	0.200	0.206	0.227	0.192	0.174	71%	-4%	-16%
Apr	0.159	0.196	0.202	0.182	0.177	0.160	15%	-10%	-21%
May	1.826	1.765	1.817	1.717	1.678	2.241	-6%	-5%	23%
Jun	0.922	0.966	0.995	1.599	1.575	1.629	73%	63%	64%
Jul	0.756	1.093	1.126	0.811	0.942	0.908	7%	-14%	-19%
Aug	0.739	0.911	0.938	0.721	0.904	0.911	-2%	-1%	-3%
Sep	0.812	1.019	1.050	0.819	0.993	0.926	1%	-3%	-12%
Oct	0.729	0.840	0.866	1.393	1.458	1.808	91%	73%	109%
Nov	0.333	0.321	0.330	0.992	0.914	0.630	198%	185%	91%
Dec	0.248	0.275	0.283	0.437	0.710	0.401	76%	158%	42%

Notes:
Shaded areas in Table indicate ice covered season, when flow measurements are limited to monthly manual data.
[1]Percent difference calculated as (2022 – Baseline)/Baseline. Positive values indicate that flows were higher than baseline in 2022, and *vice versa*.

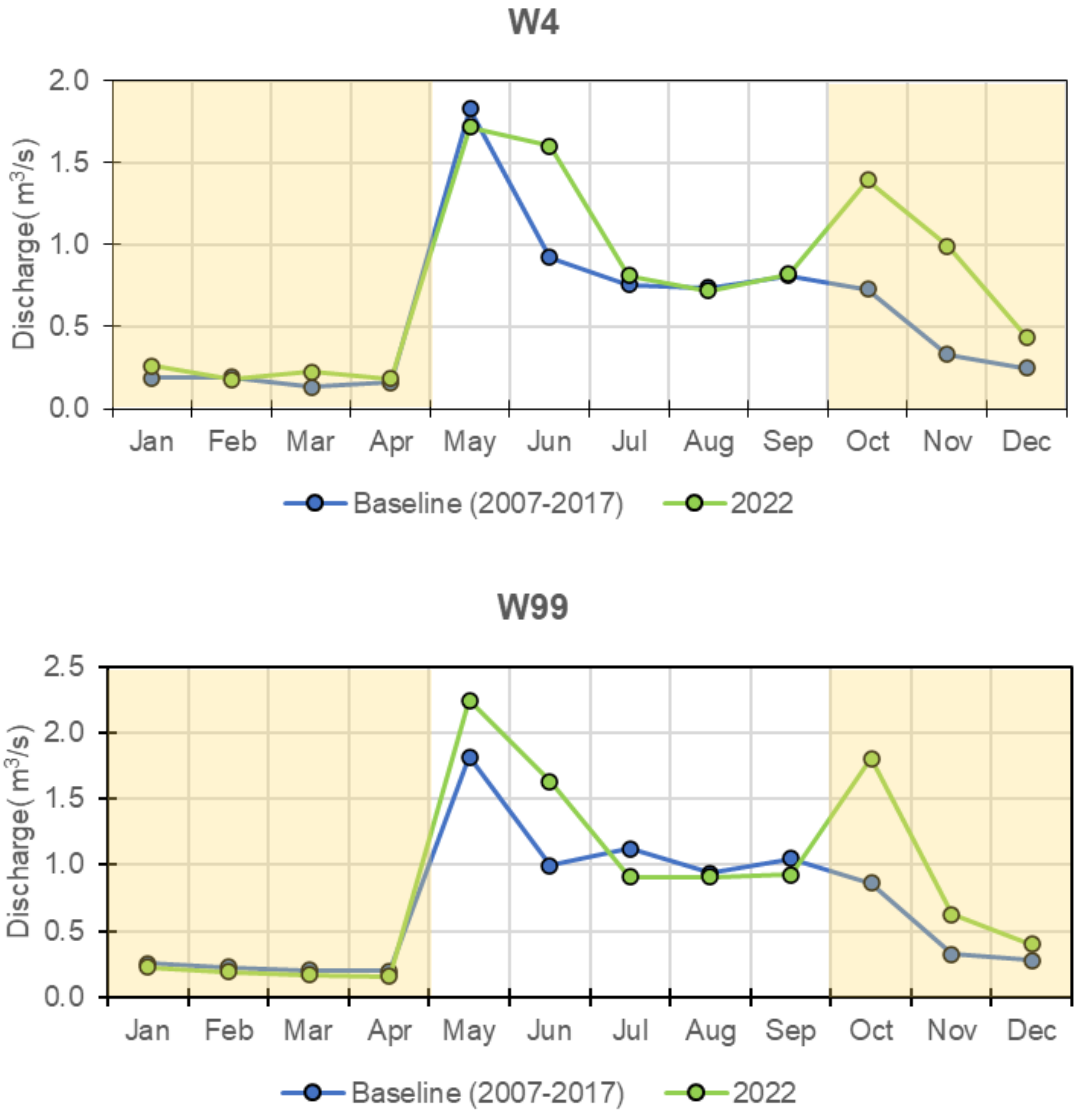


Figure 6-1: Median monthly streamflow for the baseline (2007-2017) period and for 2022, for Haggart Creek stations W4 (top) and W99 (bottom). Shaded areas indicate ice covered season when flow measurements are limited to monthly manual data.

7. Closure

Victoria
GOLD CORP

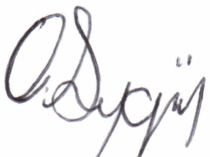
7. Closure

We trust that this report meets your expectations at this time. Please contact the undersigned with any questions or comments.

Sincerely,

LORAX ENVIRONMENTAL SERVICES LTD.

Prepared by:



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Engineers and Geoscientists British Columbia Permit to Practice Number: 1001840.

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Appendix A: Topographical Characteristics of Gauged Catchments

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MEMORANDUM

To:	**Steve Wilbur, Victoria Gold Corp.**	**Date: 19 March, 2020**
From:	**Scott Jackson and Colin Fraser**	**Project #: A562-1**
Subject:	**Eagle Gold Project – Topographical Characteristics of Gauged Catchments**	

1. Introduction

This brief technical memo presents the topographical characteristics of the Dublin Gulch tributaries and Haggart Creek mainstem, as measured from the hydrometric monitoring stations. This information is presented as hypsometric curves (cumulative percent basin area plotted against elevation), with the median elevations, average slope and catchment areas summarized in Table 1.

Table 1:
Topographical Characteristics of Gauged Catchments

Station ID	Station Name	Area (km^2)	Median Elevation (m)	Average Slope (°)
W1	Dublin Gulch above Stewart Gulch	7.0	1,313	11.3
W4	Haggart Creek below Dublin Gulch	76.8	1,129	15.4
W5	Haggart Creek above Lynx Creek	97.7	1,091	15.3
W6	Lynx Creek above Haggart Creek	100.9	1,044	13.2
W10	Stuttle Gulch	0.7	1,012	15.6
W20	Bawn Bay Gulch	2.4	1,364	8.4
W21	Dublin Gulch at the Mouth	10.1	1,263	12.5
W22	Haggart Creek above Dublin Gulch	66.5	1,113	15.9
W26	Stewart Gulch	1.4	1,211	16.1
W27	Eagle Creek	2.6	1,031	16.5
W29	Haggart Creek below Eagle Creek	84.9	1,112	15.3
W31	Olive Gulch	1.8	1,328	10.7
W45	Eagle Creek above Haggart Creek	3.9	957	14.9
W99	Haggart Creek above 15 Pup	88.7	1,105	15.4

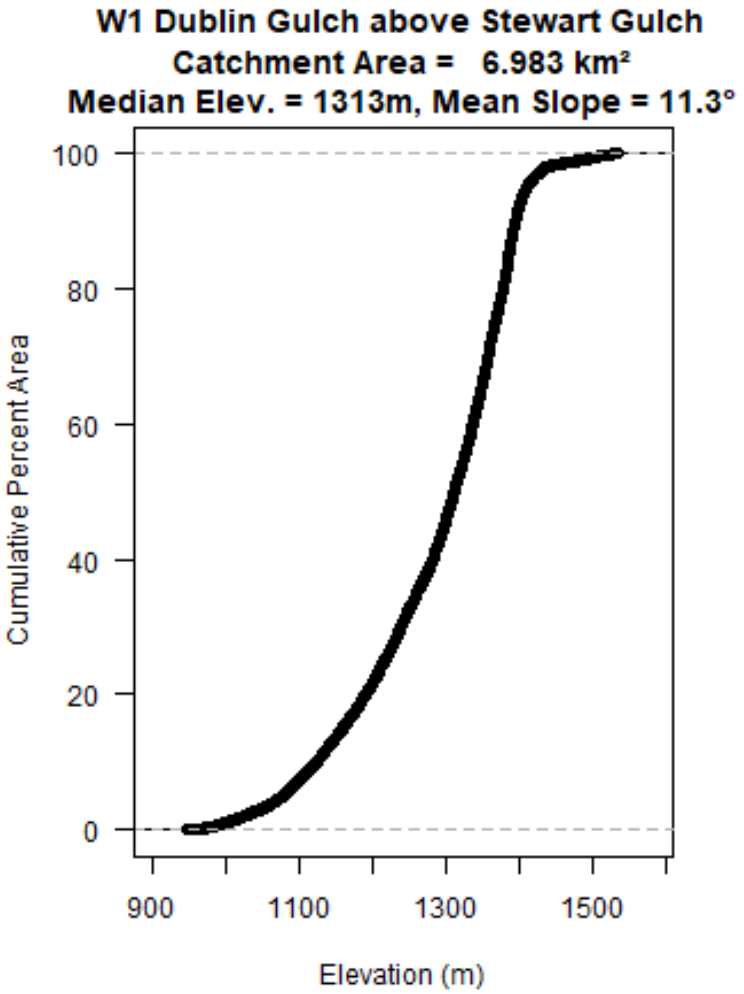

Figure 1: Hypsometric curve for station W1

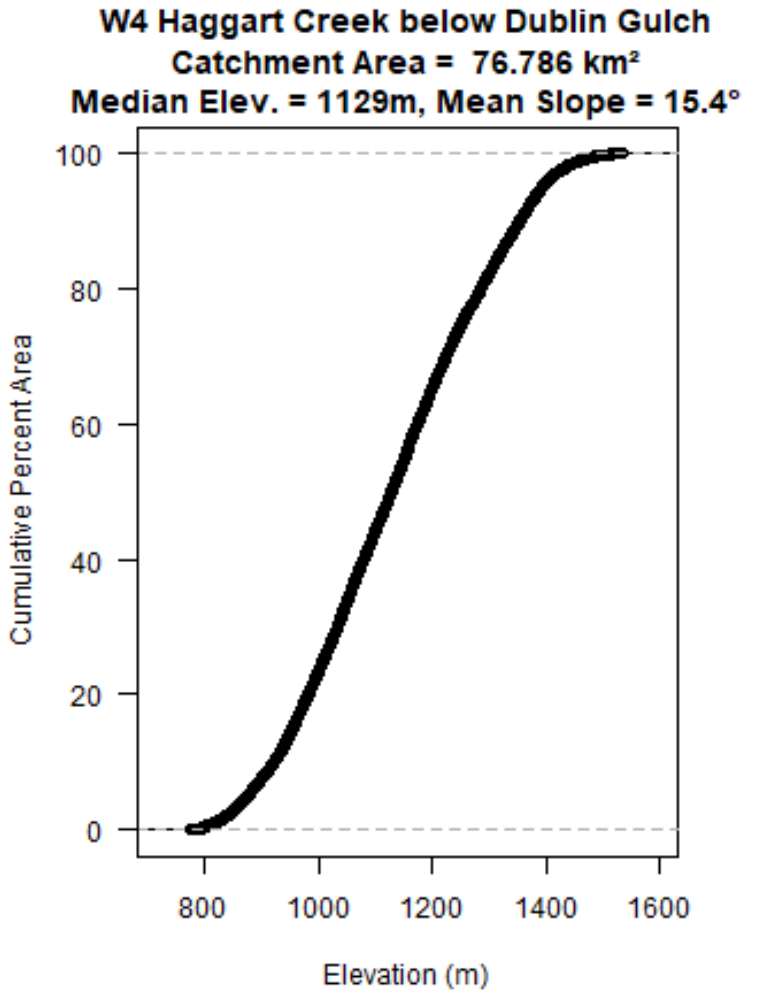

Figure 2: Hypsometric curve for station W4

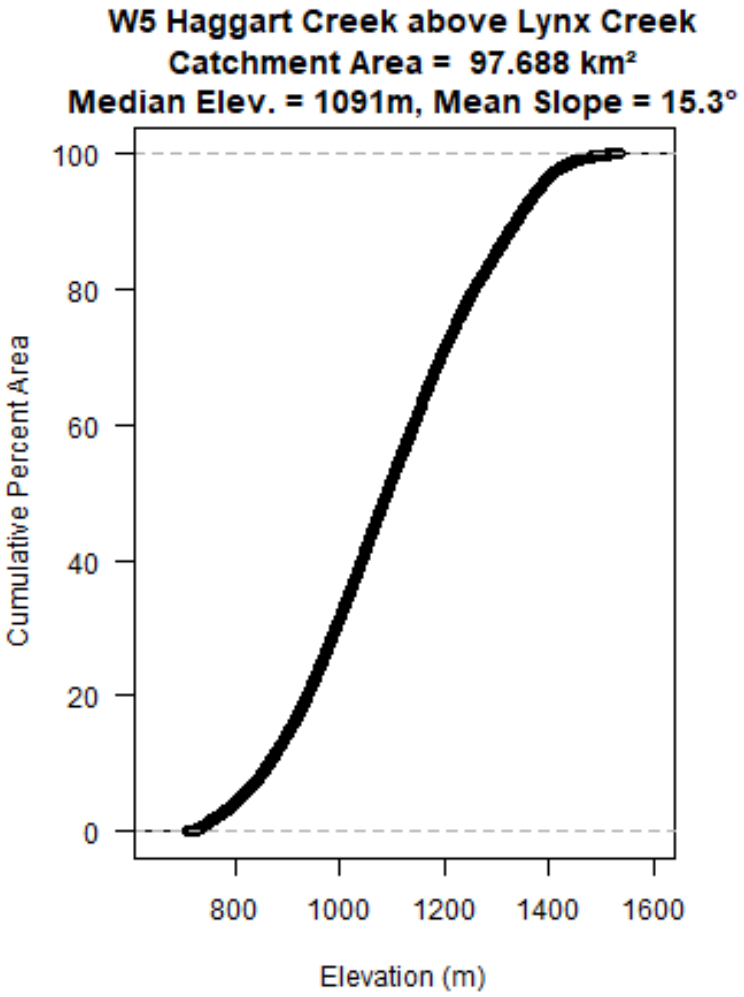

Figure 3: Hypsometric curve for station W5

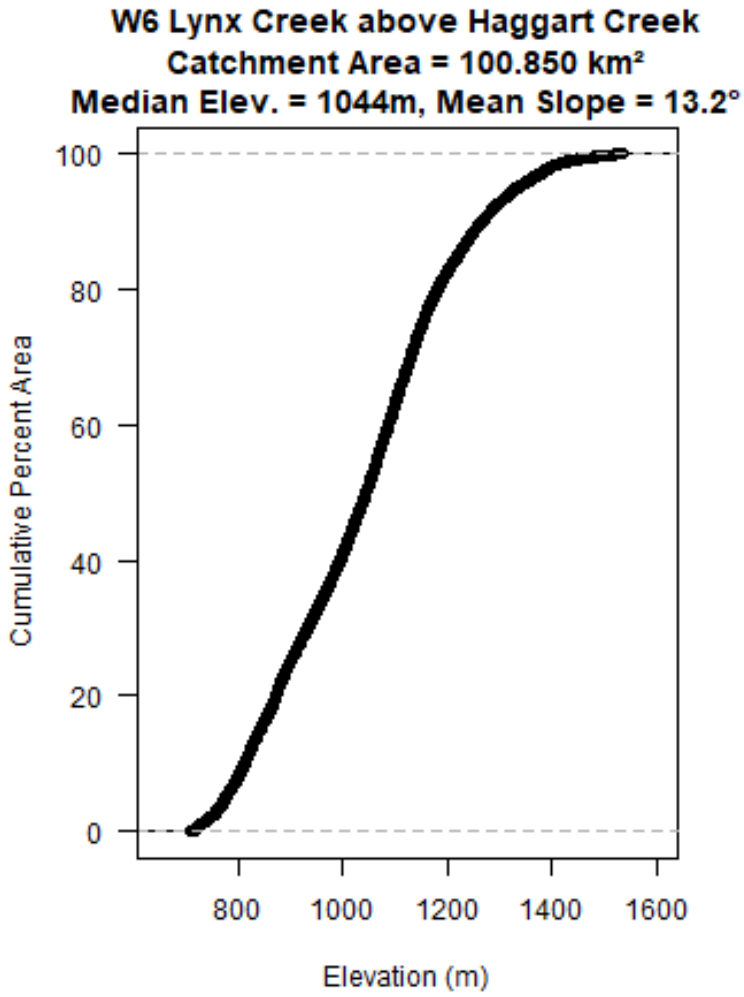

Figure 4: Hypsometric curve for station W6

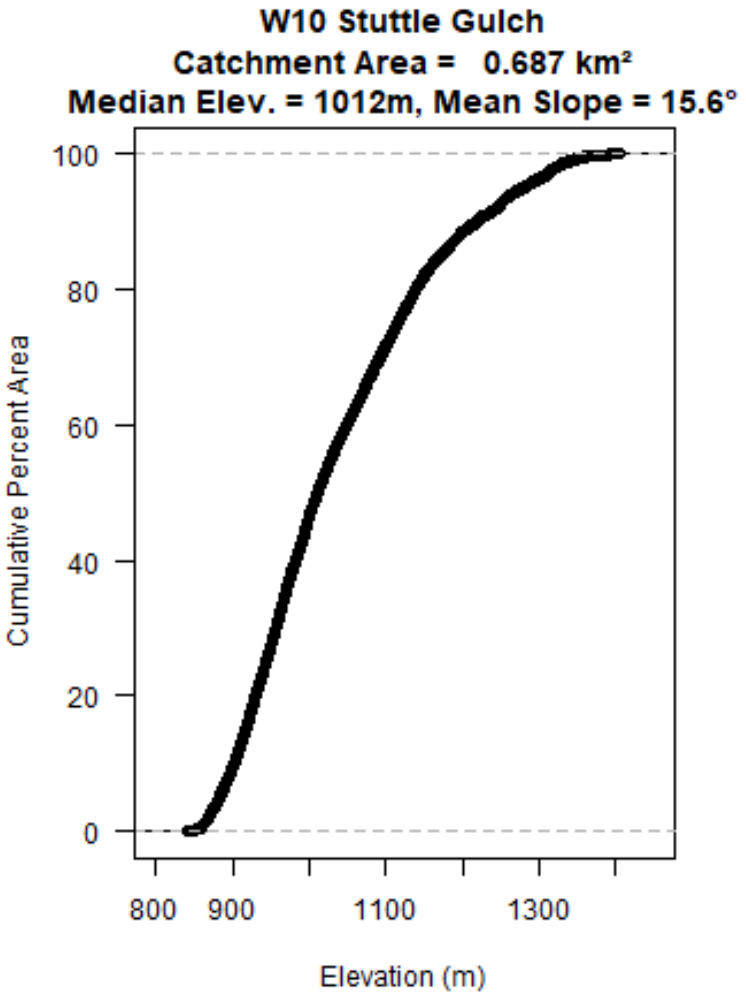

Figure 5: Hypsometric curve for station W10

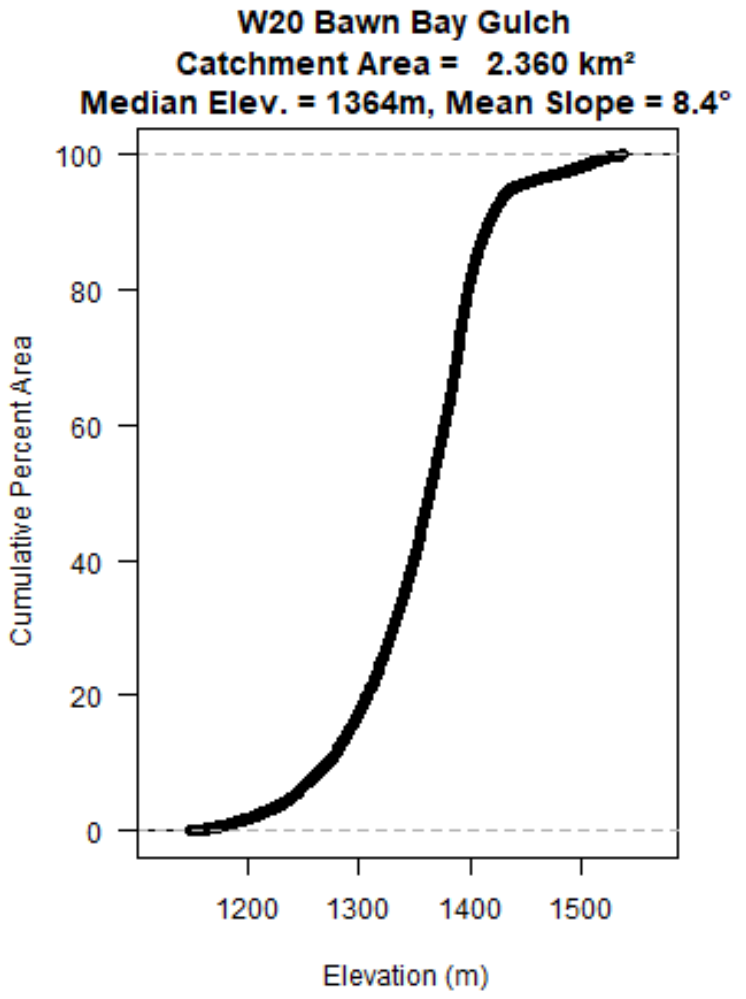

Figure 6: Hypsometric curve for station W20

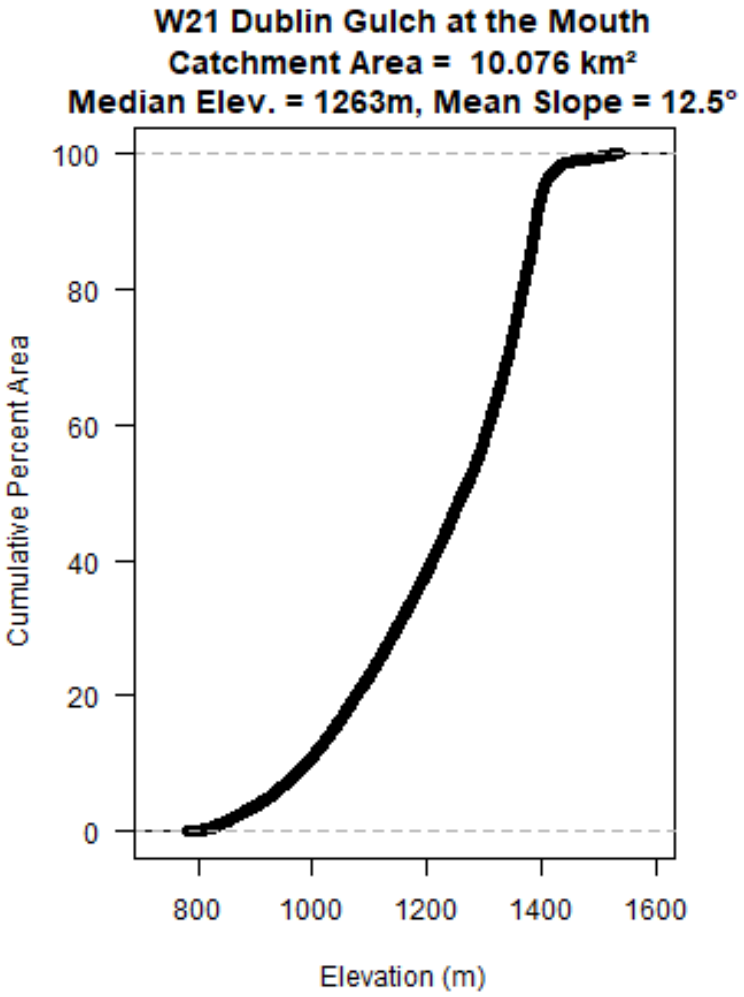

Figure 7: Hypsometric curve for station W21

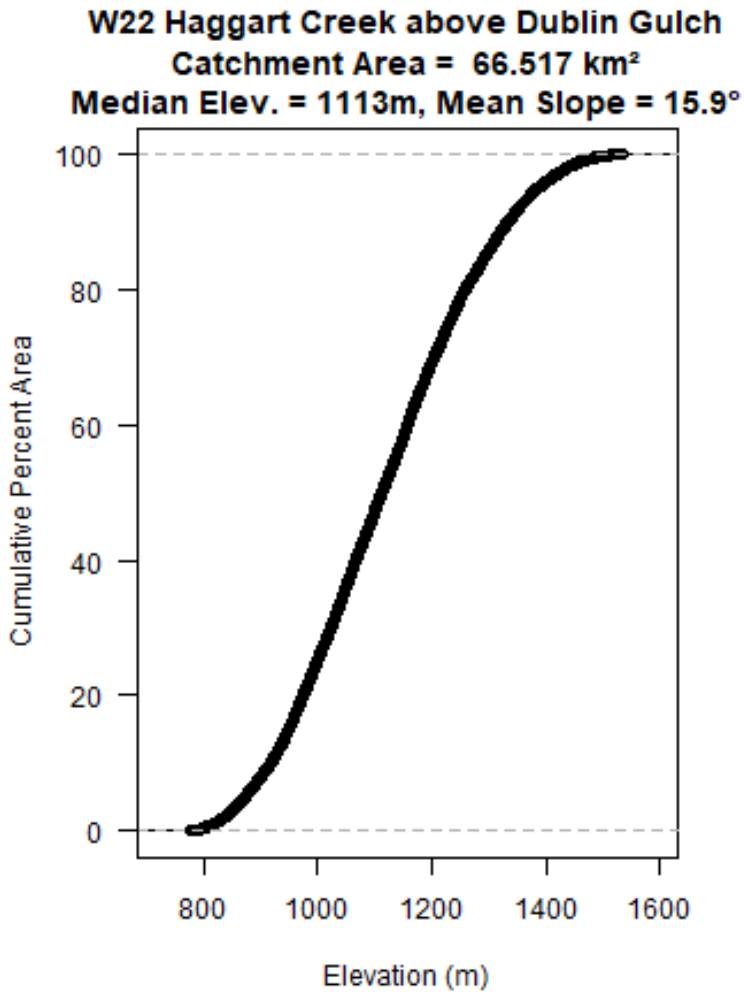

Figure 8: Hypsometric curve for station W22

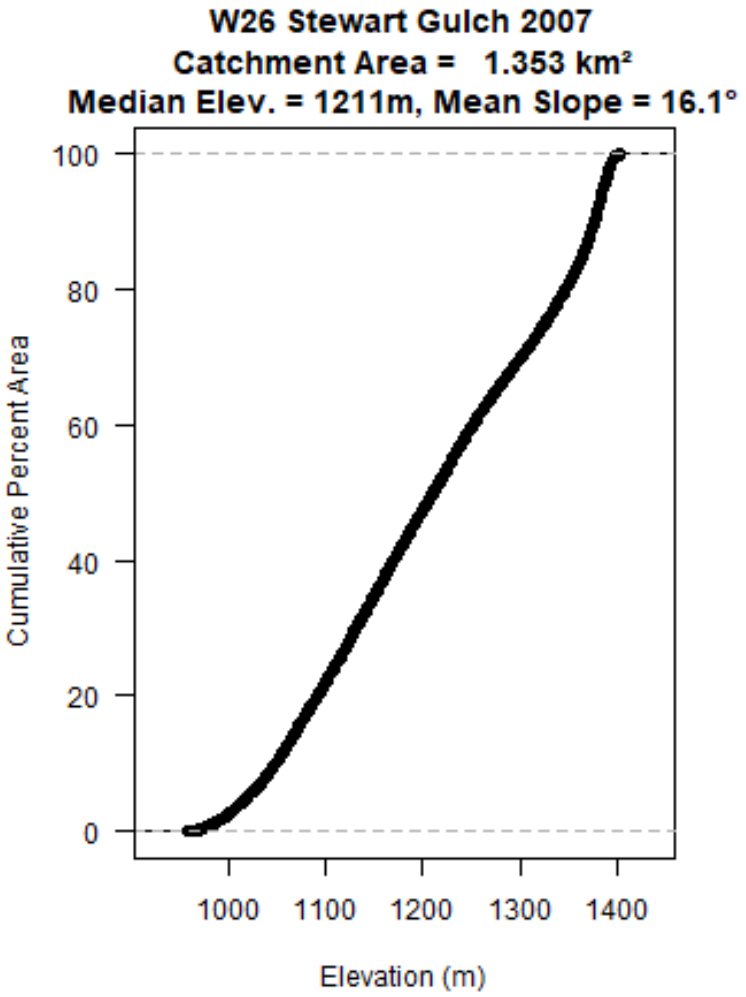

Figure 9: Hypsometric curve for station W26

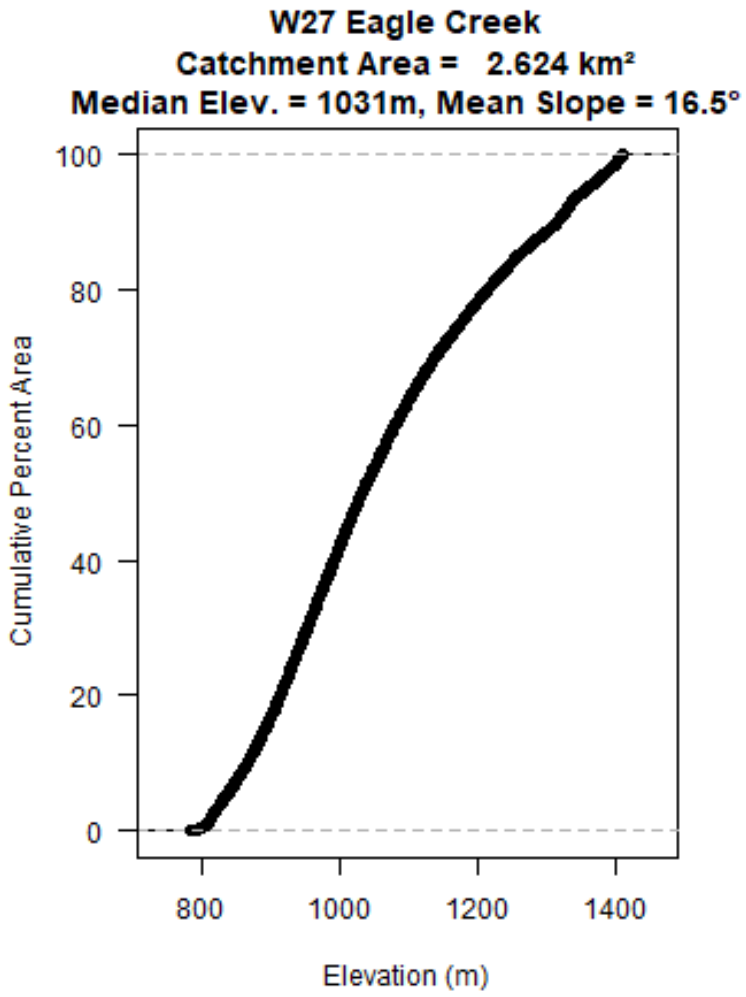

Figure 10: Hypsometric curve for station W27

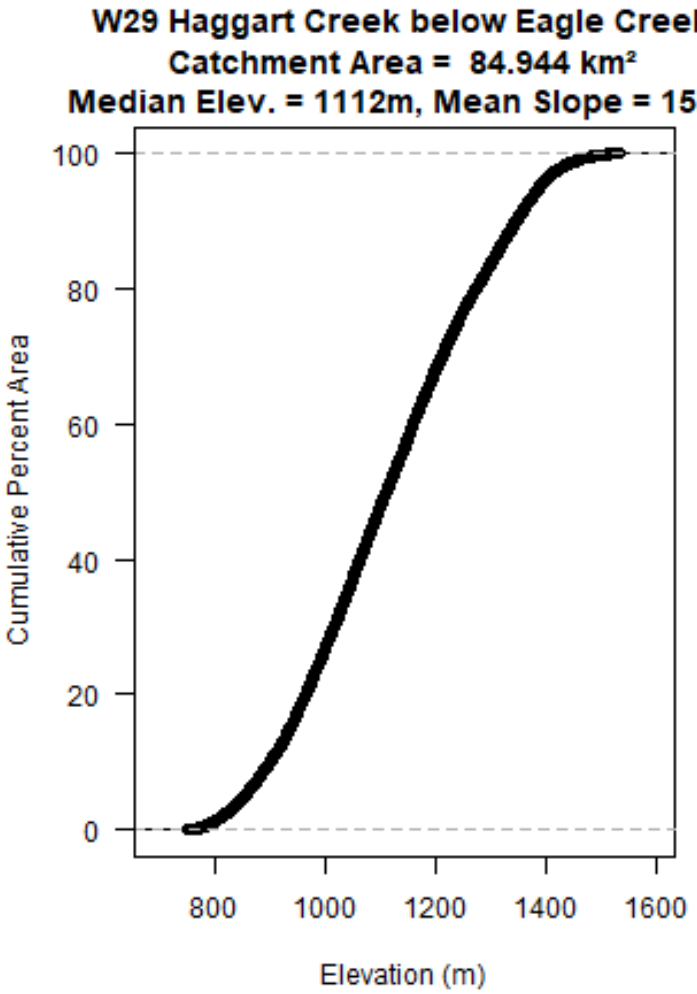

Figure 11: Hypsometric curve for station W29

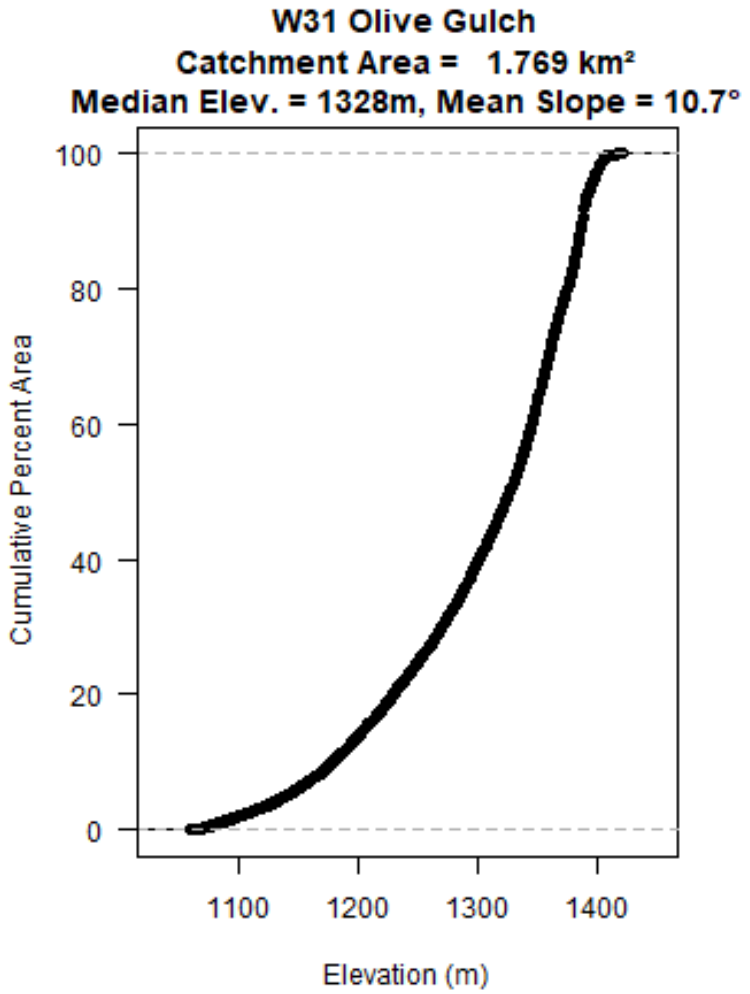

Figure 12: Hypsometric curve for station W31

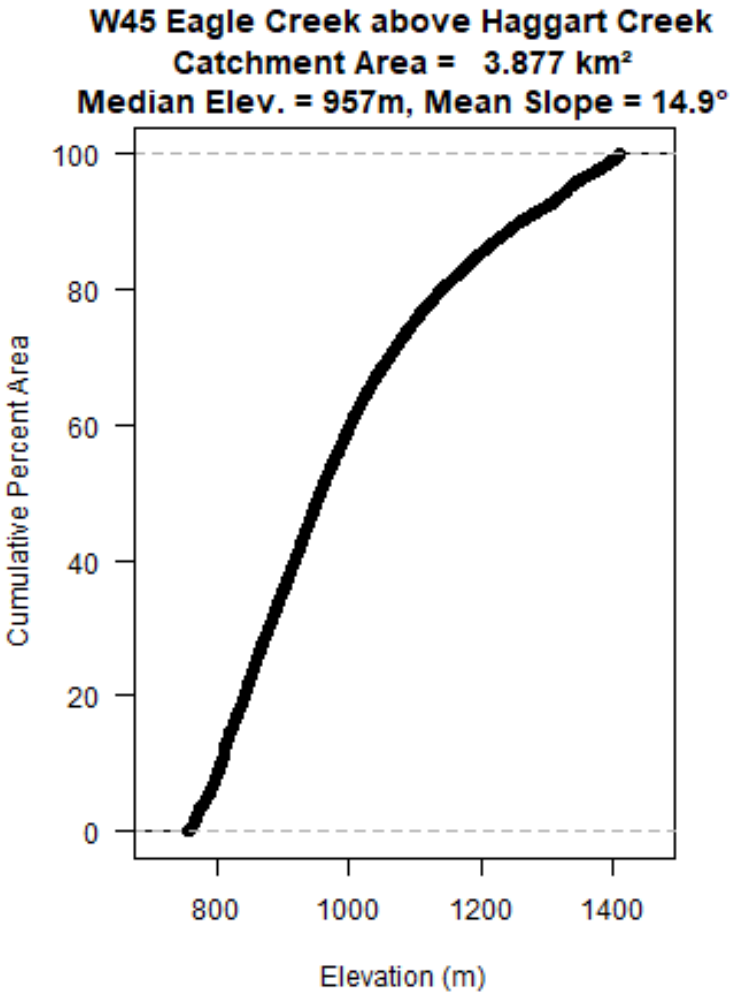

Figure 13: Hypsometric curve for station W45

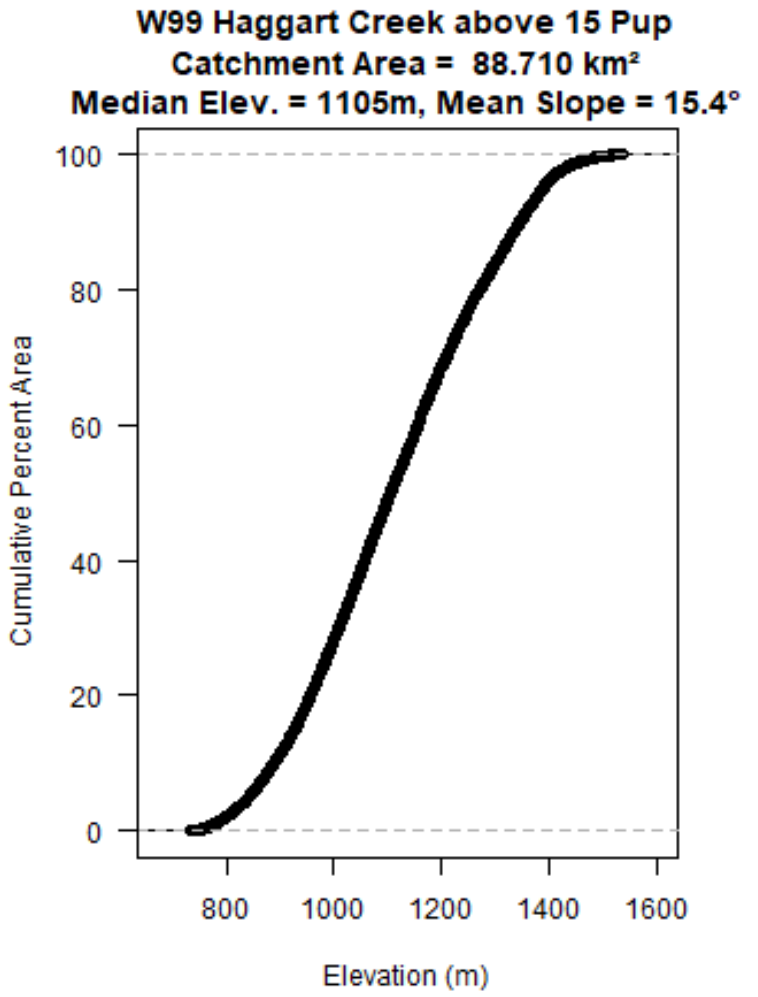

Figure 14: Hypsometric curve for station W99

VICTORIA GOLD CORP

Eagle Gold Project

2022 Surface Water Quality Summary

Project No. A610-1
31 March 2023

LORAX ENVIRONMENTAL

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1. Introduction

VICTORIA
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1. Introduction

The surface water quality monitoring program for the Eagle Gold Mine (Project) includes monitoring of water quality of watercourses within the Project area at strategic mine site locations and at water management facilities that have the potential to discharge to the environment. The water quality monitoring plan has been designed to meet the following objectives:

- Collect water quality data in the receiving environment at stations upstream and downstream of Project influences.
- Collect water quality data to verify compliance with the Effluent Quality Standards (EQSs) and monitor receiving environment Water Quality Objectives (WQOs) specified in QZ14-041-1 for Haggart Creek at W4, W29, W99 and W23.
- Provide water quality data for receiving aquatic environments to be used as input for the water quality modeling and development of water quality predictions for key mining phases of the project. Ongoing monitoring data also provide results for water balance and water quality model validation.
- Provide a continuous water quality database to support adaptive management strategies to meet water quality objectives in Haggart Creek to protect aquatic life.

Section 2 describes the surface water quality monitoring methods and sampling locations, describes the Quality Assurance and Quality Control (QA/QC) program and provides a summary of the program results for 2022. Section 3 presents the surface water quality results for monitoring conducted in 2022. Water quality results for mine site monitoring stations and mine site compliance monitoring are provided in Section 3.1. Receiving water quality data at key locations in Haggart Creek are presented in Section 3.2.

2. Monitoring Methods and QAQC

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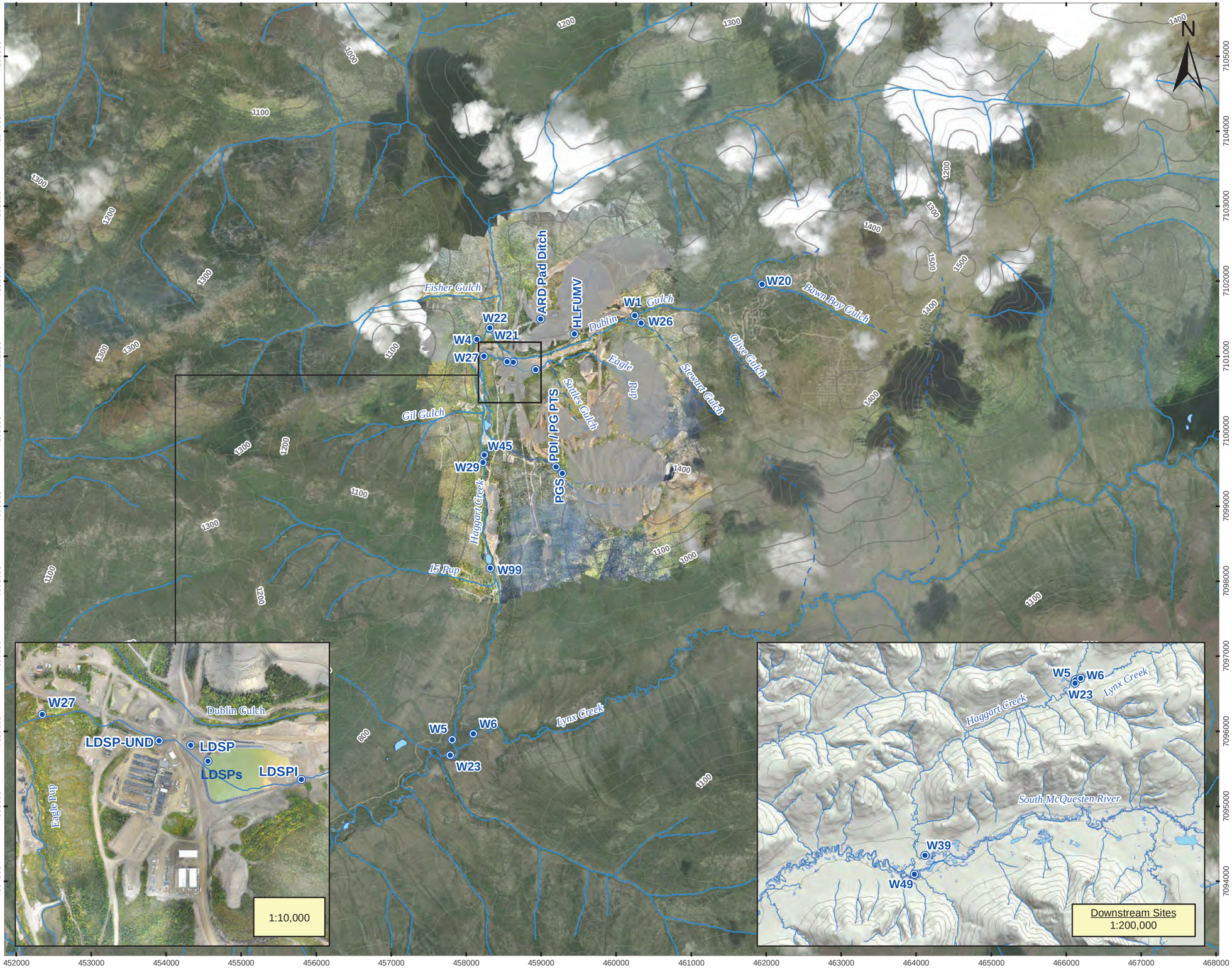
2. Monitoring Methods and QAQC

2.1 Methods and Monitoring Locations

Surface water quality monitoring programs are outlined in Victoria Gold Corp's (VGC) Environmental Monitoring, Surveillance and Adaptive Management Plan (EMSAMP, 2020). Surface water quality monitoring in 2022 consisted of monitoring active sites as identified for the operations phase monitoring in the EMSAMP and this summary report includes monitoring data for all active receiving environment locations specified in QZ14-041-1 (Schedule 1A) for the Project (Figure 2-1 and Table 2-1). Further monitoring occurs at the project to support QZ14-041-1 monitoring locations which are utilised to help inform monitoring and adaptive management decisions associated with the Project, however this data is not summarised within this report.

2.1.1 Field Sampling Methods

Water samples were collected following methods outlined in the 2013 British Columbia Field Sampling Manual Ambient Freshwater and Effluent Sampling, Part E – Water and Wastewater Sampling. In the receiving environment, samples were collected from just below the surface, facing upstream and using pre-cleaned or triple rinsed bottles. For compliance monitoring locations, the Guidance Document for the Sampling and Analysis of Metal Mining Effluents (Environment Canada, Minerals and Metals Division 2001) was followed to meet QZ14-041-1 conditions and the requirements of the *Metals and Diamond Mining Effluent Regulations.*



LEGEND

- Water Quality Sample Sites
- Waterbodies
- Watercourse (perennial)
- Watercourse (ephemeral)
- Watercourse (intermittent)
- Contour (100m)
- Contour (50m)

NOTES
Base data source:

STATUS
FOR INTERNAL USE ONLY

EAGLE GOLD PROJECT
YUKON TERRITORY

Current Surface Water Quality Monitoring Locations

PROJECTION NAD83 UTM Zone 8	**DATUM** NAD83	**CLIENT** VICTORIA GOLD CORP	
Scale: 1:50,000 (500 250 0 500 Metres)		LORAX ENVIRONMENTAL	
FILE NO.			
PROJECT Eagle Gold	**DWN** AL / **CKD** DHF / **APVD** DHF / **REV** 1		**Figure 2-1**
OFFICE	**DATE** March 19, 2022		

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Table 2-1:
Active Surface Water Quality Monitoring Locations and Frequency for Operations in 2022

Station Category	Monitoring Station	Location Description	Coordinates (Zone 8)		Sampling Frequency		
					Field Measurements	Laboratory Analysis	
			North	East	pH, Temp. DO Conductivity	Analytical Suite	48-Hour and 96-Hour LT50
Surface Water	W1	Dublin Gulch above Stewart Gulch	7101545	460249	M	M	-
	W21	Dublin Gulch below Events Ponds	7101261	458359	M	M	-
	W4	Haggart Creek below Dublin Gulch	7101223	458144	D, M	D[1], M[1]	-
	W22	Haggart Creek above Dublin Gulch	7101378	458319	M	M[2]	-
	W5	Haggart Creek above Lynx Creek	7095888	457814	M	M[2]	-
	W6	Lynx Creek above Haggart Creek	7095964	458099	M	M[2]	-
	W20	Bawn Boy Gulch	7101961	461945	M	M	-
	W23	Haggart Creek below Lynx Creek	7095682	457790	M	M[2]	-
	W27	Eagle Creek near Camp below LDSP	7100997	458235	M	M	-
	W26	Stewart Gulch	7101443	460331	M	M	-
	W29	Haggart Creek below Eagle Creek & Platinum Gulch	7099583	458225	D, M	D[1], M[2]	-
	W39	Haggart Creek above South McQuesten River	7086504	449780	Q	Q[2]	-
	W45	Eagle Creek above Haggart Creek	7099684	458243	M	M	-
	W49	South McQuesten River below Haggart Creek	7085495	449221	Q	Q[2]	-
	W99	Haggart Creek above 15 Pup	7098180	458322	M	M[2]	-
Mine Site: Internal Water Transfer	EPS	Eagle Pup WRSA Seepage	7100909	459834	M	M	-
	PGS	Platinum Gulch WRSA Seepage	7099436	459281	M	M	-
	PDI	Platinum Gulch Ditch into Lower Dublin South Pond	7099523	459184	M	M	
	LDSPI	Lower Dublin South Pond Inflow	7100824	458926	D, M	D[2], M	M
Mine Site: Compliance	LDSP	Lower Dublin South Pond Outflow	7100857	458672	D, W	D[2], W[2,3]	Md
	HLFUMV	Heap Leach Facility Underdrain Monitoring Vault	7101298	459445	C, D, W	D[4], M[2,3]	M
	LDSP-UND	LDSP Underdrain Outflow	7100937	458570	M	M[3]	-
	ADR Pad Ditch	ADR Pad Ditch Outlet	7101566	459160	D,M	D[2],M	-

Notes:
1 – Laboratory analysis includes WAD (Weak Acid Dissociable) cyanide (CN), Total CN, Thiocyanate and Cyanate.
2 – Laboratory analysis includes WAD and Total CN.
3 – Calculation of un-ionized ammonia
4 - Laboratory analysis only includes WAD and Total CN - no other parameters required.
C – Continuous monitoring for specific conductance; D – Daily when discharging; W – Weekly when discharging; M – Monthly; Md – Monthly when discharging; Q – Quarterly

Sample filtration and/or preservation were performed in the field, with the exception of occurrences that temperatures made this unsafe in which instance preservation would be performed promptly upon returning from the field. Samples were kept on ice until analysis. Elemental analysis was performed by ALS Environmental located in Vancouver or Burnaby BC and certified by the Canadian Association for Laboratory Accreditation (CALA). In situ measurements for pH, temperature, conductivity, turbidity, and dissolved oxygen were also recorded at each site prior to sample collection.

2.1.2 Laboratory Methods

Samples were analyzed for parameters listed in Schedule 1B of QZ14-041-1 according to the station category and location (Table 2-1). For full suite analyses, samples were analyzed for physical parameters (pH, conductivity, hardness, TSS, TDS, turbidity), major anions, nutrients, total and dissolved organic carbon (DOC), and total and dissolved metals. For cyanide analyses, samples were analyzed for total and weak acid dissociable (WAD) cyanide and also for cyanate and thiocyanate at certain sites.

Conventional parameters, major ions and nutrients, and metals were analyzed using procedures described in APHA Standard Methods for the Examination of Water and Wastewater (2005). Cyanide analysis was carried out using procedures adapted from APHA Method 4500-CN "Cyanide". Total or strong acid dissociable cyanide and weak acid dissociable cyanide are determined by sample distillation and analysis determined by a Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. The lowest available limit of detection for metals was achieved by using inductively coupled plasma/mass spectrometry (ICP/MS; EPA Method 6020). Mercury analysis in water was carried out by cold vapor atomic fluorescence spectrophotometry (EPA Method 245.7). This procedure involves a cold oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride.

Water quality results for all stations for the entire data record, including 2022, are provided electronically in Appendix A. The file is in an Excel-based dashboard that allows the user to evaluate each station and multiple statistics using drop-down menus. Graphical results for data for 2022 are provided in Appendix B.

2.2 Quality Assurance and Quality Control Program

VGC has a well-established quality assurance/quality control (QA/QC) program in place to ensure the surface water quality program for the Project is reliable, representative of the water quality conditions throughout the project area and of the highest quality. This program is intended to validate the monitoring data, and to identify any potential methodological and/or analytical errors in the data set that might require modifications to

the program and or laboratory analyses. The following sections provide a summary of the QA/QC program with respect to field quality, analytical data processing and internal laboratory procedures for the 2022 collection year.

2.2.1 QA/QC Methodology - Field Sampling Program

Water quality samples were collected in accordance with methods described in the EMSAMP (2020). As indicated above, water samples were collected following the methods outlined in the 2013 British Columbia Field Sampling Manual, Ambient Freshwater and Effluent Sampling, Part E – Water and Wastewater Sampling. The associated QA/QC protocols are designed to provide reliable data by preventing sampling error and cross contamination of the collected samples. In a given water course, samples were collected from downstream to upstream to avoid substrate disturbance and potential sample contamination. Haggart Creek samples and Dublin Gulch monitoring locations, within the immediate vicinity of the Project, were sampled on the same date, when possible, for data comparability and to support data analysis and adaptive management considerations. The integrity of the water quality sampling program is evaluated by the collection of quality control samples, including field blanks and replicates described in detail below, in addition to stewarding to industry standard field collection methods.

Field Blanks

Field blank samples (Sample ID02) are analyte-free reagent water samples used to assess the purity of chemical preservatives and potential contamination sources at the sampling location due to the collection method, handling, preservation, and exposure to the environment. Blank samples are generated by pouring de-ionized (DI) water into clean sample bottles and then exposing the sample bottles to the same environment in which actual samples are collected. Field blanks are generated at the Project using resident DI water as opposed be being pre made and shipped by the laboratory. The Field blanks are analyzed for the same parameters as is routinely performed on the actual collected samples.

The widely used acceptability criterion of 2×Reported Detection Limit (RDL) was used to evaluate the integrity of the collected field blanks. Detected values in blanks higher than the proposed criterion were flagged as a sample that required further investigation.

Travel Blanks

Travel blanks (Sample ID03) are provided by the analytical laboratory and are used during field surveys to identify potential contamination during storage and transport. These blanks are kept sealed and transported with water collected samples. Concentrations in these blanks are generally below detection limits, however if any measured parameter is detected above detection limit this may suggest a potential contamination during sample handling

and transport. The variability of concentrations of analytes within DI water also has the potential to impact QA/QC analyses.

Field Duplicates

Field duplicate samples (Sample ID01) were collected to assess water sampling integrity. The British Columbia Field Sampling Manual (Clark 2013) specifies that a relative percent difference (RPD) greater than 20 percent indicates a possible sample contamination. An RPD greater than 50 percent indicates a definite sample integrity problem; however, it is not unusual to find high variability for field duplicates, especially if the water is turbid with elevated total suspended solids (TSS). Field duplicate samples are generally collected at the same location and time as a site sample to assess the natural variability of the site. For the purpose of this analysis, originals and duplicates are considered paired replicates collected from the same location sequentially in time and were used to calculate the RPD.

2.2.2 QA/QC Methodology - Laboratory Analytical

All analytical analyses were performed by ALS laboratories (Burnaby, BC) a member of the CALA. The laboratory QA/QC program included analysis of certified reference materials, laboratory control samples, laboratory duplicates, method blanks and matrix spikes to determine accuracy and precision of instrumentation and methods. The majority of reported data met the laboratory data quality objectives (DQOs). However, in some instances, method recovery was not accurately calculated due to matrix interferences; thus, detection limits were adjusted to prevent any influence on analytical results. Overall, reported data were of good quality and met the laboratory QA/QC objectives. Laboratory data reports are included in the monthly monitoring reports and are not duplicated herein.

Dissolved Metal versus Total Metal Concentrations

A dissolved metal concentration that was higher than the corresponding total metal concentration was considered an indicator of sample analyte concentration variations, potential sample contamination and/or analytical error. Samples for total and dissolved metals are collected in separate bottles and are handled differently however are sourced from the same general chemistry bottle to mitigate variance due to different timing of sample aliquots. Samples for dissolved metal analysis are filtered through a 45 µm filter and the filtering process can introduce error or contamination into the sample. The 45 um filters that are used are not individually sealed.

Dissolved metal concentrations were flagged as a potential QA/QC issue if the concentration was >20% higher than the corresponding total metal value in the same sample. Variability of less than 20% is excluded because it generally falls within the

analytical margin of uncertainty (or error). Dissolved and total metal pairs are included in this analysis if the dissolved value is greater than five-times its RDL (Clark 2013).

2.2.3 Results and Discussion

Field Blanks

Field blanks were collected and analyzed to assess purity of chemical preservatives and potential contamination sources at the sampling location; a total of two field blank samples were prepared and submitted for QA/QC as part of the routine water quality monitoring. Water quality analysis of field blanks is presented in Table 2-2. For both samples, all parameters were measured at concentrations below the detection limit with the sole exception of dissolved Mo in the August 8, 2022 sample. The measured concentration was very slightly higher than the analytical detection limit. These results indicate good sampling collection protocols.

Travel Blanks

A total of 19 travel blanks were submitted during water quality monitoring at the Project in 2022. Travel blank results are summarized in Table 2-3. All the measured parameters were below their respective detection limit (DL) with the sole exception of a few samples for NH_3-N where slightly higher than DL concentrations were reported. These results indicate that good protocols of sample handling and transporting were applied in the field. The detectible concentrations of NH_3-N may be indicative of a potential issue with travel blank preparation by the analytical laboratory. The consistency of NH_3-N being the only parameter above detection limits also supports the potential for this observation to be derived from laboratory source water. However, these results do not compromise the quality of the collected samples.

Table 2-2:
Summary of Field Blank Water Quality Results for 2022

Station ID		Field Blank	Field Blank
	MDL	2022-08-02	2022-08-04
Conductivity (µS/cm)	2	<2	<2
Hardness (as $CaCO_3$) (mg/L)	0.6	<0.6	<0.6
pH (s.u.)	-	5.75	5.73
TSS (mg/L)	3	3	3
TDS (mg/L)	1		
Turbidity (NTU)	0.1	<0.1	<0.1
Alkalinity, Total (as $CaCO_3$) (mg/L)	1	1	1
NH3-N (mg/L)	0.005	<0.005	<0.005
Br (mg/L)	0.05	<0.05	<0.05
Cl (mg/L)	0.5	<0.5	<0.5
F (mg/L)	0.02	<0.02	<0.02
NO3-N (mg/L)	0.005	<0.005	<0.005
NO2-N (mg/L)	0.001	<0.001	<0.001
TKN (mg/L)	0.05	<0.05	<0.05
T-N (mg/L)	0.03	<0.03	<0.03
D-O-P (mg/L)	0.001	<0.001	<0.001
D-P-P (mg/L)	0.002	<0.002	<0.002
T-P-P (mg/L)	0.002	<0.002	<0.002
SO4 (mg/L)	0.3	<0.3	<0.3
CWAD (mg/L)	0.005		<0.005
T-CN (mg/L)	0.005		<0.005
TOC (mg/L)	0.5	<0.5	<0.5
DOC (mg/L)	0.5	<0.5	<0.5
T-Al (mg/L)	0.003	<0.003	<0.003
T-Sb (mg/L)	0.0001	<0.0001	<0.0001
T-As (mg/L)	0.0001	<0.0001	<0.0001
T-Ba (mg/L)	0.0001	<0.0001	<0.0001
T-Be (mg/L)	0.00002	<0.00002	<0.00002
T-Bi (mg/L)	0.00005	<0.00005	<0.00005
T-B (mg/L)	0.01	<0.01	<0.01
T-Cd (mg/L)	0.000005	<0.000005	<0.000005
T-Ca (mg/L)	0.05	<0.05	<0.05
T-Cr (mg/L)	0.0005	<0.0005	<0.0005
T-Co (mg/L)	0.0001	<0.0001	<0.0001
T-Cu (mg/L)	0.0005	<0.0005	<0.0005
T-Fe (mg/L)	0.01	<0.01	<0.01
T-Pb (mg/L)	0.00005	<0.00005	<0.00005
T-Li (mg/L)	0.001	<0.001	<0.001
T-Mg (mg/L)	0.1	<0.1	<0.1
T-Mn (mg/L)	0.0001	<0.0001	<0.0001
T-Hg (mg/L)	0.000005	<0.000005	<0.000005
T-Mo (mg/L)	0.00005	<0.00005	<0.00005
T-Ni (mg/L)	0.0005	<0.0005	<0.0005
T-P (mg/L)	0.05	<0.002	<0.002
T-K (mg/L)	0.1	<0.1	<0.1
T-Se (mg/L)	0.00005	<0.00005	<0.00005
T-Si (mg/L)	0.1	<0.1	<0.1
T-Ag (mg/L)	0.00001	<0.00001	<0.00001
T-Na (mg/L)	0.05	<0.05	<0.05
T-Sr (mg/L)	0.0002	<0.0002	<0.0002
T-Tl (mg/L)	0.00001	<0.00001	<0.00001
T-Sn (mg/L)	0.0001	<0.0001	<0.0001
T-Ti (mg/L)	0.0003	<0.0003	<0.0003
T-U (mg/L)	0.00001	<0.00001	<0.00001
T-V (mg/L)	0.0005	<0.0005	<0.0005
T-Zn (mg/L)	0.003	<0.003	<0.003

Station ID		Field Blank	Field Blank
	MDL	2022-08-02	2022-08-04
D-Al (mg/L)	0.001	<0.001	<0.001
D-Sb (mg/L)	0.0001	<0.0001	<0.0001
D-As (mg/L)	0.0001	<0.0001	<0.0001
D-Ba (mg/L)	0.0001	<0.0001	<0.0001
D-Be (mg/L)	0.00002	<0.00002	<0.00002
D-Bi (mg/L)	0.00005	<0.00005	<0.00005
D-B (mg/L)	0.01	<0.01	<0.01
D-Cd (mg/L)	0.000005	<0.000005	<0.000005
D-Ca (mg/L)	0.05	<0.05	<0.05
D-Cr (mg/L)	0.0005	<0.0005	<0.0005
D-Co (mg/L)	0.0001	<0.0001	<0.0001
D-Cu (mg/L)	0.0002	<0.0002	<0.0002
D-Fe (mg/L)	0.01	<0.01	<0.01
D-Pb (mg/L)	0.000074	<0.00005	<0.00005
D-Li (mg/L)	0.001	<0.001	<0.001
D-Mg (mg/L)	0.1	<0.1	<0.1
D-Mn (mg/L)	0.0001	<0.0001	<0.0001
D-Hg (mg/L)	0.000005	<0.000005	<0.000005
D-Mo (mg/L)	0.00005	<0.00005	**0.000056**
D-Ni (mg/L)	0.0005	<0.0005	<0.0005
D-P (mg/L)	0.05	<0.05	<0.05
D-K (mg/L)	0.1	<0.1	<0.1
D-Se (mg/L)	0.00005	<0.00005	<0.00005
D-Si (mg/L)	0.05	<0.05	<0.05
D-Ag (mg/L)	0.00001	<0.00001	<0.00001
D-Na (mg/L)	0.05	<0.05	<0.05
D-Sr (mg/L)	0.0002	<0.0002	<0.0002
D-Tl (mg/L)	0.00001	<0.00001	<0.00001
D-Sn (mg/L)	0.0001	<0.0001	<0.0001
D-Ti (mg/L)	0.0003	<<0.0003	<0.0003
D-U (mg/L)	0.00001	<0.00001	<0.00001
D-V (mg/L)	0.0005	<0.0005	<0.0005
D-Zn (mg/L)	0.001	<0.001	<0.001

Notes: Values in red indicate measured values above detection limit; < - below detection limit

Table 2-3:
Summary of Travel Blank Results for Selected Parameters

Station ID		Travel Blank																		
	MDL	2022-01-04	2022-02-04	2022-03-03	2022-04-04	2022-05-05	2022-05-26	2022-06-06	2022-06-25	2022-06-27	2022-07-04	2022-07-04	2022-08-03	2022-08-04	2022-08-29	2022-09-01	2022-09-01	2022-09-06	2022-10-08	2022-10-09
Conductivity (µS/cm)	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Hardness ($CaCO_3$) (mg/L)	0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
pH (s.u.)	-	5.35	5.27	5.19	5.69	5.2	5.5	5.33	5.67	5.14	5.52	5.47	5.84	5.75	5.34	5.5	5.35	5.74	5.51	5.22
TSS (mg/L)	3	<3	<3	<3	<3		<3	<3	<3	<3	<2	<3	<3	<3	<2	<3	<3	<1	<3	<3
TDS (mg/L)	1	10	10			3			10					10					10	
Turbidity (NTU)	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
T-Alk. ($CaCO_3$) (mg/L)	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
NH_3-N (mg/L)	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	**0.0113**	<0.005	**0.0063**	<0.005	**0.0059**	**0.0054**	**0.0058**	<0.005	**0.0073**	**0.0091**	<0.005	<0.005
Br (mg/L)	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cl (mg/L)	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
F (mg/L)	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
NO_3-N (mg/L)	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
NO_2-N (mg/L)	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TKN (mg/L)	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
T-N (mg/L)	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
D-O-P (mg/L)	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
D-P-P (mg/L)	0.002					<0.002														
T-P-P (mg/L)	0.002	<0.002	<0.002	<0.002	<0.02	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
SO4 (mg/L)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
CWAD (mg/L)	0.005			<0.005		<0.005														
T-CN (mg/L)	0.005			<0.005		<0.005														
TOC (mg/L)	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
DOC (mg/L)	0.5																			
T-Al (mg/L)	0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.0037	<0.0055
T-Sb (mg/L)	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
T-As (mg/L)	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
T-Ba (mg/L)	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00012	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00053	<0.00087
T-Be (mg/L)	0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
T-Bi (mg/L)	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
T-B (mg/L)	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
T-Cd (mg/L)	0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
T-Ca (mg/L)	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
T-Cr (mg/L)	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
T-Co (mg/L)	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
T-Cu (mg/L)	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
T-Fe (mg/L)	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
T-Pb (mg/L)	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
T-Li (mg/L)	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
T-Mg (mg/L)	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
T-Mn (mg/L)	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
T-Hg (mg/L)	0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
T-Mo (mg/L)	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
T-Ni (mg/L)	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
T-P (mg/L)	0.05	<0.002	<0.002	<0.002	<0.02	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
T-K (mg/L)	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
T-Se (mg/L)	0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
T-Si (mg/L)	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
T-Ag (mg/L)	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
T-Na (mg/L)	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
T-Sr (mg/L)	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
T-Tl (mg/L)	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
T-Sn (mg/L)	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
T-Ti (mg/L)	0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
T-U (mg/L)	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
T-V (mg/L)	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
T-Zn (mg/L)	0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003

Notes: Values in red indicate measured values above detection limit; < below detection limit

Field Duplicates

A total of 18 surface water field duplicates were collected as part of the surface water quality sampling program under the EMSAMP and for other environmental characterization purposes in 2022 (Table 2-4). In addition, two duplicates for LDPS and EP stations were specifically collected to evaluate cyanide forms. A total of 272 full suite water quality samples were collected in 2022 from surface water monitoring stations specified in Table 2-1; accordingly, the field duplicate component of the QA/QC program was approximately 7% of the overall surface water quality monitoring effort. When field blank and travel blank samples (21 samples) are included, the number of QA/QC samples as part of the water quality monitoring program is roughly 15% of the sampling effort which exceeded the EMSAMP target of 10%. In addition to above noted QA/QC efforts duplicates, field blanks and travel blanks were also taken for internal monitoring locations.

Table 2-4:
Station and date of collected duplicates

Station	Date
W1	2-Jan-2022; 21-May-2022; 2-June-2022
HLF-UMV	2-Feb-2022; 6-May-2022
W49	14-Jan-2022; 11-May-2022
W99	4-Feb-2022
W27	2-Mar-2022
W45	2-Apr-2022; 8-July-2022
LDSP-UND	7-May-2022
W25	8-May-2022
W21	10-May-2022
LDSP	28-June-2022
EP	6-Jul-2022
W31	9-July-2022
LDSPI	4-Sept-2022
W5	5-Nov-2022
W20	3-Dec-2022

Table 2-5 to Table 2-7shows the number of duplicates that had parameters with RPDs greater than the acceptability criteria of 20% (red-highlighted) and 50% (yellow-highlighted). Water quality results were generally similar between field duplicates. Most duplicates had at least one parameter with an RPD between 20 and 50%, but typically less than half of duplicates had one or more parameters with an RPD greater than 50%. An RPD greater than 50 percent indicates a sample integrity problem; however, it is not unusual to find higher variability for the field duplicates, especially under certain conditions such as for example, relatively high total suspended solids and/or turbidity, particularly occurring during freshet or after precipitation events. This is demonstrated by the results wherein only four of the 18 duplicates that analysed TSS and turbidity did not have an association with a high RPD in TSS or turbidity.

Table 2-5:
Summary of Field Duplicate Results for Selected Physical and Nutrient Parameters

Station	Date	Cond. (µS/cm)	Hardness (mg/L)	pH	TSS (mg/L)	Turbidity (NTU)	T-Alkalinity (mg/L)	NH_3-N (mg/L)	Br (mg/L)	Cl (mg/L)	F (mg/L)	NO_3-N (mg/L)	NO_2-N (mg/L)	TKN (mg/L)	T-N (mg/L)	D-O-P (mg/L)	D-P-P (mg/L)	T-P-P (mg/L)	SO_4 (mg/L)	CWAD (mg/L)	T-CN (mg/L)
W1	2022-01-02	141	63	7.75	3	0.74	49.3	0.005	0.05	0.5	0.09	0.12	0.001	0.05	0.15	0.004	0.007	0.010	20.3		
W1	2022-01-02	141	64	7.68	3.9	0.82	49.6	0.005	0.05	0.5	0.09	0.13	0.001	0.06	0.18	0.004	0.005	0.013	20.4		
	RPD	0%	1%	1%	26%	10%	1%	0%	0%	0%	1%	5%	0%	25%	17%	2%	31%	20%	0%	-	-
W49	2022-01-14	501	271	7.92	4.4	4.75	177	0.057	0.05	0.99	0.10	0.15	0.0012	0.18	0.31	0.002	0.002	0.003	96	0.005	0.005
W49	2022-01-14	503	271	7.88	5.8	4.74	186	0.055	0.05	1.03	0.11	0.15	0.0012	0.19	0.32	0.001	0.003	0.010	98.2	0.005	0.005
	RPD	0%	0%	1%	27%	0%	5%	3%	0%	4%	2%	3%	0%	4%	2%	30%	26%	115%	2%	0%	0%
HLF-UMV	2022-02-02	317	151	7.76	3	0.28	60.3	0.005	0.05	0.5	0.25	0.05	0.001	0.05	0.07	0.004	0.006	0.006	102	0.005	0.005
HLF-UMV	2022-02-02	311	153	7.79	3	0.26	60	0.005	0.05	0.5	0.25	0.05	0.001	0.05	0.06	0.004	0.006	0.005	102	0.005	0.005
	RPD	2%	1%	0%	0%	7%	0%	0%	0%	0%	0%	4%	0%	0%	8%	0%	5%	18%	0%	0%	0%
W99	2022-02-04	434	230	7.91	3	0.38	129	0.006	0.05	0.54	0.13	0.15	0.001	0.05	0.21	0.001	0.002	0.003	104	0.005	0.005
W99	2022-02-04	437	237	7.88	3	0.56	133	0.005	0.05	0.54	0.13	0.15	0.001	0.05	0.18	0.001	0.002	0.002	104	0.005	0.005
	RPD	1%	3%	0%	0%	38%	3%	15%	0%	0%	2%	0%	0%	0%	18%	0%	0%	8%	0%	0%	0%
W45	2022-04-02	582	356	8.06	3	1.06	216	0.010	0.05	1.13	0.12	0.10	0.001	0.07	0.17	0.002	0.002	0.004	109		
W45	2022-04-02	576	365	8.15	3	0.59	214	0.009	0.05	1.08	0.12	0.10	0.001	0.06	0.15	0.002	0.003	0.003	108		
	RPD	1%	2%	1%	0%	57%	1%	10%	0%	5%	2%	0%	0%	11%	9%	0%	34%	20%	1%	-	-
HLFUMV	2022-05-06	339	152	7.43	3	0.2	63.2	0.008	0.05	0.5	0.20	0.05	0.001	0.05	0.09	0.004	0.006	0.006	101	0.005	0.005
HLFUMV	2022-05-06	336	149	7.66	3	0.22	62	0.005	0.05	0.5	0.20	0.05	0.001	0.05	0.08	0.004	0.006	0.006	102		
	RPD	1%	2%	3%	0%	10%	2%	39%	0%	0%	0%	0%	0%	0%	7%	0%	3%	0%	1%	-	-
LDSP-UN	2022-05-07	397	207	8.22	35.8	93	154	0.005	0.05	2.82	0.14	0.58	0.0024	0.16	0.75	0.002	0.008	0.072	60.8		
LDSP-UN	2022-05-07	395	207	8.22	87.5	96.8	151	0.005	0.05	2.78	0.14	0.58	0.002	0.17	0.70	0.002	0.008	0.064	60.4		
	RPD	1%	0%	0%	84%	4%	2%	0%	0%	1%	5%	1%	18%	8%	7%	10%	1%	11%	1%	-	-
W25	2022-05-08	142	72	7.52	8.5	13	37.4	0.007	0.05	0.5	0.06	0.03	0.001	0.50	0.61	0.001	0.015	0.031	27.3	0.005	0.005
W25	2022-05-08	143	74	7.51	5.9	13.1	37.8	0.006	0.05	0.5	0.06	0.03	0.001	0.50	0.62	0.001	0.015	0.030	26.9	0.005	0.005
	RPD	1%	3%	0%	36%	1%	1%	22%	0%	0%	2%	0%	0%	2%	1%	0%	0%	2%	1%	0%	0%
W21	2022-05-10	172	84	7.77	403	196	53.2	0.011	0.05	1.06	0.09	0.28	0.0113	0.36	0.59	0.004	0.007	0.141	27.7	0.005	0.005
W21	2022-05-10	166	83	7.79	258	143	50.7	0.015	0.05	0.58	0.09	0.22	0.011	0.36	0.58	0.003	0.007	0.136	27.3	0.005	0.005
	RPD	4%	1%	0%	44%	31%	5%	33%	0%	59%	2%	23%	3%	1%	2%	28%	1%	4%	1%	0%	0%
W49	2022-05-11	134	71	7.65	99.6	28.6	41.1	0.011	0.05	0.5	0.06	0.03	0.001	0.65	0.70	0.001	0.015	0.067	21.2	0.005	0.005
W49	2022-05-11	134	71	7.64	124	32.1	41.3	0.012	0.05	0.5	0.06	0.03	0.001	0.62	0.67	0.001	0.015	0.076	21.2	0.005	0.005
	RPD	0%	1%	0%	22%	12%	0%	7%	0%	0%	2%	1%	0%	4%	5%	0%	2%	12%	0%	0%	0%
W1	2022-05-21	058	26	7.39	106	15.3	21.1	0.005	0.05	0.5	0.06	0.04	0.001	0.41	0.40	0.002	0.013	0.051	5.75		
W1	2022-05-21	057	28	7.38	41.3	10.3	21.1	0.005	0.05	0.5	0.06	0.04	0.001	0.41	0.44	0.002	0.013	0.075	5.78		
	RPD	0%	8%	0%	88%	39%	0%	0%	0%	0%	0%	2%	0%	0%	9%	29%	2%	39%	1%	-	-
W1	2022-06-02	035	21	7.16	74	38.9	12.4	0.005	0.05	0.5	0.05	0.03	0.001	0.32	0.36	0.003	0.016	0.098	3.42		
W101	2022-06-02	040	22	7.18	79	40.6	12.7	0.006	0.05	0.5	0.05	0.03	0.001	0.33	0.40	0.003	0.016	0.122	3.43		
	RPD	13%	4%	0%	7%	4%	2%	9%	0%	0%	2%	2%	0%	2%	10%	0%	2%	22%	0%	-	-
LDSP	2022-06-28																			0.005	0.005
LDSP	2022-06-28																			0.005	0.005
	RPD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0%	0%
EP	2022-07-06																			0.005	0.005
EP	2022-07-06																			0.005	0.005
	RPD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0%	0%
W45	2022-07-08	551	279	8.54	3	1.36	204	0.006	0.05	2.66	0.12	0.01	0.001	0.15	0.17	0.001	0.008	0.012	109		
W45	2022-07-08	551	286	8.54	3	1.56	204	0.005	0.05	2.66	0.12	0.01	0.001	0.15	0.15	0.001	0.005	0.011	109		
	RPD	0%	2%	0%	0%	14%	0%	6%	0%	0%	1%	0%	0%	1%	10%	15%	36%	4%	0%	-	-
W31	2022-07-09	102	45	7.80	3	0.37	39.5	0.005	0.05	0.5	0.10	0.08	0.001	0.06	0.11	0.002	0.006	0.007	10.4		
W31	2022-07-09	103	46	7.80	3	0.35	39.2	0.005	0.05	0.5	0.10	0.08	0.001	0.05	0.11	0.003	0.006	0.007	10.4		
	RPD	1%	0%	0%	0%	6%	1%	0%	0%	0%	1%	6%	0%	18%	2%	44%	4%	4%	0%	-	-
LDSPI	2022-09-04	515	240	8.32	3.6	9.16	147	0.005	0.05	3.29	0.17	2.30	0.0332	0.27	2.50	0.003	0.005	0.013	106	0.005	0.005
LDSPI	2022-09-04		239		8.6															0.005	0.005
	RPD	-	0%	-	82%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0%	0%
W5	2022-11-05	340	182	7.67	3.4	0.34	96.1	0.005	0.05	0.5	0.08	0.08	0.001	0.06	0.14	0.001	0.003	0.003	73.3	0.005	0.005
W5	2022-11-05	343	186	7.68	4	0.42	97.1	0.005	0.05	0.5	0.08	0.08	0.001	0.07	0.15	0.001	0.003	0.003	72.9	0.005	0.005
	RPD	1%	2%	0%	16%	21%	1%	0%	0%	0%	2%	1%	0%	9%	2%	0%	4%	0%	1%	0%	0%
W20	2022-12-03	068	29	7.42	9.6	1.93	25.4	0.008	0.05	0.5	0.05	0.07	0.001	0.06	0.09	0.001	0.006	0.014	8.46		
W20	2022-12-03	069	29	7.46	6.2	1.54	24	0.005	0.05	0.5	0.05	0.07	0.001	0.05	0.11	0.001	0.007	0.013	8.43		
	RPD	1%	1%	1%	43%	22%	6%	39%	0%	0%	2%	0%	0%	13%	24%	0%	12%	8%	0%	-	-
W27	2022-03-02	504	288.0	8.30	3	0.21	193	0.005	0.05	2.2	0.155	0.652	0.001	0.174	0.638	0.0053	0.0055	0.0061	79.1		
W27	2022-03-02	505	279.0	8.32	3	0.19	203	0.005	0.05	2.22	0.155	0.652	0.001	0.072	0.641	0.0046	0.0076	0.0063	78.9		
	RPD	0%	3%	0%	0%	10%	5%	0%	0%	1%	0%	0%	0%	83%	0%	14%	32%	3%	0%	-	-

Note: Highlighted cells represent relative percent difference (RPD) values >20% but < 50% (yellow);> 50% (red); - Not calculated

Table 2-6:
Summary of Field Duplicate Results for Selected Total Metal Parameters

Station	Date	T-Al (mg/L)	T-Sb (mg/L)	T-As (mg/L)	T-Ba (mg/L)	T-Be (mg/L)	T-Bi (mg/L)	T-B (mg/L)	T-Cd (mg/L)	T-Ca (mg/L)	T-Cr (mg/L)	T-Co (mg/L)	T-Cu (mg/L)	T-Fe (mg/L)	T-Pb (mg/L)	T-Li (mg/L)	T-Mg (mg/L)	T-Mn (mg/L)	T-Hg (mg/L)	T-Mo (mg/L)	T-Ni (mg/L)	T-P (mg/L)	T-K (mg/L)	T-Se (mg/L)	T-Si (mg/L)	T-Ag (mg/L)	T-Na (mg/L)	T-Sr (mg/L)	T-Tl (mg/L)	T-Sn (mg/L)	T-Ti (mg/L)	T-U (mg/L)	T-V (mg/L)	T-Zn (mg/L)
W1	2022-01-02	0.142	0.001	0.039	0.05	0.00002	0.00005	0.01	0.0000099	17.5	0.0005	0.00011	0.0005	0.23	0.000353	0.003	4.63	0.0058	0.000005	0.00178	0.001	0.010	0.87	0.000224	6.93	0.00001	1.8	0.10	0.00001	0.0001	0.00787	0.0007	0.00062	0.003
W1	2022-01-02	0.071	0.001	0.036	0.05	0.00002	0.00005	0.01	0.0000129	17.8	0.0005	0.0001	0.0005	0.12	0.000198	0.003	4.65	0.00318	0.000005	0.00185	0.001	0.013	0.86	0.000174	6.92	0.00001	1.83	0.10	0.00001	0.0001	0.00407	0.0006	0.0005	0.003
	RPD	67%	5%	7%	3%	0%	0%	0%	26%	2%	0%	10%	0%	64%	56%	3%	0%	58%	0%	4%	20%	20%	1%	25%	0%	0%	2%	0%	0%	0%	64%	6%	21%	0%
W49	2022-01-14	0.054	0.000	0.006	0.13	0.00002	0.00005	0.01	0.000328	72.6	0.0005	0.00127	0.00106	0.70	0.00434	0.005	21.8	0.346	0.000005	0.000944	0.011	0.003	0.95	0.000501	4.49	0.000025	3.18	0.28	0.00001	0.00001	0.00072	0.0011	0.0005	0.050
W49	2022-01-14	0.055	0.000	0.006	0.12	0.00002	0.00005	0.01	0.000315	72.4	0.0005	0.00124	0.00103	0.70	0.0044	0.005	22	0.342	0.000005	0.000998	0.011	0.010	0.92	0.000453	4.42	0.00003	3.23	0.28	0.00001	0.00001	0.0009	0.0011	0.0005	0.050
	RPD	2%	11%	1%	2%	0%	0%	0%	4%	0%	0%	2%	3%	0%	1%	0%	1%	1%	0%	6%	0%	115%	3%	10%	2%	18%	2%	1%	0%	0%	22%	0%	0%	0%
HLF-UM\	2022-02-02	0.006	0.003	0.041	0.02	0.0002	0.00005	0.01	0.0000294	33.6	0.0005	0.0001	0.0005	0.01	0.000051	0.076	16.3	0.00139	0.000005	0.000093	0.003	0.006	2.56	0.000224	8.36	0.00001	3.04	0.21	0.00001	0.00001	0.0003	0.0001	0.0005	0.010
HLF-UM\	2022-02-02	0.006	0.003	0.044	0.02	0.0002	0.00005	0.01	0.0000359	33.3	0.0005	0.0001	0.00052	0.01	0.000051	0.075	17	0.00144	0.000005	0.000096	0.003	0.005	2.73	0.000242	8.61	0.00001	3.31	0.21	0.00001	0.00001	0.0003	0.0001	0.0005	0.011
	RPD	9%	0%	5%	6%	0%	0%	0%	20%	1%	0%	0%	4%	10%	0%	1%	4%	4%	0%	3%	4%	18%	6%	8%	3%	0%	9%	1%	0%	0%	0%	0%	4%	0%	7%
W99	2022-02-04	0.028	0.001	0.003	0.05	0.00002	0.00005	0.01	0.0000201	56.9	0.0005	0.00019	0.0005	0.11	0.000088	0.009	21.4	0.0869	0.000005	0.000208	0.002	0.003	1.38	0.000206	4.74	0.00001	2.43	0.28	0.00001	0.00001	0.00137	0.0019	0.0005	0.003
W99	2022-02-04	0.064	0.001	0.004	0.05	0.00002	0.00005	0.01	0.000022	57.9	0.0005	0.00026	0.0005	0.21	0.000187	0.009	22.4	0.095	0.000005	0.000211	0.002	0.002	1.44	0.000309	4.93	0.00001	2.55	0.29	0.00001	0.00001	0.00317	0.0020	0.0005	0.004
	RPD	79%	8%	24%	5%	0%	0%	0%	9%	2%	0%	31%	0%	62%	72%	1%	5%	9%	0%	1%	6%	8%	4%	40%	4%	0%	5%	2%	0%	0%	79%	5%	0%	12%
W45	2022-04-02	0.008	0.001	0.040	0.04	0.00002	0.00005	0.01	0.0000137	100	0.0005	0.00047	0.0005	0.21	<0.000050	0.012	25.8	0.465	0.000005	0.000478	0.001	0.004	2.44	0.00112	5.38	0.00001	6.16	0.58	0.00001	0.00001	0.00034	0.0041	0.0005	0.003
W45	2022-04-02	0.010	0.001	0.043	0.05	0.00002	0.00005	0.01	0.0000145	101	0.0005	0.00048	0.0005	0.23	<0.000050	0.012	27.4	0.484	0.000005	0.000463	0.001	0.003	2.55	0.00121	5.68	0.00001	6.61	0.60	0.00001	0.00001	0.00046	0.0041	0.0005	0.003
	RPD	24%	3%	8%	4%	0%	0%	0%	6%	1%	0%	2%	0%	10%	-	3%	6%	4%	0%	3%	0%	20%	4%	8%	5%	0%	7%	3%	0%	0%	30%	0%	0%	0%
HLFUMV	2022-05-06	0.009	0.002	0.037	0.02	0.00002	0.00005	0.01	0.0000385	33.5	0.0005	0.0001	0.0006	0.02	0.000053	0.078	16.5	0.00316	0.000005	0.000762	0.003	0.006	2.76	0.000236	8.24	0.00001	3.2	0.20	0.00001	0.00001	<0.00030	0.0002	0.0005	0.013
HLFUMV	2022-05-06	0.011	0.002	0.037	0.02	0.00002	0.00005	0.01	0.0000402	33.5	0.0005	0.0001	0.00061	0.02	0.00006	0.073	15.8	0.00243	0.000005	0.00008	0.003	0.006	2.66	0.000305	8.06	0.00001	3.01	0.20	0.00001	0.00001	0.00031	0.0002	0.0005	0.013
	RPD	12%	3%	2%	4%	0%	0%	0%	4%	0%	0%	0%	2%	18%	12%	7%	4%	26%	0%	162%	2%	0%	4%	26%	2%	0%	6%	1%	0%	0%	-	1%	0%	3%
LDSP-UN	2022-05-07	2.140	0.008	0.117	0.10	0.000189	0.00124	0.01	0.000106	43.5	0.0033	0.00208	0.00899	3.97	0.0116	0.014	23.9	0.0548	0.0000119	0.00132	0.006	0.072	2.85	0.000559	7.69	0.000068	3.12	0.31	0.000046	0.00011	0.061	0.0064	0.00402	0.023
LDSP-UN	2022-05-07	1.850	0.007	0.106	0.10	0.000169	0.00109	0.01	0.000099	44	0.00268	0.00179	0.0081	3.39	0.0105	0.014	23.6	0.0498	0.000011	0.00112	0.005	0.064	2.78	0.00059	7.36	0.000059	3.14	0.31	0.00004	0.0001	0.052	0.0064	0.00364	0.021
	RPD	15%	6%	10%	4%	11%	13%	0%	7%	1%	21%	15%	10%	16%	10%	2%	1%	10%	8%	16%	11%	11%	2%	5%	4%	14%	1%	0%	14%	10%	16%	0%	10%	9%
W25	2022-05-08	0.675	0.000	0.003	0.03	0.000048	0.00005	0.01	0.0000449	17.3	0.00082	0.0004	0.00287	1.04	0.000346	0.004	6.91	0.042	0.0000153	0.00007	0.003	0.031	0.97	0.000103	3.5	0.000012	0.906	0.09	0.00001	0.00001	0.0165	0.0004	0.00114	0.006
W25	2022-05-08	1.000	0.000	0.003	0.04	0.000063	0.00005	0.01	0.0000623	17.8	0.00128	0.0007	0.00326	1.41	0.000496	0.005	7.2	0.093	0.000014	0.000086	0.004	0.030	1.03	0.000102	3.99	0.000013	0.925	0.10	0.00001	0.00001	0.0246	0.0004	0.00155	0.008
	RPD	39%	9%	18%	10%	27%	0%	0%	32%	3%	44%	55%	13%	30%	36%	12%	4%	76%	9%	21%	11%	2%	6%	1%	13%	8%	2%	2%	0%	0%	39%	8%	30%	27%
W21	2022-05-10	2.520	0.003	0.109	0.08	0.000222	0.000816	0.01	0.000107	21.8	0.0045	0.00302	0.00791	4.47	0.00896	0.009	7.16	0.123	0.0000241	0.00204	0.007	0.141	2.34	0.00034	8.48	0.000045	1.52	0.13	0.000065	0.00001	0.0832	0.0017	0.00549	0.018
W21	2022-05-10	2.810	0.003	0.110	0.08	0.000233	0.000775	0.01	0.000113	21.6	0.005	0.00305	0.00806	4.79	0.00896	0.009	7.16	0.122	0.0000208	0.00199	0.007	0.136	2.43	0.000328	9.08	0.000046	1.51	0.13	0.000071	0.00001	0.101	0.0016	0.00597	0.019
	RPD	11%	3%	1%	3%	5%	5%	0%	5%	1%	11%	1%	2%	7%	0%	1%	0%	1%	15%	2%	5%	4%	4%	4%	7%	2%	1%	1%	9%	0%	19%	1%	8%	8%
W49	2022-05-11	0.717	0.001	0.010	0.04	0.000027	0.00005	0.01	0.0000776	19	0.00125	0.00096	0.00431	1.46	0.00206	0.003	5.64	0.113	0.0000141	0.000198	0.004	0.067	1.09	0.000134	2.77	0.000019	0.77	0.10	0.00001	0.00001	0.0178	0.0004	0.00167	0.010
W49	2022-05-11	1.000	0.001	0.012	0.05	0.00005	0.00006	0.01	0.000102	19	0.00175	0.00123	0.00493	2.04	0.00259	0.003	5.74	0.126	0.0000138	0.0002	0.004	0.076	1.12	0.000165	3.17	0.000024	0.776	0.09	0.000014	0.00001	0.0254	0.0005	0.00231	0.012
	RPD	33%	22%	15%	9%	60%	18%	0%	27%	0%	33%	25%	13%	33%	23%	14%	2%	11%	2%	1%	15%	12%	3%	21%	13%	23%	1%	2%	33%	0%	35%	5%	32%	18%
W1	2022-05-21	0.656	0.001	0.035	0.04	0.000062	0.00005	0.01	0.0000464	7.55	0.00144	0.00055	0.00192	1.03	0.00148	0.002	1.78	0.0362	0.0000066	0.00102	0.003	0.051	0.92	0.000135	3.88	0.000015	0.731	0.04	0.000021	0.00001	0.0344	0.0007	0.0018	0.006
W1	2022-05-21	0.740	0.001	0.041	0.04	0.000063	0.00005	0.01	0.0000518	7.98	0.00164	0.00063	0.00219	1.16	0.00158	0.002	2.06	0.0412	0.0000067	0.00105	0.003	0.075	1.05	0.000142	4.04	0.000017	0.842	0.05	0.000022	0.00001	0.0375	0.0007	0.00205	0.007
	RPD	12%	6%	16%	12%	2%	0%	0%	11%	6%	13%	14%	13%	12%	7%	4%	15%	13%	2%	3%	13%	39%	14%	5%	4%	13%	14%	5%	5%	0%	9%	6%	13%	15%
W1	2022-06-02	1.520	0.002	0.072	0.05	0.000079	0.000091	0.01	0.0000805	5.8	0.00355	0.0014	0.00294	2.79	0.00604	0.004	1.51	0.0796	0.0000129	0.00118	0.004	0.098	0.90	0.000074	4.77	0.000042	0.702	0.04	0.000047	0.00001	0.0792	0.0012	0.00468	0.014
W101	2022-06-02	1.490	0.002	0.070	0.05	0.000144	0.000062	0.01	0.0000914	5.99	0.00353	0.00151	0.00289	2.61	0.00736	0.003	1.58	0.105	0.0000145	0.0011	0.004	0.122	0.89	0.000114	4.74	0.000039	0.706	0.04	0.000045	0.00001	0.0817	0.0016	0.00457	0.014
	RPD	2%	7%	2%	7%	58%	38%	0%	13%	3%	1%	8%	2%	7%	20%	3%	5%	28%	12%	7%	2%	22%	0%	43%	1%	7%	1%	6%	4%	0%	3%	26%	2%	1%
	RPD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W45	2022-07-08	0.040	0.002	0.066	0.06	0.00002	0.00005	0.01	0.0000129	76.9	0.0005	0.0001	0.00371	0.11	0.00033	0.010	21.2	0.0258	0.000005	0.000874	0.001	0.012	2.53	0.000704	2.86	0.00001	4.87	0.48	0.00001	0.00001	0.0012	0.0044	0.0005	0.003
W45	2022-07-08	0.031	0.002	0.065	0.06	0.00002	0.00005	0.01	0.0000086	79.4	0.0005	0.0001	0.00073	0.10	0.000284	0.010	21.3	0.0259	0.000005	0.000847	0.001	0.011	2.52	0.000792	2.88	0.00001	4.84	0.46	0.00001	0.00001	0.00091	0.0044	0.0005	0.003
	RPD	23%	0%	0%	1%	0%	0%	0%	40%	3%	0%	0%	134%	13%	15%	1%	0%	0%	0%	3%	22%	4%	0%	12%	1%	0%	1%	3%	0%	0%	27%	0%	0%	0%
W31	2022-07-09	0.019	0.002	0.026	0.04	0.00002	0.00005	0.01	0.0000075	13.4	0.0005	0.0001	0.0005	0.02	0.000067	0.002	2.88	0.0012	0.000005	0.00404	0.001	0.007	0.81	0.000132	5.63	0.00001	1.82	0.08	0.00001	0.00001	0.00065	0.0008	0.0005	0.003
W31	2022-07-09	0.027	0.002	0.026	0.04	0.00002	0.00005	0.01	0.0000074	13.4	0.0005	0.0001	0.0005	0.03	0.000094	0.002	2.92	0.00143	0.000005	0.00417	0.001	0.007	0.82	0.000169	5.64	0.00001	1.78	0.08	0.00001	0.00001	0.00168	0.0008	0.0005	0.003
	RPD	34%	2%	2%	1%	0%	0%	0%	1%	0%	0%	0%	0%	39%	34%	0%	1%	17%	0%	3%	0%	4%	1%	25%	0%	0%	2%	3%	0%	0%	88%	1%	0%	0%
LDSP1	2022-09-04	0.160	0.024	0.070	0.05	0.00002	0.000114	0.01	0.0000275	58.2	0.00053	0.0007	0.00265	0.18	0.000892	0.011	23	0.0266	0.000005	0.00462	0.002	0.013	3.92	0.00198	3.77	0.00001	4.42	0.98	0.000013	0.00001	0.00494	0.0210	0.0005	0.003
LDSP1	2022-09-04	0.262	0.022	0.070	0.05	0.00002	0.000142	0.01	0.0000333	59.3	0.0005	0.00072	0.00165	0.31	0.00104	0.011	22.1	0.0275	0.000005	0.0044	0.002		3.83	0.00229	3.99	0.00001	4.29	0.91	0.000014	0.00001	0.009	0.0204	0.00062	0.003
	RPD	48%	7%	1%	1%	0%	22%	0%	19%	2%	6%	3%	47%	55%	15%	1%	4%	3%	0%	5%	3%	-	2%	15%	6%	0%	3%	8%	7%	0%	58%	3%	21%	0%
W5	2022-11-05	0.020	0.001	0.004	0.05	0.00002	0.00005	0.01	0.0000261	43.5	0.0005	0.00014	0.00065	0.04	0.000061	0.006	17.8	0.0417	0.000005	0.000375	0.001	0.003	1.18	0.000188	4.52	0.00001	2.2	0.23	0.00001	0.00001	0.00041	0.0011	0.0005	0.006
W5	2022-11-05	0.012	0.001	0.004	0.05	0.00002	0.00005	0.01	0.0000185	45.2	0.0005	0.00014	0.00066	0.03	0.000054	0.006	17.8	0.0408	0.000005	0.000289	0.001	0.003	1.21	0.000207	4.46	0.00001	2.24	0.23	0.00001	0.00001	0.0003	0.0012	0.0005	0.003
	RPD	53%	9%	5%	0%	0%	0%	0%	34%	4%	0%	0%	2%	15%	12%	2%	0%	2%	0%	26%	3%	0%	3%	10%	1%	0%	2%	3%	0%	0%	31%	3%	0%	56%
W20	2022-12-03	0.148	0.001	0.068	0.03	0.00002	0.00005	0.01	0.0000056	9.25	0.0005	0.0001	0.0005	0.18	0.00017	0.002	1.44	0.00614	0.000005	0.00075	0.001	0.014	0.47	0.000086	6.72	0.00001	1.8	0.06	0.00001	0.00001	0.00762	0.0004	0.0005	0.003
W20	2022-12-03	0.162	0.001	0.068	0.03	0.00002	0.00005	0.01	0.000005	9.19	0.0005	0.00012	0.0005	0.20	0.00022	0.002	1.42	0.00786	0.000005	0.000779	0.001	0.013	0.49	0.000072	6.65	0.00001	1.84	0.06	0.00001	0.00001	0.00843	0.0004	0.00052	0.003
	RPD	9%	4%	1%	3%	0%	0%	0%	11%	1%	0%	18%	0%	11%	26%	0%	1%	25%	0%	4%	0%	8%	4%	18%	1%	0%	2%	1%	0%	0%	10%	11%	4%	0%
W27	2022-03-02	0.006	0.00402	0.035	0.0884	0.00002	0.00005	0.01	0.0000123	59	0.0005	0.0001	0.00059	0.01	0.0005	0.0144	34.1	0.0004	0.000005	0.00102	0.00056	0.0061	2.69	0.000614	5.83	0.00001	4.21	0.4	0.00001	0.0001	0.0003	0.00979	0.0005	0.003
W27	2022-03-02	0.0074	0.00399	0.0326	0.0831	0.00002	0.00005	0.01	0.0000129	59.1	0.0005	0.0001	0.00061	0.01	0.0005	0.0143	31.9	0.0004	0.000005	0.00107	0.00054	0.0063	2.48	0.000597	5.6	0.00001	3.92	0.394	0.00001	0.0001	0.0003	0.00992	0.0005	0.003
	RPD	21%	1%	7%	6%	0%	0%	0%	5%	0%	0%	0%	3%	0%	0%	1%	7%	0%	0%	5%	4%	3%	8%	3%	4%	0%	7%	2%	0%	0%	0%	1%	0%	0%

Note: Highlighted cells represent relative percent difference (RPD) values >20% but < 50% (yellow);> 50% (red);T = total - Not calculated

Table 2-7:
Summary of Field Duplicate Results for Selected Dissolved Metal Parameters

Station	Date	D-Al (mg/L)	D-Sb (mg/L)	D-As (mg/L)	D-Ba (mg/L)	D-Be (mg/L)	D-Bi (mg/L)	D-B (mg/L)	D-Cd (mg/L)	D-Ca (mg/L)	D-Cr (mg/L)	D-Co (mg/L)	D-Cu (mg/L)	D-Fe (mg/L)	D-Pb (mg/L)	D-Li (mg/L)	D-Mg (mg/L)	D-Mn (mg/L)	D-Hg (mg/L)	D-Mo (mg/L)	D-Ni (mg/L)	D-P (mg/L)	D-K (mg/L)	D-Se (mg/L)	D-Si (mg/L)	D-Ag (mg/L)	D-Na (mg/L)	D-Sr (mg/L)	IN-D-Ti (mg/L)	D-Sn (mg/L)	D-Ti (mg/L)	D-U (mg/L)	D-V (mg/L)	D-Zn (mg/L)
W1	2022-01-02	0.004	0.00102	0.034	0.05	0.00002	0.00005	0.01	0.0000057	17.4	0.0005	0.0001	0.00021	0.01	0.00005	0.0028	4.54	0.0002	0.000005	0.0018	0.0005	0.05	0.89	0.00018	6.52	0.00001	1.94	0.10	0.00001	0.00016	0.0003	0.000586	0.0005	0.001
W1	2022-01-02	0.004	0.0011	0.034	0.05	0.00002	0.00005	0.01	0.0000072	18.8	0.0005	0.0001	0.0002	0.01	0.00005	0.003	4.65	0.00018	0.000005	0.0019	0.0005	0.05	0.88	0.000154	6.59	0.00001	1.94	0.10	0.00001	0.00018	0.0003	0.000638	0.0005	0.001
	RPD	8%	8%	0%	1%	0%	0%	0%	23%	8%	0%	0%	5%	0%	0%	7%	2%	11%	0%	5%	0%	0%	1%	16%	1%	0%	0%	6%	0%	12%	0%	8%	0%	0%
W49	2022-01-14	0.002	0.0002	0.003	0.12	0.00002	0.00005	0.01	0.000114	68.4	0.0005	0.00116	0.00043	0.20	0.0001	0.0053	21.2	0.338	0.000005	0.000938	0.0106	0.05	1.00	0.000529	4.08	0.00001	3.29	0.26	0.00001	0.0001	0.0003	0.00101	0.0005	0.039
W49	2022-01-14	0.005	0.0002	0.003	0.11	0.00002	0.00005	0.01	0.000113	64.5	0.0005	0.00112	0.0005	0.20	0.000128	0.0051	20.8	0.327	0.000005	0.000916	0.0104	0.05	0.92	0.000506	4.09	0.00001	3.16	0.26	0.00001	0.0001	0.0003	0.000992	0.0005	0.038
	RPD	69%	0%	1%	4%	0%	0%	0%	1%	6%	0%	4%	15%	3%	25%	4%	2%	3%	0%	2%	2%	0%	8%	4%	0%	0%	4%	2%	0%	0%	0%	2%	0%	3%
HLF-UMV	2022-02-02	0.002	0.00235	0.039	0.02	0.00002	0.00005	0.01	0.0000327	34.6	0.0005	0.0001	0.00046	0.01	0.00005	0.078	16.5	0.00109	0.000005	0.000082	0.00282	0.05	2.57	0.000284	8.3	0.00001	3.13	0.19	0.00001	0.0001	0.0003	0.00009	0.0005	0.010
HLF-UMV	2022-02-02	0.002	0.00233	0.038	0.02	0.00002	0.00005	0.01	0.0000287	34.6	0.0005	0.0001	0.00046	0.01	0.00005	0.0775	15.7	0.00111	0.000005	0.000087	0.00274	0.05	2.50	0.000258	8.09	0.00001	3.06	0.20	0.00001	0.0001	0.0003	0.000079	0.0005	0.009
	RPD	18%	1%	2%	3%	0%	0%	0%	13%	0%	0%	0%	0%	0%	0%	1%	5%	2%	0%	6%	3%	0%	3%	10%	3%	0%	2%	1%	0%	0%	0%	13%	0%	4%
W99	2022-02-04	0.003	0.00048	0.003	0.05	0.00002	0.00005	0.01	0.0000198	57.1	0.0005	0.00017	0.0006	0.01	0.00005	0.0087	23.6	0.0896	0.000005	0.000186	0.002	0.05	1.50	0.000213	5.09	0.00001	2.59	0.29	0.00001	0.00071	0.0003	0.00187	0.0005	0.005
W99	2022-02-04	0.004	0.00048	0.003	0.05	0.00002	0.00005	0.01	0.0000019	56.4	0.0005	0.00015	0.0004	0.01	0.00005	0.0086	23.7	0.0888	0.000005	0.000206	0.002	0.05	1.48	0.00023	5.06	0.00001	2.61	0.29	0.00001	0.0001	0.0003	0.00184	0.0005	0.003
	RPD	51%	0%	0%	0%	0%	0%	0%	4%	1%	0%	13%	40%	8%	0%	1%	0%	1%	0%	10%	0%	0%	1%	8%	1%	0%	1%	0%	0%	151%	0%	2%	0%	60%
W45	2022-04-02	0.001	0.00088	0.029	0.04	0.00002	0.00005	0.01	0.0000088	84.3	0.0005	0.00037	0.0002	0.14	0.00005	0.0112	21	0.36	0.000005	0.000378	0.00067	0.05	2.16	0.000989	4.81	0.00001	4.94	0.47	0.00001	0.0001	0.0003	0.00358	0.0005	0.001
W45	2022-04-02	0.002	0.00088	0.029	0.04	0.00002	0.00005	0.01	0.0000107	83.2	0.0005	0.00038	0.0002	0.14	0.00005	0.011	20.9	0.361	0.000005	0.000399	0.00069	0.05	2.16	0.00101	4.76	0.00001	4.95	0.47	0.00001	0.0001	0.0003	0.00357	0.0005	0.001
	RPD	67%	0%	1%	1%	0%	0%	0%	19%	1%	0%	3%	0%	0%	0%	2%	0%	0%	0%	5%	3%	0%	0%	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%
HLFUMV	2022-05-06	0.004	0.0025	0.037	0.02	0.00002	0.00005	0.01	0.0000398	34.6	0.0005	0.0001	0.00056	0.01	0.00005	0.0779	16.5	0.00289	0.000005	0.000528	0.00311	0.05	2.54	0.000276	8.76	0.00001	3.04	0.21	0.00001	0.0001	0.0003	0.000177	0.0005	0.013
HLFUMV	2022-05-06	0.005	0.00253	0.038	0.02	0.00002	0.00005	0.01	0.0000412	33.4	0.0005	0.0001	0.00057	0.01	0.00005	0.0796	16.5	0.00226	0.000005	0.000154	0.00321	0.05	2.59	0.000346	8.84	0.00001	3.22	0.21	0.00001	0.0001	0.0003	0.000163	0.0005	0.013
	RPD	7%	1%	4%	0%	0%	0%	0%	3%	4%	0%	0%	2%	7%	0%	2%	0%	24%	0%	110%	3%	0%	2%	23%	1%	0%	6%	0%	0%	0%	0%	8%	0%	0%
LDSP-UN	2022-05-07	0.009	0.00435	0.032	0.07	0.00002	0.00005	0.01	0.0000173	44.6	0.0005	0.00017	0.00157	0.03	0.000099	0.0112	23.7	0.00815	0.000005	0.0011	0.00117	0.05	2.38	0.000507	4.5	0.00001	3.16	0.31	0.00001	0.0001	0.0003	0.0063	0.0005	0.003
LDSP-UN	2022-05-07	0.013	0.00433	0.033	0.07	0.00002	0.00005	0.01	0.0000248	44.8	0.0005	0.00018	0.00162	0.03	0.000115	0.0111	24	0.00913	0.000005	0.0011	0.00124	0.05	2.46	0.000587	4.52	0.00001	3.32	0.31	0.00001	0.0001	0.00064	0.00636	0.0005	0.003
	RPD	34%	0%	3%	2%	0%	0%	0%	36%	0%	0%	6%	3%	21%	15%	1%	1%	11%	0%	0%	6%	0%	3%	15%	0%	0%	5%	1%	0%	0%	59%	1%	0%	10%
W25	2022-05-08	0.166	0.00014	0.001	0.03	0.000028	0.00005	0.01	0.0000459	17.4	0.0005	0.00034	0.00216	0.28	0.000053	0.0036	6.36	0.0584	0.000005	0.00005	0.00263	0.05	0.84	0.000088	2.36	0.00001	0.87	0.09	0.00001	0.0001	0.00153	0.000363	0.0005	0.005
W25	2022-05-08	0.172	0.00014	0.001	0.03	0.000025	0.00005	0.01	0.0000498	16.9	0.0005	0.00035	0.00216	0.29	0.000056	0.0036	6.73	0.0598	0.000005	0.00005	0.00264	0.05	0.85	0.000087	2.42	0.00001	0.89	0.09	0.00001	0.0001	0.0018	0.000352	0.0005	0.006
	RPD	4%	0%	4%	2%	11%	0%	0%	8%	3%	0%	3%	0%	3%	6%	0%	6%	2%	0%	0%	0%	0%	2%	1%	3%	0%	1%	2%	0%	0%	16%	3%	0%	10%
W21	2022-05-10	0.050	0.00131	0.025	0.04	0.00002	0.00005	0.01	0.0000165	20.9	0.0005	0.00031	0.00144	0.07	0.00005	0.0059	6.92	0.0235	0.000005	0.00211	0.00179	0.05	1.49	0.000326	4.92	0.00001	1.49	0.13	0.00001	0.0001	0.00053	0.00123	0.0005	0.001
W21	2022-05-10	0.050	0.0013	0.025	0.04	0.00002	0.00005	0.01	0.0000131	21.3	0.0005	0.00031	0.00144	0.07	0.00005	0.0059	6.92	0.0241	0.000005	0.00206	0.0018	0.05	1.50	0.000332	4.93	0.00001	1.53	0.13	0.00001	0.0001	0.00063	0.00122	0.0005	0.002
	RPD	0%	1%	1%	1%	0%	0%	0%	23%	2%	0%	0%	0%	0%	0%	0%	0%	3%	0%	2%	1%	0%	1%	2%	0%	0%	3%	1%	0%	0%	17%	1%	0%	57%
W49	2022-05-11	0.108	0.0003	0.003	0.03	0.00002	0.00005	0.01	0.0000385	18.4	0.0005	0.0002	0.00237	0.20	0.00014	0.0018	5.23	0.039	0.000005	0.000184	0.00198	0.05	1.00	0.000179	2.04	0.00001	0.78	0.09	0.00001	0.0001	0.00145	0.00037	0.0005	0.005
W49	2022-05-11	0.103	0.00028	0.003	0.03	0.00002	0.00005	0.01	0.0000378	18.6	0.0005	0.0002	0.00236	0.19	0.000119	0.0018	5.24	0.0384	0.000005	0.00017	0.00189	0.05	1.00	0.000145	2.08	0.00001	0.77	0.09	0.00001	0.0001	0.00093	0.000372	0.0005	0.003
	RPD	5%	7%	4%	2%	0%	0%	0%	2%	1%	0%	0%	0%	5%	16%	0%	0%	2%	0%	8%	5%	0%	0%	21%	2%	0%	0%	1%	0%	0%	44%	1%	0%	42%
W1	2022-05-21	0.162	0.00079	0.023	0.03	0.000028	0.00005	0.01	0.0000206	7.71	0.0005	0.00014	0.0012	0.12	0.000089	0.0014	1.88	0.0124	0.0000089	0.000932	0.00138	0.05	0.89	0.000085	3.36	0.00001	0.79	0.04	0.00001	0.0001	0.00156	0.000475	0.0005	0.002
W1	2022-05-21	0.164	0.00076	0.023	0.03	0.000025	0.00005	0.01	0.0000235	7.85	0.0005	0.00013	0.00122	0.12	0.000081	0.0015	1.88	0.012	0.000009	0.000928	0.0013	0.05	0.91	0.000101	3.45	0.00001	0.77	0.04	0.00001	0.0001	0.00148	0.000469	0.0005	0.004
	RPD	1%	4%	1%	1%	11%	0%	0%	13%	2%	0%	7%	2%	1%	9%	7%	0%	3%	1%	0%	6%	0%	2%	17%	3%	0%	2%	4%	0%	0%	5%	1%	0%	67%
W1	2022-06-02	0.121	0.00076	0.023	0.02	0.00002	0.00005	0.01	0.0000188	5.07	0.0005	0.0001	0.00071	0.12	0.000177	0.0012	1.02	0.00583	0.0000051	0.000854	0.00078	0.05	0.59	0.000072	2.69	0.00001	0.72	0.03	0.00001	0.0001	0.00244	0.000376	0.0005	0.004
W101	2022-06-02	0.114	0.00073	0.023	0.02	0.00002	0.00005	0.01	0.000018	5	0.0005	0.0001	0.00068	0.10	0.000147	0.0011	1.02	0.00484	0.000005	0.00087	0.0007	0.05	0.58	0.000056	2.74	0.00001	0.70	0.03	0.00001	0.0001	0.00179	0.000389	0.0005	0.001
	RPD	6%	4%	0%	5%	0%	0%	0%	4%	1%	0%	0%	4%	13%	19%	9%	0%	19%	2%	2%	11%	0%	1%	25%	2%	0%	4%	1%	0%	0%	31%	3%	0%	117%
W45	2022-07-08	0.004	0.00224	0.063	0.06	0.00002	0.00005	0.01	0.0000061	74.9	0.0005	0.0001	0.00057	0.01	0.00005	0.01	20.9	0.0177	0.000005	0.000841	0.00088	0.05	2.71	0.000905	2.88	0.00001	4.51	0.46	0.00001	0.0001	0.0003	0.00454	0.0005	0.001
W45	2022-07-08	0.005	0.00223	0.063	0.06	0.00002	0.00005	0.01	0.0000071	79	0.0005	0.0001	0.00064	0.02	0.00005	0.0103	21.8	0.018	0.000005	0.000854	0.00089	0.05	2.80	0.000923	2.91	0.00001	4.75	0.47	0.00001	0.0001	0.0003	0.00455	0.0005	0.001
	RPD	35%	0%	0%	3%	0%	0%	0%	15%	5%	0%	0%	12%	31%	0%	3%	4%	2%	0%	2%	1%	0%	3%	2%	1%	0%	5%	1%	0%	0%	0%	0%	0%	0%
W31	2022-07-09	0.007	0.00188	0.025	0.03	0.00002	0.00005	0.01	0.0000006	13.2	0.0005	0.0001	0.00027	0.01	0.00005	0.0017	2.86	0.00028	0.000005	0.00397	0.0005	0.05	0.77	0.000195	5.4	0.00001	1.73	0.07	0.00001	0.0001	0.0003	0.000686	0.0005	0.001
W31	2022-07-09	0.015	0.00191	0.025	0.03	0.00002	0.00005	0.01	0.0000057	13.3	0.0005	0.0001	0.00028	0.01	0.00005	0.0017	2.85	0.00044	0.000005	0.004	0.0005	0.05	0.78	0.000175	5.37	0.00001	1.73	0.07	0.00001	0.0001	0.0003	0.00068	0.0005	0.001
	RPD	75%	2%	0%	1%	0%	0%	0%	5%	1%	0%	0%	4%	0%	0%	0%	0%	44%	0%	1%	0%	0%	2%	11%	1%	0%	0%	1%	0%	0%	0%	1%	0%	0%
LDSPI	2022-09-04	0.013	0.022	0.068	0.05	0.00002	0.00005	0.01	0.0000204	56.3	0.0005	0.00052	0.00121	0.01	0.00005	0.0109	23.3	0.00795	0.000005	0.00443	0.00161	0.05	3.96	0.0022	3.66	0.00001	4.49	0.93	0.00001	0.0001	0.0003	0.0198	0.0005	0.001
LDSPI	2022-09-04	0.012	0.0214	0.065	0.05	0.00002	0.00005	0.01	0.0000189	57.4	0.0005	0.00051	0.00116	0.01	0.00005	0.0109	21.9	0.00773	0.000005	0.00422	0.00164	0.05	3.81	0.00229	3.52	0.00001	4.23	0.90	0.00001	0.0001	0.0003	0.0197	0.0005	0.001
	RPD	6%	3%	4%	2%	0%	0%	0%	8%	2%	0%	2%	4%	0%	0%	0%	6%	3%	0%	5%	2%	0%	4%	4%	4%	0%	6%	3%	0%	0%	0%	1%	0%	0%
W5	2022-11-05	0.004	0.00054	0.003	0.04	0.00002	0.00005	0.01	0.0000146	39.1	0.0005	0.00011	0.00054	0.01	0.00005	0.006	15.9	0.0382	0.000005	0.000264	0.00086	0.05	1.14	0.000163	4.15	0.00001	2.07	0.21	0.00001	0.0001	0.0003	0.00106	0.0005	0.002
W5	2022-11-05	0.004	0.00054	0.003	0.04	0.00002	0.00005	0.01	0.0000177	39.5	0.0005	0.00013	0.00054	0.02	0.00005	0.0061	16.2	0.0378	0.000005	0.000254	0.0009	0.05	1.14	0.000207	4.2	0.00001	2.06	0.21	0.00001	0.0001	0.0003	0.00107	0.0005	0.001
	RPD	20%	0%	0%	1%	0%	0%	0%	19%	1%	0%	17%	0%	7%	0%	2%	2%	1%	0%	4%	5%	0%	0%	24%	1%	0%	0%	0%	0%	0%	0%	1%	0%	30%
W20	2022-12-03	0.006	0.00049	0.063	0.02	0.00002	0.00005	0.01	0.000005	8.71	0.0005	0.0001	0.0002	0.01	0.00005	0.0014	1.31	0.00036	0.000005	0.00074	0.0005	0.05	0.44	0.000096	6.58	0.00001	1.71	0.05	0.00001	0.0001	0.0003	0.000278	0.0005	0.001
W20	2022-12-03	0.006	0.00049	0.062	0.02	0.00002	0.00005	0.01	0.000005	8.59	0.0005	0.0001	0.0002	0.01	0.00005	0.0013	1.3	0.0004	0.000005	0.000762	0.0005	0.05	0.43	0.000085	6.51	0.00001	1.72	0.05	0.00001	0.0001	0.0003	0.000275	0.0005	0.001
	RPD	2%	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	7%	1%	11%	0%	3%	0%	0%	1%	12%	1%	0%	1%	2%	0%	0%	0%	1%	0%	0%
W27	2022-03-02	0.001	0.00415	0.0323	0.0819	0.00002	0.00005	0.01	0.0000145	52.6	0.0005	0.0001	0.00059	0.01	0.00005	0.0136	28.9	0.00029	0.000005	0.000991	0.0005	0.05	2.37	0.000622	5.27	0.00001	3.77	0.383	0.00001	0.0001	0.0003	0.00913	0.0005	0.0017
W27	2022-03-02	0.001	0.00423	0.032	0.082	0.00002	0.00005	0.01	0.0000112	51.3	0.0005	0.0001	0.0006	0.01	0.00005	0.0134	29.2	0.00031	0.000005	0.00101	0.0005	0.05	2.4	0.000667	5.44	0.00001	3.76	0.385	0.00001	0.0001	0.0003	0.00951	0.0005	0.0017
	RPD	0%	2%	1%	0%	0%	0%	0%	26%	3%	0%	0%	2%	0%	0%	1%	1%	7%	0%	2%	0%	0%	1%	7%	3%	0%	0%	1%	0%	0%	0%	4%	0%	0%

Note: Highlighted cells represent relative percent difference (RPD) values >20% but < 50% (yellow);> 50% (red);D = Dissolved - Not calculated

Dissolved Metal versus Total Metal Concentrations

QA/QC of dissolved vs total metal concentrations are presented in Appendix C. The number of analyte pairs with dissolved metal values greater than 120 and 150% of the corresponding total metal values are uncommon (generally < 6 occurrences of the total collected samples per station for each parameter, except for phosphorous and selenium). Se showed nine (9) samples above the 120% range for station W4. For phosphorous, samples > 120%, 150% and 200% occurred in the majority of the sampled stations. Other parameters with percentages above 150% seldom occurred for the remaining stations. Particularly for phosphorous, the results are most likely representative of some kind of interference in the sample matrix, leading to incomplete digestion in many of the samples. Although unlikely, these exceedances could also be indicative of cross-contamination or mislabeling of bottles occurring during sample collection or at the laboratory. However, this is unlikely since other analytes did not experience the same trend of higher dissolved concentrations. Notably the number of recorded incidents in parameter concentrations above 120% and/or 150% occurred primarily for phosphorous, while only in a low number for other parameters, which reflects reasonable confidence in the reported results.

3. Water Quality Results

Victoria
GOLD CORP

3. Water Quality Results

The following sections focus on surface water quality monitoring results for key mine site stations associated with the Lower Dublin South Pond, mine-site internal water transfers, compliance monitoring sites as well as receiving environment locations in Haggart Creek where QZ14-041-1 water quality objectives (WQO) are established at W4, W29, W99 and W23. Where relevant to the interpretation of monitoring results, background Haggart Creek data at W22 and Dublin Gulch at stations W1 and W21 are discussed to provide context to observed results in Haggart Creek at those stations in relation to Haggart Creek WQOs.

3.1 Mine Site Monitoring Results

Results of water quality monitoring in 2022 at mine site stations associated with the Lower Dublin South Pond (LDSPI, LDSPS), compliance monitoring of the HLFUMV and LDSP-UND, and discharge water quality at the LDSP final discharge point (FDP) are provided below.

3.1.1 Lower Dublin South Pond

Routine surface water quality monitoring of the Lower Dublin South Pond (LDSPI, LDSPS) occurred in 2022 to remain in compliance with QZ14-041-1 monitoring frequencies; to inform on-site water management; and, to inform on potential project discharges to the receiving environment to mitigate the possibility of releasing non-compliant water (*e.g.,* greater than effluent quality standards (EQS)). As with previous years, water transfers with respect to the LDSP for the Project include:

- Direct pumping from the LDSP to the heap leach pad for make-up water requirements as necessary; and
- Intermittent pumping of LDSP water to the Events Pond

Pumping of water to the Events Pond increases available storage in the LDSP and also provides for additional settling of suspended solids within the Events Pond to improve water quality prior to discharge when necessary.

Monitoring points within the Lower Dublin South Pond are sampled and analyzed on a regular sampling schedule to inform operational water management and discharge decisions. Monitoring stations sampled in 2022 within the Lower Dublin South Pond and other monitoring locations in the vicinity of the pond are illustrated in Figure 3-1 and include:

- LDSPI – Inflow to Lower Dublin South Pond (listed as a WUL water sampling site); and
- LDSPS – Along shore of Lower Dublin South Pond (a VGC internal sampling site to help inform water management decisions).

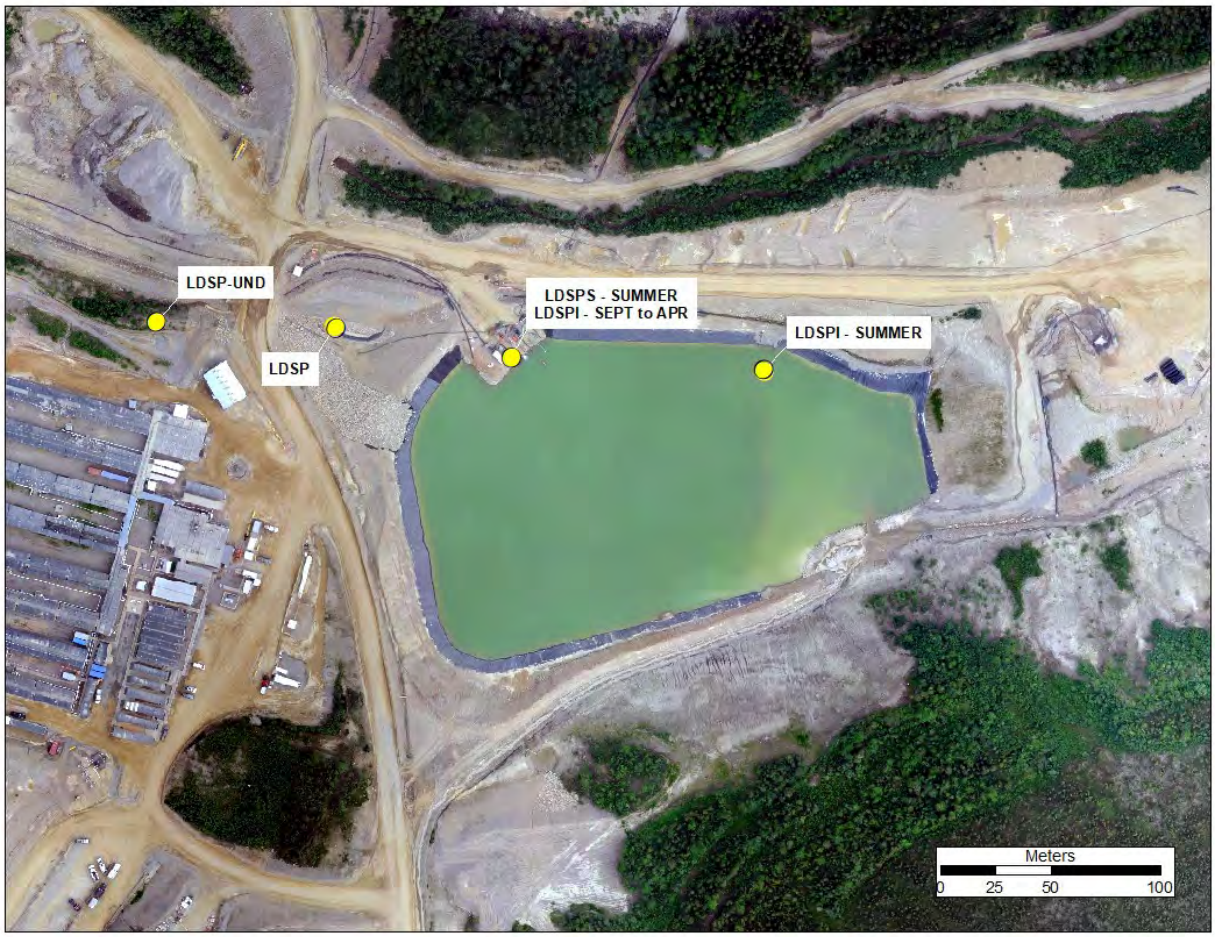


Figure 3-1: Lower Dublin South Pond Area Sampling Locations

Water quality entering the Lower Dublin South Pond at station LDSPI was measured and analyzed monthly or daily during discharge events for full suite analyses or the presence of CN_{WAD} and total CN, respectively in 2022 (Table 3-1). The LDSPI represents a combined sample of all ditch inflows into the Lower Dublin South Pond from the forebay just prior to entering and then settling within the pond. Due to access issues during the winter, the location of LDSPI samples is adjusted as shown in Figure 3-1. The period where the location is modified (*e.g.*, September to April) also coincides with significantly reduced inflow volumes to the pond.

Table 3-1:
Number of Full Suite Analytical and CN analysis for LDSPI and LDSPS by Month in 2022

Month	LDSPI		LDSPS	
	Full Suite	CN_T and CN_{WAD}	Full Suite	CN_T and CN_{WAD}
January	1	1	0	0
February	1	1	0	0
March	1	1	0	0
April	1	1	1	1
May	3	2	0	0
June	1	5	0	0
July	1	14	0	0
August	2	4	0	0
September	1	3	0	0
October	3	1	0	0
November	1	0	0	0
December	1	1	0	0
Total	***17***	***34***	***1***	***1***

One sample in April was collected and analyzed for station LDSPS in 2022; LDSPS is representative of Lower Dublin South Pond water chemistry after major settling has occurred and is an internal monitoring location; the sample is collected along the western shore of the pond adjacent to pumping or outlet structures (Figure 3-1).

Table 3-2 provides results of water quality sampling for LDSPI for key parameters for 2022 and compares results to EQS. As indicated above, sampling at LDSPI provides characterization of water chemistry in the Lower Dublin South Pond; however, this is a pre-discharge sampling location and direct comparison to EQS in the tables is only for the purposes of providing context to the results. In 2022, all parameters analyzed for LDSPI were present at concentrations well below QZ14-041-1 EQS with the exceptions of TSS, total As and total Fe (Table 3-2).

Table 3-2:
Water Quality Measured within the LDSP (LDSPI) 2022

Parameter	QZ14-041-1 EQS	2022-01-13	2022-02-05	2022-03-03	2022-04-05	2022-05-10	2022-05-12	2022-05-23	2022-06-07	2022-07-03	2022-08-02	2022-08-25	2022-09-04	2022-10-01	2022-10-07	2022-10-21	2022-11-10	2022-12-06
pH	***6.5 – 8.44***	7.92	8.25	8.29	8.41	7.89	7.68	7.95	8.37	8.27	8.33	8.42	8.32	8.22	8.36	8.22	7.98	8.08
TSS	***15***	<3.0	<3.0	<3.0	**44.5**	**197**	**44.1**	**160**	6	14.2	7.8	4.6	3.6	**194**	14.3	3.9	7.3	<3.0
SO_4	***1850***	93.9	95.1	91.8	105	33.5	19.8	48	75.6	104	119	116	106	83.2	85.7	81.3	85.4	86.7
Cl	***250***	2.4	2.71	2.56	3.39	1.99	1.22	2.49	3.46	3.78	3.57	3.18	3.29	2.96	2.51	2.82	2.57	3.13
NO_3-N	***19.5***	0.736	0.752	0.685	0.842	0.457	0.26	1.03	1.67	2.6	3.1	2.56	2.3	1.93	2.61	2.51	2.11	1.7
NO_2-N	***0.12***	0.0021	0.0016	0.0016	0.0121	0.0103	0.0076	0.0295	0.0355	0.043	0.0577	0.0373	0.0332	0.0514	0.102	0.0746	0.0681	0.0226
NH_3-N	***7.5***	0.0199	0.0256	0.0158	0.0481	0.0236	0.0161	0.0087	0.0108	0.0555	0.0363	0.0157	<0.0050	0.0163	0.0074	0.0103	0.028	0.0392
CN_{WAD}	***0.03***		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050					<0.0050	<0.0050	<0.0050				<0.0050
Diss- Al	***0.4***	0.0013	0.0068	0.0018	0.0027	0.13	0.048	0.0212	0.0146	0.022	0.0377	0.014	0.0129	0.0075	0.0114	0.0044	0.0034	0.0016
T-Sb	***0.13***	0.00584	0.0062	0.00625	0.00888	0.0135	0.00806	0.0121	0.00876	0.0254	0.0289	0.0299	0.0237	0.0158	0.00894	0.00734	0.00681	0.00604
T-As	***0.053***	**0.108**	**0.112**	**0.105**	**0.121**	**0.35**	**0.146**	**0.232**	0.0452	**0.0605**	0.0524	**0.0658**	**0.0702**	**0.236**	**0.0776**	**0.0566**	**0.112**	**0.11**
T-Cd	***0.00125***	0.0000293	0.0000361	0.0000436	0.0000985	0.000389	0.000173	0.000239	0.0000618	0.0000151	0.0000333	0.0000262	0.0000275	0.000211	0.0000585	0.0000395	0.0000485	0.0000332
T-Co	***0.026***	0.00033	0.00039	0.00057	0.0016	0.00755	0.00328	0.00509	0.00091	0.00065	0.00089	0.00071	0.0007	0.00391	0.00118	0.00074	0.00097	0.00056
T-Cu	***0.026***	0.00138	0.00136	0.00121	0.00419	0.0327	0.014	0.0198	0.00542	0.00212	0.00207	0.00165	0.00265	0.0138	0.00296	0.00178	0.00185	0.00122
T-Fe	***6.4***	0.029	0.061	0.098	2.03	**14.1**	5.47	**9.77**	0.294	0.315	0.232	0.22	0.175	**6.98**	0.736	0.197	0.383	0.066
T-Pb	***0.05***	0.000144	0.000267	0.000492	0.00636	0.0462	0.0168	0.0276	0.00154	0.00139	0.00102	0.000774	0.000892	0.0251	0.00258	0.000954	0.0018	0.000349
T-Mn	***7.7***	0.0688	0.0874	0.0981	0.24	0.253	0.112	0.196	0.0668	0.0105	0.105	0.0325	0.0266	0.154	0.089	0.0674	0.157	0.103
T-Hg	***0.00008***	<0.000005	<0.000005	<0.000005	<0.000005	0.000051	0.0000179	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.0000171	<0.000005	<0.000005	<0.000005	<0.000005
T-Mo	***0.45***	0.00145	0.00159	0.00145	0.00229	0.0015	0.00116	0.00188	0.00264	0.00423	0.00581	0.0054	0.00462	0.00377	0.00292	0.00248	0.0018	0.00153
T-Ni	***0.5***	0.00122	0.00133	0.00165	0.00363	0.0185	0.00786	0.0125	0.00317	0.00292	0.0019	0.00212	0.00192	0.00909	0.00277	0.00195	0.00214	0.00153
T-Se	***0.025***	0.000689	0.000788	0.00065	0.000724	0.000716	0.000307	0.000713	0.00139	0.00217	0.00263	0.00243	0.00198	0.00182	0.00239	0.0021	0.00182	0.00151
T-Ag	***0.01***	<0.00001	<0.00001	<0.00001	0.00004	0.000264	0.000122	0.000182	0.000052	<0.00001	0.000013	<0.00001	<0.00001	0.000136	0.000023	<0.00001	0.00001	<0.00001
T-U	***0.09***	0.0105	0.0104	0.0108	0.011	0.0052	0.00286	0.00641	0.0112	0.0211	0.0254	0.0248	0.021	0.0144	0.0128	0.0114	0.0138	0.0128
T-Zn	***0.23***	<0.0030	<0.0030	<0.0030	0.0135	0.0751	0.0273	0.0428	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.0364	0.005	0.0033	0.0036	<0.0030

Shaded values indicate concentrations above EQS. Comparison to EQS is only for illustrative purposes and is not a compliance comparison

TSS concentrations within the LDSP were highest during the freshet period of April and May 2022 (ranging from ~45 mg/L to ~195 mg/L) and again in October (ranging from 3 mg/L to ~195 mg/L) (Table 3-2). Conversely and during most other months of the year, TSS levels were typically around the detection limit of 3 mg/L. Total As concentrations were the highest during the elevated TSS periods in April, May and October and ranged from 0.12 mg/L to 0.35 mg/L. Figure 3-2 illustrates TSS and total and dissolved As concentrations for all sampling events within the LDSP (LDSPI, LDSPS) for 2022.

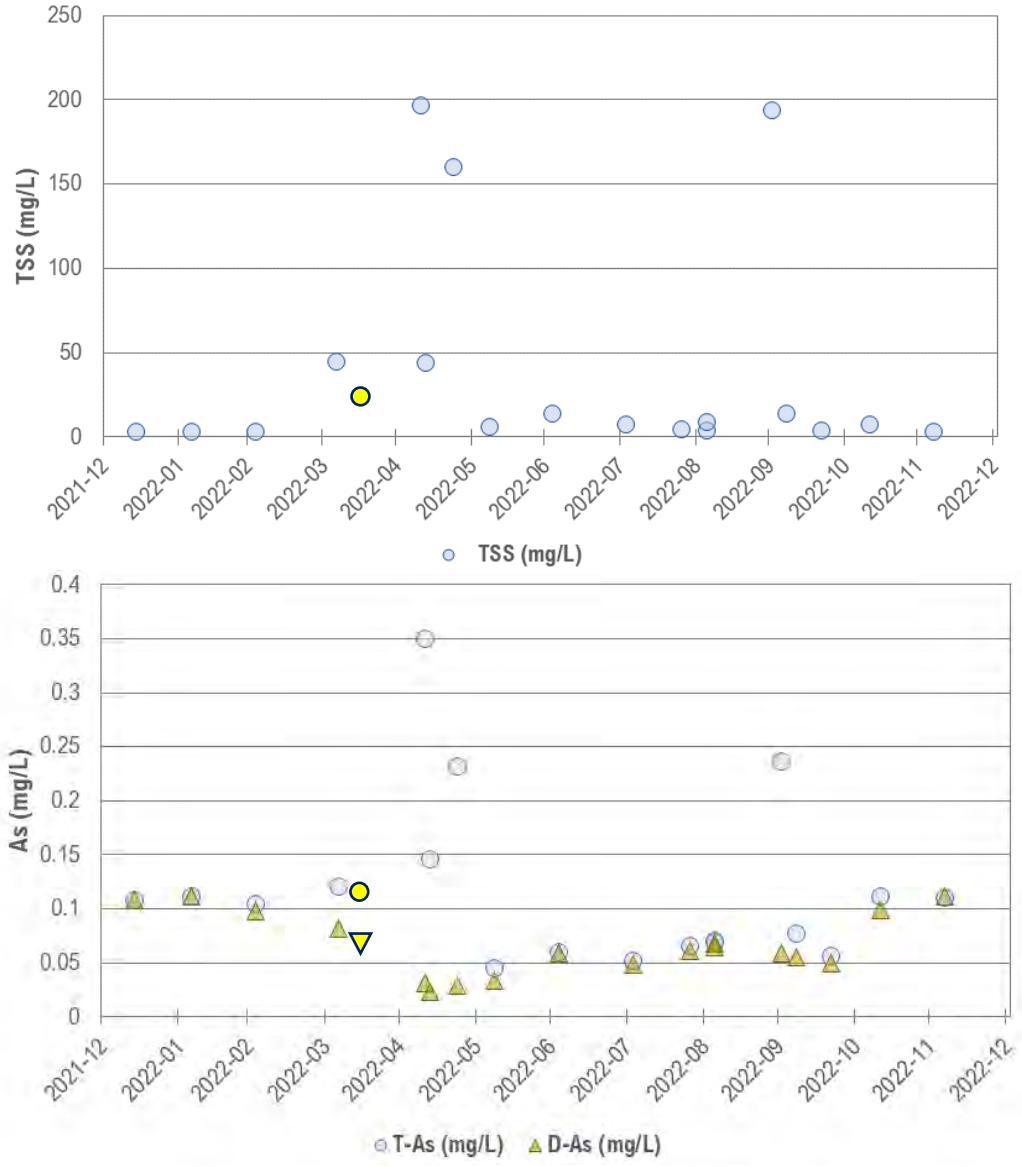


Figure 3-2: 2022 Time-series of TSS and Total and Dissolved As at LDSPI Sampling Locations. Single LDSPS sample shown as yellow symbol.

During the lower flow months of November to March, total As concentrations were consistently around 0.100 mg/L during the lower flow periods (*e.g.*, during the winter in January to March and November to December 2022, and during the summer in June, July, August and September); higher total As concentrations were coincident with the most elevated TSS values during April, May and October (Table 3-2 and Figure 3-2).

As noted above, peak total arsenic concentrations were associated with high TSS values although dissolved As concentrations were notably lower and consistently less than 0.05 mg/L during those high TSS events. Dissolved As concentrations were typically highest in the winter (around 0.01 mg/L) and are reflective of predominantly groundwater and potentially waste rock sources. Total and dissolved As concentrations were relatively lower during the summer during periods of lower TSS with most values observed around
0.05 mg/L (Figure 3-2; Appendix A).

Total Fe values above the EQS occurred in May 2022 (14 mg/L and 9.7 mg/L) and October (6.9 mg/L) and were associated with elevated TSS above 150 mg/L (Table 3-2). Similar to As, the dissolved Fe concentration during this same period was much lower (0.075 mg/L) and observed above indicates most of the measured Fe was associated with the solid phase (Appendix A). All other parameters were present within the LDSP (LDSPI, LDSPS) at relatively low concentrations and well below the respective EQS presented for comparative purposes. Total Se and total Zn concentrations at LDSPI document this observation and were present at very low concentrations; total Zn values were consistently below the detection limit of 0.003 mg/L (Table 3-2).

It is significant to note that no discharge occurred from water sourcing within the Lower Dublin South Pond in 2022. Discharge water was released from the Events Pond to ensure sufficient settling of suspended solids had occurred and allowed for compliant discharges from this water management facility.

3.1.2 LDSP-UND and HLFUMV Water Quality

3.1.2.1 LDSP-UND

The LDSP-UND (Figure 3-1) passes natural groundwater flow underneath the Lower Dublin South Pond to lower Eagle Creek and was monitored monthly and additionally on three occasions during the month of May 2022. Table 3-3 summarizes the measured water quality results for LDSP-UND and compares the results to QZ14-041-1 EQS. LDSP-UND is a compliance monitoring location.

Water quality monitoring of the LDSP-UND showed that all parameters were present at concentrations below their respective EQS (Table 3-3). It was documented in the May

monthly report that a sample collected on May 7th, 2022 (and labeled as LDSP-UND) was inadvertently collected at an erroneous location. Specifically, the sample was taken within lower Eagle Creek which was receiving freshet surface water runoff and where the LDSP-UND discharges to rather than the end of the underdrain pipe. In response, two separate May 2022 samples were collected on May 26 and 29; these samples did not exhibit elevated TSS or total As concentrations and were measured at 0.027 mg/L and 0.022 mg/L, respectively and are consistent with other monthly sample results. Accordingly, the May 7th sample is not reported herein and has been removed from the LDSP-UND database.

For all other months and sampling events, TSS concentrations remained consistently below 3 mg/L and total As concentrations narrowly ranged between roughly 0.022 mg/L to 0.039 mg/L (Table 3-3). These observed results for As are consistent with background shallow groundwater quality in this area.

Table 3-3:
Water Quality Measured at LDSP-UND 2022

Parameter	QZ14-041-1 EQS	2022-01-03	2022-02-02	2022-03-03	2022-04-02	2022-05-26	2022-05-29	2022-06-04	2022-07-03	2022-08-02	2022-09-02	2022-10-07	2022-11-10	2022-12-05
pH	***6.5 – 8.44***	7.78	8.12	7.9	7.98	8.31	8.43	8.34	8.27	7.82	7.45	8.42	7.37	7.79
TSS	***15***	<3.0	<3.0	<3.0	<3.0	<3.0	6.5	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
SO_4	***1850***	77	81.4	76.6	79.4	72.3	73.2	73.1	78.2	76.1	79.9	76.9	80	82.3
Cl	***250***	2.52	2.4	2.19	2.05	3.17	3.21	2.94	3.08	2.8	2.98	3.37	3.69	4.88
NO_3-N	***19.5***	0.578	0.588	0.609	0.617	0.658	0.648	0.585	0.819	0.724	0.76	0.587	0.713	0.817
NO_2-N	***0.12***	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
NH_3-N	***7.5***	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0098	0.0106	<0.0050
CN_{WAD}	***0.03***	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Diss- Al	***0.4***	<0.0010	<0.0010	0.0023	0.0011	0.0053	0.0015	0.0015	0.0014	0.0015	<0.0010	0.0029	<0.0010	<0.0010
T-Sb	***0.13***	0.00303	0.00354	0.00305	0.00357	0.0035	0.00319	0.00312	0.00648	0.00564	0.00694	0.00372	0.00321	0.00404
T-As	***0.053***	0.0222	0.0279	0.0233	0.027	0.0278	0.022	0.0236	0.0296	0.0275	0.0324	0.0272	0.0246	0.0393
T-Cd	***0.00125***	0.0000081	0.0000071	0.0000094	0.0000083	0.0000154	0.0000086	0.0000056	0.0000114	0.000013	0.0000112	0.0000083	0.0000082	0.0000067
T-Co	***0.026***	<0.00010	<0.00010	<0.00010	<0.00010	0.00021	0.00011	0.0001	0.00015	0.00013	0.00015	<0.00010	<0.00010	0.00012
T-Cu	***0.026***	0.00072	0.00135	0.00068	0.0007	0.00122	0.00071	0.00098	0.00099	0.00111	0.00101	0.00077	0.00074	0.00072
T-Fe	***6.4***	<0.010	<0.010	0.012	<0.010	0.156	0.032	0.044	0.041	0.032	0.017	0.011	<0.010	0.016
T-Pb	***0.05***	0.000053	<0.000050	<0.000050	<0.000050	0.000612	0.00012	0.000132	0.000156	0.000115	0.00008	<0.000050	<0.000050	0.00005
T-Mn	***7.7***	0.00127	0.00281	0.00144	0.0035	0.00932	0.00358	0.00351	0.00492	0.00361	0.00451	0.00359	0.00251	0.00373
T-Hg	***0.00008***	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000000	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
T-Mo	***0.45***	0.001	0.00104	0.000945	0.00111	0.000959	0.000944	0.000885	0.00147	0.00141	0.00171	0.00107	0.000917	0.00103
T-Ni	***0.5***	<0.00050	0.00052	<0.00050	<0.00050	0.00078	<0.00050	<0.00050	0.00059	0.0006	0.00054	<0.00050	0.0005	0.00058
T-Se	***0.025***	0.000615	0.000668	0.000621	0.000693	0.000518	0.000493	0.000506	0.000706	0.000637	0.000661	0.000452	0.00057	0.000686
T-Ag	***0.01***	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
T-U	***0.09***	0.00776	0.0097	0.0086	0.0103	0.00659	0.00692	0.00551	0.00652	0.00625	0.00966	0.00754	0.00544	0.00821
T-Zn	***0.23***	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Cyanide analsyis not required for the LDSP-UND station.

3.1.2.1 HLFUMV

The HLFUMV is a discharge compliance monitoring point that captures natural groundwater flow passing underneath the HLF. Currently and throughout 2022, all flow from the HLFUMV was captured and recirculated back to the Events Pond and no discharge to the receiving environment occurred. Water quality monitoring occurred monthly in 2022 with 2 and 3 sampling events occurring in the months of April and May, respectively. With the exception of the April 19th sample, water quality of the HLFUMV throughout 2022 exhibited concentrations for all parameters below their corresponding EQS (Table 3-4). For the April 19th sample, TSS, dissolved Al and total As exceeded their respective EQS. For all other samples collected in 2022 at HLFUMV, total As concentrations narrowly ranged between approximately 0.038 mg/L to 0.044 mg/L and was very similar to values measured throughout 2021.

As noted above, two sampling events occurred in April – April 4 and April 19. The April As values were 0.039 mg/L and 0.093 mg/L, respectively (Table 3-4; Appendix A). The higher total As value on April 19 was associated with elevated TSS in the sample (36 mg/L), and had a relatively lower dissolved As concentration of 0.051 mg/L (Figure 3-3). It has been observed in previous monitoring that freshet timing has the potential to exhibit higher levels of TSS from the HLFUMV outlet and is one of the primary reasons that the HLFUMV flow is recirculated back to the Events Pond as opposed to being discharged continuously.

The concentrations of all remaining parameters, including no detectible CN_{WAD} in any sample confirms that no measurable leakage of HLF solution to the underlying environment was identified in 2022.

Table 3-4:
Water Quality Measured at HLFUMV 2022

Parameter	QZ14-041-1 EQS	2022-01-03	2022-02-02	2022-02-02 (duplicate)	2022-03-02	2022-04-04	2022-04-19	2022-05-06	2022-05-06 (duplicate)	2022-05-07	2022-05-15	2022-06-02	2022-07-03	2022-08-02	2022-09-02	2022-10-07	2022-11-06	2022-12-05
pH	***6.5 – 8.44***	7.47	7.76	7.79	7.44	8	7.64	7.43	7.66	7.88	6.86	7.17	7.83	6.98	6.55	7.96	7.31	7.2
TSS	***15***	<3.0	<3.0	<3.0	<3.0	<3.0	**36.3**	<3.0	<3.0	<3.0	<3.0	<3.0	4	<3.0	<3.0	<3.0	<3.0	<3.0
SO_4	***1850***	99.2	102	102	110	104	53.9	101	102	100	67.6	97.9	94.8	93.1	89.8	89.8	94.2	93.7
Cl	***250***	<0.50	<0.50	<0.50	<0.50	<0.50	1.62	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
NO_3-N	***19.5***	0.05	0.0493	0.0476	0.0697	0.044	0.172	0.0537	0.0538	0.0522	0.0393	0.0448	0.0617	0.0959	0.0741	0.0736	0.0813	0.0898
NO_2-N	***0.12***	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0088	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
NH_3-N	***7.5***	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0284	0.0076	<0.0050	<0.0050	<0.0050	0.013	<0.0050	<0.0050	<0.0050	<0.0050	0.0068	<0.0050
CN_{WAD}	***0.03***	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Diss- Al	***0.4***	0.0027	0.0015	0.0018	0.0037	0.0037	**0.736**	0.0044	0.0047	0.0061	0.0042	0.0061	0.0065	0.0065	0.0056	0.0072	0.002	0.0032
T-Sb	***0.13***	0.00258	0.00253	0.00254	0.00258	0.00266	0.00702	0.00238	0.00232	0.00239	0.00243	0.00254	0.0028	0.00304	0.00288	0.00284	0.00296	0.00291
T-As	***0.053***	0.0412	0.0413	0.0435	0.0409	0.0397	**0.0928**	0.0374	0.0368	0.0378	0.0387	0.0423	0.0423	0.0434	0.0423	0.0423	0.0436	0.0414
T-Cd	***0.00125***	0.0000291	0.0000294	0.0000359	0.0000413	0.0000368	0.000091	0.0000385	0.0000402	0.0000385	0.0000397	0.0000424	0.0000413	0.0000472	0.0000412	0.0000406	0.0000366	0.0000366
T-Co	***0.026***	<0.00010	<0.00010	<0.00010	0.0006	0.00014	0.00203	<0.00010	<0.00010	<0.00010	<0.00010	0.00042	0.00063	0.00158	0.00072	0.00069	0.00063	0.00078
T-Cu	***0.026***	<0.00050	<0.00050	0.00052	0.00058	0.00062	0.00786	0.0006	0.00061	0.00061	0.00066	0.0008	0.00079	0.00095	0.00067	0.00064	0.00053	<0.00050
T-Fe	***6.4***	<0.010	0.01	0.011	0.042	0.052	4.04	0.024	0.02	0.021	0.036	0.119	0.048	0.065	0.031	0.024	0.036	0.024
T-Pb	***0.05***	<0.00005	0.000051	0.000051	0.000057	0.000081	0.00865	0.000053	0.00006	0.000054	0.00008	0.000202	0.000093	0.000088	<0.000050	<0.000050	0.000051	<0.000050
T-Mn	***7.7***	0.0016	0.00139	0.00144	0.00247	0.00216	0.0574	0.00316	0.00243	0.00206	0.00224	0.0033	0.00302	0.00449	0.0027	0.00242	0.00195	0.00165
T-Hg	***0.00008***	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
T-Mo	***0.45***	0.000095	0.000093	0.000096	0.000089	0.000105	0.000995	0.000762	0.00008	0.00007	0.000086	0.000072	0.000074	0.000091	0.000068	0.000075	0.000092	0.000082
T-Ni	***0.5***	0.00294	0.00286	0.00297	0.00396	0.00329	0.0064	0.00325	0.00318	0.00334	0.00331	0.00366	0.00374	0.00366	0.00367	0.00363	0.00347	0.00322
T-Se	***0.025***	0.00022	0.000224	0.000242	0.00026	0.000245	0.000249	0.000236	0.000305	0.000319	0.000286	0.000238	0.000223	0.000247	0.000278	0.000252	0.00023	0.000226
T-Ag	***0.01***	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000058	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
T-U	***0.09***	0.000114	0.000096	0.0001	0.000086	0.000069	0.00186	0.000159	0.00016	0.00015	0.000117	0.000098	0.000071	0.000066	0.000063	0.000069	0.000179	0.000093
T-Zn	***0.23***	0.0098	0.0099	0.0106	0.0156	0.0138	0.0224	0.0128	0.0132	0.0132	0.0133	0.0142	0.0146	0.0143	0.0144	0.0141	0.0107	0.0124

Shaded values indicate concentrations above EQS.

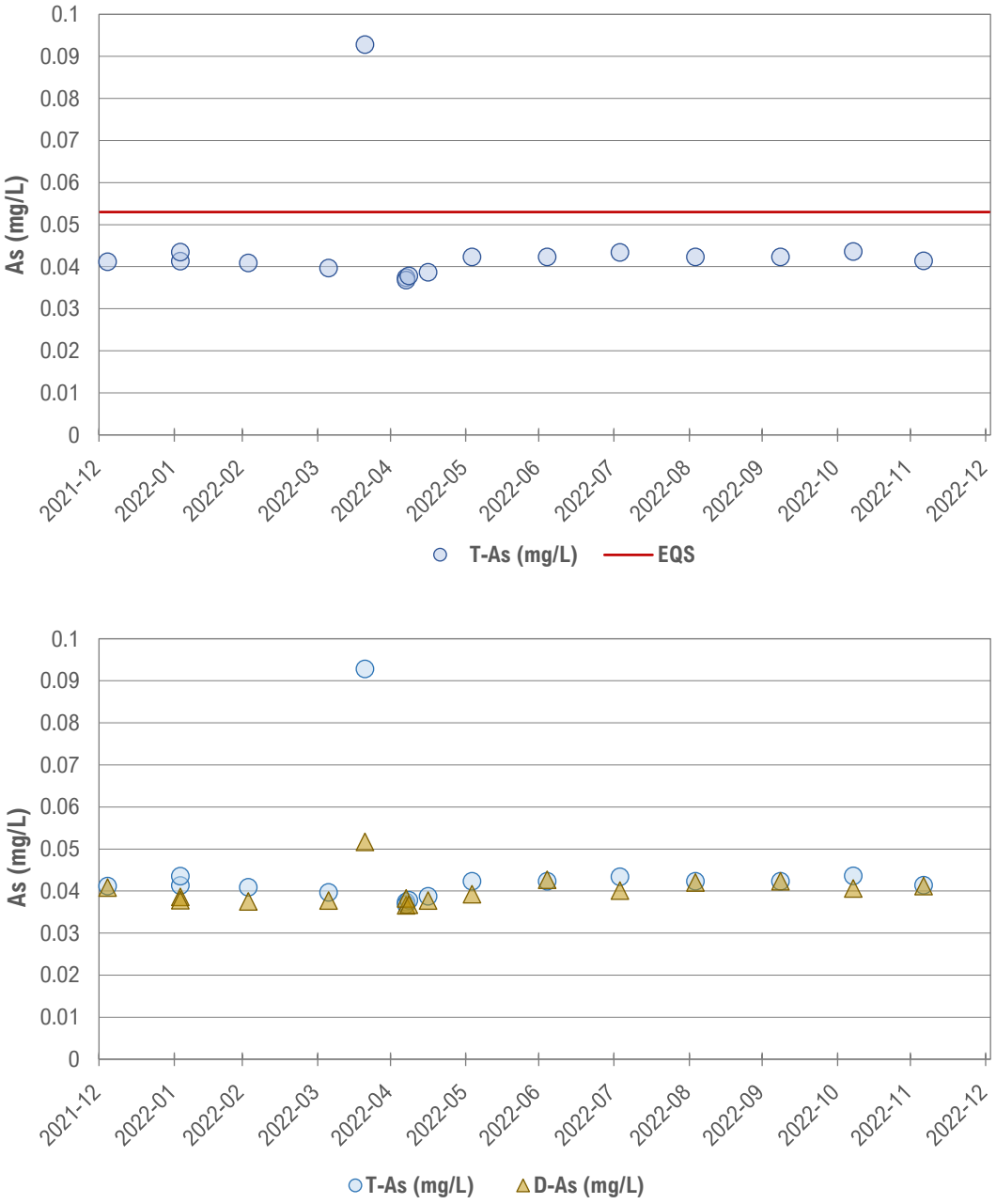


Figure 3-3: 2022 Time-series of Total As and Total and Dissolved As at HLFUMV Sampling Location

3.1.3 Controlled Discharge Water Quality - LDSP Final Discharge Point (FDP)

All discharges from the Eagle Mine to the receiving environment are required to meet EQS stipulated in QZ14-041-1. In 2022, two (2) controlled discharge events to Haggart Creek occurred as indicated in Table 3-5.

Table 3-5:
2022 Discharge Events, Duration and Volume Released

Month	Duration of Event	Volume (m^3)
June - July	21 days (June 25 to July 15)	108,486
August - September	7 days (August 29 to September 4)	56,180

The first controlled discharge into Haggart Creek from the LDSP FDP outlet occurred over a roughly 21-day period between June 25 and July 15, 2022. Effluent from the Events Pond was piped through the LDSP FDP and conveyed by pipe to Haggart Creek to avoid the potential entrainment of sediments from the Ditch C channel prior to entering Haggart Creek. During this period, roughly 108,486 m3 of compliant water was released from the LDSP FDP after transfer from the Events Pond. The discharge primarily contained water that was transferred from the Lower Dublin South Pond and then detained in the Events Pond to increase the overall suspended sediment settling time. The second controlled event occurred over seven days between August 29 and September 4, 2022. During this period, roughly 56,180 m3 of compliant water was released from the LDSP FDP (after transfer from the Events Pond) (Table 3-5). Discharges occurred to reduce water volumes in the Events Pond to within HLF DAS (Desired Available Storage) volumes. Water volumes were documented by calibrated flow meters. As noted above, no direct discharges from the Lower Dublin South Pond occurred to the environment in 2022.

For both discharge events, daily field parameters (pH, specific conductance, temperature, turbidity and dissolved oxygen) and daily cyanide (CNtotal and CNWAD) samples were collected and weekly samples for full suite analysis were collected at the FDP as required by the QZ14-041-1 (Appendix A). All parameters were below the EQS limits throughout the discharge periods (Table 3-6).

All acute toxicity tests taken, as per QZ14-041-1 and the MDMER, for Rainbow trout and Daphnia magna were compliant (Table 3-7) and well below MDMER Schedule 4 Authorized Limits. Results for all parameters are provided in Appendix A and graphically in Appendix B.

Table 3-6:
Water Quality at LDSP FDP for 2022 Discharges

Parameter	QZ14-041-1 EQS	2022-06-25	2022-06-27	2022-07-01	2022-07-04	2022-07-05	2022-07-11		2022-08-29	2022-09-01
pH	***6.5 – 8.44***	7.63	7.74	7.7	7.8	7.7	7.8		8.22	7.93
TSS	***15***	2.5	<2.0	2.6	<2.0	<2.0	4.1		<2.0	<2.0
SO_4	***1850***	47.2	49.2	47.3	48.2	47.7	48.6		73.7	74.3
Cl	***250***	3.69	3.82	3.61	3.58	3.49	3.52		3.5	3.51
NO_3-N	***19.5***	0.694	0.717	0.687	0.668	0.677	0.678		1.41	1.4
NO_2-N	***0.12***	0.017	0.0179	0.0168	0.0142	0.0132	0.0152		0.028	0.0271
NH_3-N	***7.5***	0.0268	0.0226	0.0198	0.0153	0.0159	0.0135		0.0335	0.0361
CN_{WAD}	***0.03***	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050		0.0145	0.0117
Diss- Al	***0.4***	0.0102	0.0114	0.0104	0.0109	0.0135	0.0108		0.0174	0.0167
T-Sb	***0.13***	0.00467	0.00504	0.0051	0.00533	0.00563	0.00526		0.0152	0.0149
T-As	***0.053***	0.0383	0.0392	0.0365	0.0377	0.038	0.0415		0.0441	0.0473
T-Cd	***0.00125***	0.0000287	0.0000208	0.0000255	0.00002	0.00002	0.0000347		0.0000366	0.0000278
T-Co	***0.026***	0.00127	0.00144	0.00146	0.0017	0.00172	0.00191		0.00331	0.0036
T-Cu	***0.026***	0.00254	0.00243	0.00219	0.00214	0.00229	0.00242		0.0109	0.0107
T-Fe	***6.4***	0.161	0.211	0.121	0.09	0.098	0.199		0.058	0.07
T-Pb	***0.05***	0.00171	0.000746	0.000494	0.000322	0.000356	0.000803		0.000266	0.000213
T-Mn	***7.7***	0.00837	0.00577	0.00322	0.00235	0.00235	0.00423		0.0119	0.00999
T-Hg	***0.00008***	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005		<0.000005	<0.000005
T-Mo	***0.45***	0.00196	0.00225	0.00226	0.00236	0.0023	0.00201		0.00376	0.00354
T-Ni	***0.5***	0.00208	0.00199	0.00182	0.00181	0.00186	0.00199		0.0039	0.00419
T-Se	***0.025***	0.000507	0.000581	0.000614	0.000609	0.000706	0.000615		0.00139	0.00144
T-Ag	***0.01***	<0.000010	0.00001	<0.000010	<0.000010	<0.000010	<0.000010		0.00004	0.000088
T-U	***0.09***	0.00477	0.00517	0.00542	0.00512	0.0058	0.00511		0.0126	0.0122
T-Zn	***0.23***	0.0044	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030		<0.0030	<0.0030

Table 3-7:
Summary of Dates and Results of Acute Toxicity Testing

Sample Id	Date	Percent Survival	
		Rainbow Trout	*Daphnia magna*
LDSPI	June 7, 2022	100	100
LDSP FDP	July 1, 2022	100	100
LDSPI	July 7, 2022	100	100
LDSPI	August 2, 2022	100	100
LDSP FDP	August 29, 2022	100	100
LDSP FDP	September 1, 2022	100	100

TSS concentrations remained low throughout the discharge periods ranging from <2.0 mg/L to approximately 4.0 mg/L. Total As concentrations were well below the EQS of 0.053 mg/L with concentrations measured consistently between 0.036 mg/L and 0.047 mg/L. All nitrogen species were present at low concentrations and total Se values were present at concentrations below 0.0015 mg/L (Table 3-6).

In general, most parameters were measured at relatively higher concentrations during the late August/September discharge as compared to the discharge over the late June to mid-July discharge (Table 3-6).

3.2 Receiving Environment Surface Water Quality Monitoring Program

The 2022 surface water quality monitoring program included continuing the surveillance sampling of watercourses monitored as part of the EMSAMP with particular focus on those stations within Haggart Creek that have WQOs and associated adaptive management plan (AMP) water quality tiers at stations W4, W29, W99 and W23 (Figure 2-1).

3.2.1 Daily Monitoring Results During Planned Discharges – W4

Table 3-8 and Table 3-9 summarize the daily water quality monitoring results for station W4 in Haggart Creek for the June 25 to July 15 and August 29 to September 4, 2022 discharge events, respectively. As indicated in Table 3-6, during the planned discharges from the LDSP FDP all regulated parameters were compliant and present at concentrations below their respective EQS.

Water quality results at W4 are directly compared to the AMP Tier 1, Tier 2 and Tier 3 threshold concentrations. Results illustrate that for both of the planned discharges, all

parameters, with the exception of total As were measured at concentrations well below the most stringent Tier 1 threshold for each parameter (Table 3-8 and Table 3-9).

Prior to, and at the start of each discharge event, total As concentrations at W4 were measured to be below Tier 1 water quality objectives (Table 3-8 and Table 3-9). However, total As concentrations were observed to be above the Tier 3 threshold of 0.0085 mg/L on most remaining days during the June-July and August-September 2022 discharge periods (Table 3-8 and Table 3-9).

Table 3-8:
Water Quality in Haggart Creek at Station W4 During Controlled Discharge of June 25 to July 15, 2022

Parameter	T1	T2	T3	June-25	June-26	June-27	June-28	June-29	June-30	July-1	July-2	July-3	July-4	July-5
TSS				<2.0	4.4	9.1	<3.0	<3.0	<3.0	2.3	3	<3.0	<3.0	<3.0
SO_4	**231.8**	**262.7**	**309**	52	51.4	48	50	49.1	48.8	48.5	48.6	54.1	54.8	55.4
Cl	**112.5**	**127.5**	**150**	<0.50	<0.50	2.52	2.08	2.77	2.96	3.03	2.99	0.66	<0.50	<0.50
NO_3-N	**2.3**	**2.6**	**3**	0.0805	0.0913	0.495	0.416	0.54	0.577	0.582	0.596	0.163	0.115	0.108
NO_2-N	**0.015**	**0.017**	**0.02**	<0.0010	<0.0010	0.01	0.0067	0.0105	0.013	0.0144	0.0111	0.0021	0.0012	<0.0010
NH_3-N	**0.848**	**0.961**	**1.13**	<0.0050	<0.0050	0.0157	0.0132	0.0155	0.0156	0.016	0.0172	<0.0050	<0.0050	<0.0050
CN_{WAD}	**0.005**	**0.005**	**0.005**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Diss- Al	**0.075**	**0.085**	**0.1**	0.0118	0.011	0.011	0.0111	0.0104	0.014	0.0118	0.0102	0.0108	0.01	0.0097
T-Sb	**0.015**	**0.017**	**0.02**	0.00038	0.00043	0.00357	0.00275	0.00404	0.00418	0.00434	0.00451	0.00093	0.0009	0.0006
T-As	**0.0064**	**0.0072**	**0.0085**	0.0057	0.0067	0.0292	0.022	0.0305	0.0333	0.0323	0.0343	0.0102	0.00861	0.0068
T-Cd	**0.00015**	**0.00017**	**0.0002**	0.000011	0.000008	0.000021	0.000016	0.000016	0.000021	0.000019	0.000020	0.000007	0.000009	0.000009
T-Co	**0.003**	**0.0034**	**0.004**	0.00016	0.00013	0.00109	0.00076	0.00114	0.00125	0.00129	0.00136	0.00027	0.00022	0.00012
T-Cu	**0.00375**	**0.00425**	**0.005**	0.00054	<0.00050	0.00186	0.00138	0.00185	0.00177	0.00192	0.00206	0.00066	0.00055	<0.00050
T-Fe	**0.75**	**0.85**	**1**	0.183	0.095	0.201	0.085	0.119	0.094	0.128	0.117	0.088	0.094	0.087
T-Pb	**0.00578**	**0.00655**	**0.0077**	0.000212	0.000094	0.000528	0.000291	0.000431	0.000345	0.000459	0.000408	0.000079	0.000416	0.000051
T-Mn	**0.878**	**0.995**	**1.17**	0.0272	0.022	0.0104	0.013	0.00816	0.00787	0.00693	0.00637	0.0179	0.0173	0.0229
T-Hg	**0.000015**	**0.000017**	**0.00002**	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
T-Mo	**0.0548**	**0.0621**	**0.073**	0.000286	0.000391	0.0017	0.00125	0.0018	0.00184	0.00193	0.00199	0.000558	0.000499	0.000401
T-Ni	**0.087**	**0.099**	**0.116**	0.00097	0.00082	0.00172	0.00133	0.00157	0.00158	0.00171	0.00181	0.00087	0.0009	0.00088
T-Se	**0.0015**	**0.0017**	**0.002**	0.000218	0.000194	0.000437	0.000378	0.000505	0.000496	0.000516	0.000501	0.000222	0.00021	0.000198
T-Ag	**0.00113**	**0.00128**	**0.0015**	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
T-U	**0.0113**	**0.0128**	**0.015**	0.000765	0.000814	0.0038	0.00304	0.00423	0.004	0.0048	0.00444	0.00138	0.00125	0.00101
T-Zn	**0.0285**	**0.0323**	**0.038**	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Color of Shaded cell indicates Adaptive Management Tier Exceedance														

All values in mg/L

Table 3-8 (continued):
Water Quality in Haggart Creek at Station W4 During Controlled Discharge of June 25 to July 15, 2022

Parameter	T1	T2	T3	July-6	July-7	July-8	July-9	July-10	July-11	July-12	July-13	July-14	July-15
TSS				4.1	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	8.7	5.7
SO_4	**231.8**	**262.7**	**309**	53.9	52.9	53.1	54.9	56.5	57.2	54.6	56.2	50.1	50.9
Cl	**112.5**	**127.5**	**150**	0.82	1.33	1.46	1.23	1.04	0.91	0.96	0.58	3.03	2.79
NO_3-N	**2.3**	**2.6**	**3**	0.187	0.285	0.304	0.266	0.23	0.204	0.213	0.149	0.559	0.532
NO_2-N	**0.015**	**0.017**	**0.02**	0.0025	0.0044	0.005	0.0042	0.0036	0.003	0.0031	0.0014	0.0087	0.0094
NH_3-N	**0.848**	**0.961**	**1.13**	0.014	0.0088	0.0089	0.0104	<0.0050	0.0165	0.0055	<0.0050	0.0143	0.0119
CN_{WAD}	**0.005**	**0.005**	**0.005**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Diss- Al	**0.075**	**0.085**	**0.1**	0.0084	0.0071	0.0077	0.0071	0.0076	0.0075	0.0096	0.0085	0.01	0.0105
T-Sb	**0.015**	**0.017**	**0.02**	0.002	0.00186	0.0023	0.00292	0.00168	0.00189	0.00096	0.00156	0.00439	0.00402
T-As	**0.0064**	**0.0072**	**0.0085**	0.0165	0.0162	0.0189	0.0224	0.0142	0.0156	0.0108	0.0157	0.0352	0.0352
T-Cd	**0.00015**	**0.00017**	**0.0002**	0.000013	0.000013	0.000012	0.000017	0.000012	0.000012	0.000011	0.000017	0.000025	0.000025
T-Co	**0.003**	**0.0034**	**0.004**	0.0006	0.00058	0.00069	0.00097	0.00052	0.00065	0.00031	0.00055	0.00161	0.00158
T-Cu	**0.00375**	**0.00425**	**0.005**	0.001	0.00091	0.00112	0.00133	0.00085	0.0009	0.00069	0.00098	0.00206	0.00208
T-Fe	**0.75**	**0.85**	**1**	0.081	0.091	0.092	0.1	0.08	0.097	0.131	0.173	0.264	0.267
T-Pb	**0.00578**	**0.00655**	**0.0077**	0.000145	0.000271	0.000195	0.000299	0.000163	0.000233	0.000234	0.000547	0.000866	0.00104
T-Mn	**0.878**	**0.995**	**1.17**	0.0139	0.018	0.0163	0.0141	0.02	0.0187	0.0246	0.0232	0.00774	0.0117
T-Hg	**0.000015**	**0.000017**	**0.00002**	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
T-Mo	**0.0548**	**0.0621**	**0.073**	0.000968	0.000865	0.00111	0.00136	0.00077	0.000916	0.000517	0.00073	0.00171	0.00162
T-Ni	**0.087**	**0.099**	**0.116**	0.0011	0.00115	0.00122	0.00133	0.00111	0.00117	0.00101	0.0011	0.00173	0.00171
T-Se	**0.0015**	**0.0017**	**0.002**	0.000321	0.0003	0.000341	0.000356	0.000269	0.000257	0.000186	0.000275	0.000519	0.000519
T-Ag	**0.00113**	**0.00128**	**0.0015**	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
T-U	**0.0113**	**0.0128**	**0.015**	0.00231	0.00222	0.00266	0.00311	0.00209	0.0022	0.00136	0.00183	0.00393	0.0042
T-Zn	**0.0285**	**0.0323**	**0.038**	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Color of Shaded cell indicates Adaptive Management Tier Exceedance													

Table 3-9:
Water Quality in Haggart Creek at Station W4 During Controlled Discharge of August 29 to September 4, 2022

Parameter	T1	T2	T3	August-29	August-30	August-31	September-1	September-2	September-3	September-4
TSS				<2.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
SO_4	**231.8**	**262.7**	**309**	56.3	56.2	61.2	59.5	59.6	61.1	61.2
Cl	**112.5**	**127.5**	**150**	<0.50	<0.50	0.84	0.54	0.55	0.66	0.61
NO_3-N	**2.3**	**2.6**	**3**	0.0761	0.138	0.35	0.245	0.25	0.276	0.274
NO_2-N	**0.015**	**0.017**	**0.02**	<0.0010	0.0014	0.0049	0.0041	0.004	0.0044	0.0047
NH_3-N	**0.848**	**0.961**	**1.13**	<0.0050	0.0054	0.0149	0.0092	0.014	0.0147	0.0143
CN_{WAD}	**0.005**	**0.005**	**0.005**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Diss- Al	**0.075**	**0.085**	**0.1**	0.0197	0.0194	0.0173	0.0153	0.0127	0.028	0.0522
T-Sb	**0.015**	**0.017**	**0.02**	0.00053	0.00094	0.00233	0.00133	0.00525	0.00243	0.00351
T-As	**0.0064**	**0.0072**	**0.0085**	0.00546	0.0068	0.0108	0.00811	0.0194	0.0113	0.0142
T-Cd	**0.00015**	**0.00017**	**0.0002**	0.000011	0.000011	0.000014	0.000013	0.000020	0.000018	0.000016
T-Co	**0.003**	**0.0034**	**0.004**	0.00018	0.00029	0.00058	0.0004	0.0012	0.00061	0.00083
T-Cu	**0.00375**	**0.00425**	**0.005**	0.0008	0.00118	0.00224	0.00145	0.00385	0.00191	0.00249
T-Fe	**0.75**	**0.85**	**1**	0.134	0.182	0.144	0.133	0.113	0.045	0.042
T-Pb	**0.00578**	**0.00655**	**0.0077**	0.000057	0.000109	0.000094	0.000055	0.000165	<0.000050	<0.000050
T-Mn	**0.878**	**0.995**	**1.17**	0.0358	0.0377	0.0368	0.0395	0.0318	0.0321	0.031
T-Hg	**0.000015**	**0.000017**	**0.00002**	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
T-Mo	**0.0548**	**0.0621**	**0.073**	0.000349	0.000437	0.000763	0.000512	0.00141	0.000816	0.00108
T-Ni	**0.087**	**0.099**	**0.116**	0.00123	0.00155	0.00178	0.00152	0.0022	0.00158	0.00179
T-Se	**0.0015**	**0.0017**	**0.002**	0.000159	0.000242	0.000273	0.000265	0.000592	0.000373	0.0004
T-Ag	**0.00113**	**0.00128**	**0.0015**	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
T-U	**0.0113**	**0.0128**	**0.015**	0.00089	0.0013	0.00242	0.00152	0.00474	0.00234	0.00323
T-Zn	**0.0285**	**0.0323**	**0.038**	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Color of Shaded cell indicates Adaptive Management Tier Exceedance										

All values in mg/L.

In previous years, elevated total (and dissolved) As concentrations measured at W4 were observed to result, at least in part, from elevated total and dissolved As concentrations emanating from Dublin Gulch. Baseline Dublin Gulch water quality as monitored at W1 and W21 for the period 2007 to 2017 has mean monthly total and dissolved As concentrations consistently on the order of 0.030 mg/L to 0.038 mg/L. Evaluation of monitoring results from W21 in Dublin Gulch that occurred during the 2022 discharge periods indicates that total As concentrations were at levels typically observed in the baseline data record. Total and dissolved As concentrations at W21 in Dublin Gulch were on the order of approximately 0.035 mg/L during both the 2022 discharge periods (Figure 3-4; Appendix A). One exception occurred on July 11, 2022 where total As was observed to be 0.182 mg/L; although dissolved As was measured at 0.035 mg/L and similar to baseline concentrations.

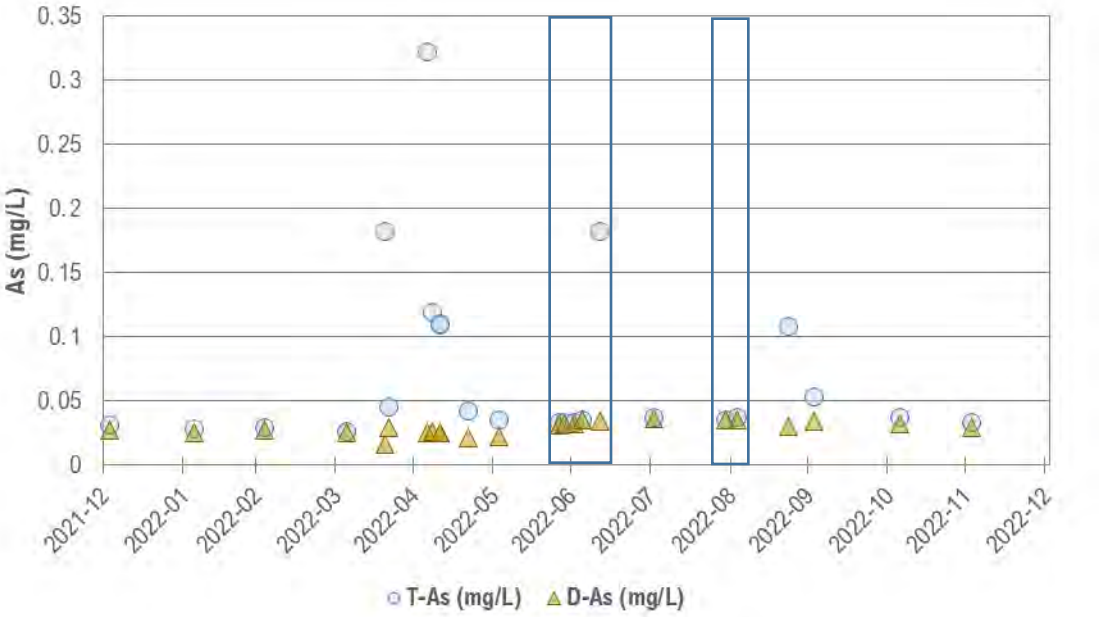


Figure 3-4: Time-series of Total As at W21 for 2022. Outlined areas indicate discharge periods

Similarly, Haggart Creek water quality upstream of W4 as measured at W22 did not show aberrant total As concentrations during the discharge periods with values on the order of 0.0008 mg/L being observed and similar to the baseline condition. Based on the above, the reasons for the observed elevated concentrations of total As at W4 during the June/July and August/September 2022 discharges are not readily apparent given the discharge of fully compliant water. Observations may be related to the following:

- Incomplete mixing of effluent discharged to Haggart Creek at the W4 sampling location; and/or

- Discharge flow rates from the LDSP FDP, combined with naturally elevated As concentrations from Dublin Gulch, resulted in reduced assimilative capacity in Haggart Creek for these arsenic loadings.

It should be noted that incomplete mixing and/or discharge flow rates clearly did not affect concentrations in Haggart Creek for any of the other regulated parameters.

3.2.2 EMSAMP Monitoring Results

Discussion of the 2022 monitoring results for W4, W29, W99 and W23, including AMP analysis, is provided below. Specifically, monthly water quality data collected for the Eagle Gold project is compared to each station's baseline water quality condition. For stations W4 and W23, the baseline water quality is represented by monitoring results for the period 2007 to 2017. For station W29, the baseline period spans 2009 to 2017 and for station W99, there does not exist a true baseline as water quality sampling was initiated at this station in April 2019 during early operations. In the case of W99, monthly data for 2022 is compared only to 2019. Concentrations of parameters of interest in Haggart Creek exhibit strong flow-based variability and therefore monthly data were compared between years as the most appropriate approach rather than assessing water quality changes observed over consecutive months.

Determination as to whether parameters measured in 2022 are exhibiting short term excursions from baseline conditions has been based on consideration of the natural variability in the baseline. Specifically, monthly mean 2022 observations for AMP key parameters are compared to baseline monthly mean +1 and +2 standard deviations (*e.g.*, 68th and 95th percentile). Monthly mean 2022 values within +1 standard deviation of baseline values are considered to be unchanged; values measured within +2 standard deviations are considered to be within the natural observed variability. Monthly mean 2022 values measured above +2 standard deviations of the baseline and above the Tier 3 WQO are considered to be a short-term excursion over the baseline condition. Importantly, water quality returned, generally, to baseline conditions following the short term elevated As occurrences and WQO exceedances were generally not persistent past the near field of the Project (*i.e.*, W23). In some instances, and for some parameters, monthly mean 2022 values were measured above the Tier 3 WQO but below +2 standard deviations of baseline conditions. In these cases, no specific action is required and observed values are attributable to naturally high background conditions.

Table 3-10 provides a summary of the total number of sampling events (including samples collected during discharging from the LDSP FDP) where concentrations for any given

parameter were greater than Tier 3 water quality objectives for stations W4, W29, W99 and W23.

Table 3-10:
Number of Sampling Occasions where Measured Values were Greater than Tier 3 WQOs at EMSAMP Monitoring Locations in Haggart Creek (2022)

Parameter List	Tier 3 WQOs W4, W29, W99, W23	W4	W29	W99	W23
TSS	15	**5**	**3**	**4**	**3**
SO_4	309	0	0	0	0
Cl	150	0	0	0	0
Nitrate-N	3	0	0	0	0
Nitrite-N	0.02	0	0	0	0
NH_3-N	1.13	0	0	0	0
CN_{WAD}	0.005	0	0	0	0
Diss-Al	0.1	**3**	**2**	**2**	**2**
Sb	0.02	0	0	0	0
As	0.0085	**24**	**4**	**5**	**2**
Cd	0.000197	0	0	0	0
Cu	0.005	0	0	0	0
Co	0.004	0	0	0	0
Fe	1.0	**4**	**2**	**2**	**1**
Pb	0.0077	0	0	0	0
Hg	0.00002	0	0	0	0
Mn	1.17	0	0	0	0
Mo	0.073	0	0	0	0
Ni	0.116	0	0	0	0
Se	0.002	0	0	0	0
Ag	0.0015	0	0	0	0
U	0.015	0	0	0	0
Zn	0.038	0	0	0	0

Tier 3 values in mg/L

3.2.2.1 W4

Station W4 is located downstream of the confluence of both Dublin Gulch (Figure 2-1) and downstream of where the controlled discharges enter Haggart Creek. Short term analysis summary of W4 utilizing baseline data from the period 2007 to 2017, compared to monthly mean 2022 water quality data for the open water period of April to November is presented in Table 3-11. Full graphical results for all parameters in 2022 are also presented in Appendix B. As illustrated, most parameters were measured at W4 during 2022 at

concentrations very similar to baseline values (*e.g.*, ≤ +2 std. dev.); only total As was measured at concentrations greater than the baseline variability and greater than the respective Tier 3 WQO (Table 3-11). As discussed in Section 3.2.1, the higher As concentrations were likely associated with sampling bias of incompletely mixed effluent and Haggart Creek.

Table 3-11:
Summary Comparison of Key Water Quality Parameters at W4 for Baseline Period (2007 – 2017) to 2022 Monthly Mean Values and Relative to AMP Threshold Values

Parameter	*T1*	*T2*	*T3*	W4 - Haggart Creek																						
				April			May			June			July			August			September			October			November		
				Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 2)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 3)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 7)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 15)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 4)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 5)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)
TSS				6	7	5.4	70	102	41	31	48	6	4	5	4	9	13	<3	4	4	13	4	4	11	4	5	<3
SO_4	***231.8***	***262.7***	***309***	100	107	94	28	38	28	50	56	45	68	77	53	64	72	58	70	92	59	70	76	37	77	82	59
Cl	***112.5***	***127.5***	***150***	0.5	0.5	0.53	2.3	3.3	<0.5	0.5	0.5	1.7	0.5	0.5	1.5	0.5	0.5	0.6	0.6	0.7	0.6	0.6	0.8	<0.5	0.5	0.5	<0.5
NO_3-N	***2.3***	***2.6***	***3***	0.144	0.156	0.16	0.046	0.065	0.034	0.794	1.253	0.321	0.058	0.067	0.300	0.061	0.071	0.156	0.102	0.126	0.222	0.169	0.204	0.080	0.160	0.175	0.090
NO_2-N	***0.015***	***0.017***	***0.02***	0.001	0.001	<0.0010	0.0047	0.0067	<0.0010	0.0010	0.0010	0.0062	0.0010	0.0010	0.0050	0.0010	0.0010	0.0021	0.0010	0.0010	0.0036	0.0099	0.0164	<0.0010	0.0010	0.0010	<0.0010
NH_3-N	***0.848***	***0.961***	***1.13***	0.005	0.005	0.0058	0.009	0.012	0.006	0.008	0.010	0.011	0.005	0.005	0.010	0.015	0.022	0.008	0.005	0.005	0.012	0.005	0.005	0.008	0.005	0.005	<0.005
CN_{WAD}	***0.005***	***0.005***	***0.005***	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050
Diss- Al	***0.075***	***0.085***	***0.1***	0.007	0.010	0.0036	0.221	0.286	0.431	0.050	0.070	0.021	0.013	0.017	0.009	0.023	0.033	0.016	0.015	0.019	0.024	0.008	0.010	0.046	0.004	0.005	0.006
T-Sb	***0.015***	***0.017***	***0.02***	0.0006	0.0008	0.0004	0.0007	0.0009	0.0005	0.0009	0.0011	0.0023	0.0005	0.0005	0.0023	0.0005	0.0005	0.0011	0.0005	0.0005	0.0028	0.0005	0.0006	0.0005	0.0004	0.0005	0.0004
T-As	***0.0064***	***0.0072***	***0.0085***	0.0093	0.0141	0.0037	0.0255	0.0377	0.0109	0.0151	0.0228	0.0194	0.0059	0.0079	0.0195	0.0057	0.0070	0.0071	0.0072	0.0092	0.0172	0.0067	0.0084	0.0083	0.0050	0.0064	0.0067
T-Cd	***0.00015***	***0.00017***	***0.0002***	0.00003	0.00004	0.00002	0.00010	0.00014	0.00007	0.0000	0.0000	0.00002	0.00002	0.00002	0.00001	0.00003	0.00004	0.00001	0.00003	0.00005	0.00002	0.00001	0.00002	0.00001	0.00002	0.00002	0.00001
T-Co	***0.003***	***0.0034***	***0.004***	0.00047	0.00065	0.00021	0.00192	0.00275	0.00095	0.00064	0.00097	0.00071	0.00012	0.00013	0.00075	0.00022	0.00030	0.00029	0.00016	0.00018	0.00085	0.00015	0.00017	0.00028	0.00016	0.00018	0.00010
T-Cu	***0.00375***	***0.00425***	***0.005***	0.00074	0.00096	0.0005	0.00511	0.00678	0.00352	0.00258	0.00378	0.00134	0.00065	0.00074	0.00117	0.00104	0.00140	0.00118	0.00073	0.00084	0.00262	0.00098	0.00131	0.00148	0.00097	0.00129	0.00050
T-Fe	***0.75***	***0.85***	***1***	0.47	0.69	0.15	3.09	4.50	1.64	1.42	2.25	0.20	0.11	0.14	0.13	0.31	0.48	0.13	0.11	0.14	0.61	0.10	0.12	0.49	0.09	0.11	0.06
T-Pb	***0.00578***	***0.00655***	***0.0077***	0.00065	0.00099	0.00019	0.00275	0.00407	0.0017	0.00178	0.00286	0.00038	0.00006	0.00006	0.00036	0.00017	0.00025	0.00008	0.00010	0.00013	0.00071	0.00007	0.00008	0.00033	0.00006	0.00007	0.00006
T-Mn	***0.878***	***0.995***	***1.17***	0.104	0.140	0.053	0.208	0.302	0.101	0.046	0.063	0.018	0.030	0.037	0.016	0.033	0.039	0.033	0.034	0.038	0.043	0.033	0.037	0.033	0.041	0.048	0.010
T-Hg	***0.000015***	***0.000017***	***0.00002***	0.000011	0.000013	<0.000005	0.000032	0.000047	0.000009	0.000037	0.000055	<0.0000050	0.000011	0.000013	<0.0000050	0.000011	0.000013	<0.0000050	0.000011	0.000013	0.000006	0.000010	0.000013	<0.0000050	0.000010	0.000013	<0.0000050
T-Mo	***0.0548***	***0.0621***	***0.073***	0.00018	0.00023	0.00024	0.00042	0.00062	0.00016	0.00080	0.00109	0.00107	0.00032	0.00041	0.00106	0.00031	0.00038	0.00048	0.00066	0.00092	0.00087	0.00061	0.00086	0.00040	0.00069	0.00101	0.00038
T-Ni	***0.087***	***0.099***	***0.116***	0.0024	0.0030	0.0017	0.0057	0.0075	0.0038	0.0025	0.0035	0.0014	0.0010	0.0012	0.0013	0.0012	0.0015	0.0014	0.0010	0.0011	0.0024	0.0010	0.0011	0.0016	0.0013	0.0015	0.0008
T-Se	***0.0015***	***0.0017***	***0.002***	0.00026	0.00031	0.00022	0.00021	0.00025	0.00012	0.00022	0.00025	0.00033	0.00020	0.00024	0.00033	0.00021	0.00025	0.00021	0.00021	0.00025	0.00036	0.00019	0.00022	0.00012	0.00023	0.00025	0.00022
T-Ag	***0.00113***	***0.00128***	***0.0015***	0.000010	0.000010	<0.000010	0.000033	0.000046	0.000020	0.000021	0.000028	0.000010	0.000010	0.000010	<0.000010	0.000010	0.000010	<0.000010	0.000010	0.000010	0.000014	0.000011	0.000012	<0.000010	0.000010	0.000010	<0.000010
T-U	***0.0113***	***0.0128***	***0.015***	0.0016	0.0017	0.0016	0.0005	0.0006	0.0005	0.0007	0.0008	0.0024	0.0010	0.0011	0.0026	0.0009	0.0011	0.0014	0.0010	0.0011	0.0026	0.0012	0.0014	0.0006	0.0013	0.0014	0.0008
T-Zn	***0.0285***	***0.0323***	***0.038***	0.0058	0.0072	0.0033	0.0148	0.0201	0.0088	0.0069	0.0098	0.0031	0.0034	0.0041	<0.0030	0.0033	0.0041	<0.0030	0.0034	0.0044	0.0043	0.0032	0.0033	<0.0030	0.0042	0.0049	<0.0030

All units in mg/L
Baseline period for W4 2007 – 2017

Colour Coding Legend for Trend Assessment	
Monthly 2022 mean is ≤ any Tier and ≤ Baseline 2 stdev	no action
Monthly 2022 mean is ≥ any Tier but ≤ Baseline 2 stdev	high background
Monthly 2022 mean is ≥ Tier 2 < Tier 3 ≥ Baseline 2 stdev	monitor
Monthly 2022 mean is ≥ Tier 3 > Baseline 2 stdev	Short-term excursion

The elevated total As monthly mean for July and September have been described previously and are potentially attributable to poor mixing at W4 during discharge and/or lower assimilative capacity owing to the discharge volumes relative to flow in Haggart Creek in combination with the load from Dublin Gulch. Importantly the above analyses does not suggest an overall increasing trend of As in Haggart during July and September 2022, but rather reports on short term excursions of W4 WQOs generally during discharge periods. Concentrations for all parameters, including As, at W4 returned to values below AMP thresholds in months following the documented exceedances.

3.2.2.2 W29

Water quality parameters at W29 in 2022 were present at concentrations very similar to the observed baseline values (*e.g.*, ≤ +2 std. dev.) during the baseline period of 2009 to 2017 (Table 3-12). Exceptions to these observations occurred in May, June and September 2022.

In May, elevated TSS, and total As were present in concentrations greater than AMP T3 and baseline values for the same period. The elevated TSS above +2 standard deviations is, in part, a result of modifications to the 2009 to 2017 baseline dataset. Specifically, during the WUL process in 2015 for the Eagle Gold Project, regulators requested that water quality data associated with samples measuring greater than 50 mg/L TSS be ignored in developing site specific water quality objectives. As such, values exceeding 50 mg/L have been eliminated and the data is biased to the lower TSS concentrations as well as total As and total Fe as these parameters are closely correlated to TSS. The short-term excursion above baseline conditions is attributed to documented freshet influences outside and within the Project area, which were not considered within baseline data.

For June 2022, the monthly mean total As value (0.0087 mg/L) marginally exceeded the AMP T3 WQO of 0.0085 mg/L (Table 3-12). Similarly in September, only total As was measured at concentrations (0.0093 mg/L) above the AMP T3 WQO but was only slightly greater than the baseline +2 standard deviations of 0.009 mg/L (Table 3-12). The sample at W29 was collected on September 2 and likely reflects the residual influence of the August-September controlled discharge event but illustrates the effect of more complete mixing in Haggart Creek as significant additional dilution does not occur between W4 and W29 to account for the much lower concentrations observed at W29.

3.2.2.3 W99

Station W99 was added in 2019 and therefore does not have a “baseline” record of measurements to which trend analysis is applicable. In 2022, May and September had mean monthly total As concentrations that were greater than the AMP T3 threshold of 0.0085 mg/L (Table 3-13).

The elevated As concentrations measured on September 2, 2022 are associated with the August 29 to September 4 discharge event and are consistent with measured elevated total As concentrations at upstream locations in Haggart Creek at W4 and W29.

3.2.2.4 W23

Water quality at W23 reflects loadings from all upstream non-mine related tributaries (*e.g.*, Lynx Creek, 15 Pup, Gil Gulch and Fisher Gulch), and all mine related inputs from Dublin Gulch and Eagle Creek . Water quality observed in 2022 at W23 relative to the baseline period of 2007 to 2017 indicated that all parameters measured in 2022 were at concentrations very similar to those observed during baseline monitoring. Indeed, all parameters were present at a concentration within +1 standard deviation of the baseline monthly mean concentration, documenting that short term excursions above baseline conditions observed in July and September at W4 were not persistent below near field of the Project. (Table 3-14).

Table 3-12:
Summary Comparison of Key Water Quality Parameters at W29 for Baseline Period (2009 – 2017) to 2022 Monthly Mean Values and Relative to AMP Threshold Values

Parameter	*T1*	*T2*	*T3*	W29 - Haggart Creek																				
				April			May			June			July			August			September			October			November		
				Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 2)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 2)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 3)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 2)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)
TSS				10	14	<3.0	41	55	64	3	3	13	3	3	3	10	15	3	4	5	3	5	7	12	3	3	4.6
SO_4	***231.8***	***262.7***	***309***	100	107	100	36	40	25	55	63	37	70	79	60	73	84	62	65	67	62	71	78	40	85	91	65
Cl	***112.5***	***127.5***	***150***	0.9	1.1	<0.50	2.8	3.7	0.62	0.5	0.5	0.5	0.5	0.5	0.52	0.5	0.5	0.57	0.6	0.7	0.64	0.6	0.7	<0.50	1.2	1.6	<0.50
NO_3-N	***2.3***	***2.6***	***3***	0.139	0.148	0.14	0.046	0.055	0.03	0.083	0.094	0.081	0.059	0.069	0.098	0.065	0.081	0.1	0.098	0.116	0.2	0.124	0.136	0.076	0.154	0.162	0.092
NO_2-N	***0.015***	***0.017***	***0.02***	0.0010	0.0010	<0.0010	0.0056	0.0074	<0.0010	0.0010	0.0010	0.001	0.0010	0.0010	0.0016	0.0010	0.0010	0.0012	0.0010	0.0010	0.0029	0.0010	0.0010	<0.0010	0.0010	0.0010	<0.0010
NH_3-N	***0.848***	***0.961***	***1.13***	0.0050	0.0050	<0.0050	0.0069	0.0079	0.0054	0.0096	0.0119	0.005	0.0050	0.0050	0.005	0.0124	0.0173	0.005	0.0140	0.0200	0.0064	0.0124	0.0177	0.012	0.0050	0.0050	0.0053
CN_{WAD}	***0.005***	***0.005***	***0.005***	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050
Diss- Al	***0.075***	***0.085***	***0.1***	0.003	0.004	0.0021	0.130	0.165	0.18	0.022	0.027	0.046	0.013	0.016	0.0078	0.021	0.031	0.014	0.010	0.011	0.012	0.007	0.009	0.046	0.003	0.004	0.0049
T-Sb	***0.015***	***0.017***	***0.02***	0.0007	0.0008	0.00052	0.0009	0.0010	0.00061	0.0006	0.0006	0.00059	0.0008	0.0008	0.00076	0.0011	0.0014	0.00094	0.0007	0.0007	0.002	0.0007	0.0008	0.00058	0.0006	0.0007	0.0005
T-As	***0.0064***	***0.0072***	***0.0085***	0.007	0.0093	0.003	0.014	0.0176	0.034	0.005	0.0061	0.0087	0.007	0.0091	0.007	0.008	0.0108	0.0064	0.0074	0.0090	0.009	0.0075	0.0095	0.0075	0.0047	0.0055	0.0059
T-Cd	***0.00015***	***0.00017***	***0.0002***	0.00002	0.00002	0.000018	0.00008	0.00011	0.000079	0.00002	0.00002	0.000019	0.00002	0.00002	0.000012	0.00002	0.00002	0.000013	0.00002	0.00002	0.000016	0.00003	0.00004	0.000022	0.00002	0.00002	0.000014
T-Co	***0.003***	***0.0034***	***0.004***	0.00033	0.00045	0.00014	0.00110	0.00141	0.00099	0.00011	0.00012	0.00037	0.00012	0.00012	0.0002	0.00022	0.00031	0.00023	0.00012	0.00013	0.00047	0.00029	0.00041	0.00031	0.00011	0.00011	<0.00010
T-Cu	***0.00375***	***0.00425***	***0.005***	0.00126	0.00169	0.0005	0.00430	0.00497	0.0039	0.00094	0.00113	0.0012	0.00077	0.00090	0.00056	0.00111	0.00154	0.00098	0.00085	0.00100	0.0017	0.00092	0.00116	0.0019	0.00050	0.00050	0.00061
T-Fe	***0.75***	***0.85***	***1***	0.62	0.92	0.081	2.00	2.60	1.4	0.14	0.19	0.43	0.12	0.15	0.087	0.36	0.57	0.1	0.10	0.13	0.1	0.51	0.79	0.51	0.04	0.05	0.049
T-Pb	***0.00578***	***0.00655***	***0.0077***	0.0009	0.0013	0.000055	0.0022	0.0029	0.0023	0.0002	0.0002	0.00065	0.0001	0.0002	0.00012	0.0005	0.0008	0.000097	0.0003	0.0004	0.000091	0.0005	0.0007	0.00069	0.0001	0.0001	0.00012
T-Mn	***0.878***	***0.995***	***1.17***	0.068	0.081	0.081	0.108	0.135	0.1	0.018	0.021	0.041	0.039	0.049	0.028	0.037	0.044	0.035	0.040	0.044	0.044	0.051	0.064	0.039	0.057	0.070	0.021
T-Hg	***0.000015***	***0.000017***	***0.00002***	0.000010	0.000010	<0.000005	0.000010	0.000010	0.000012	0.000010	0.000010	0.0000061	0.000011	0.000013	0.000005	0.000011	0.000013	0.000005	0.000010	0.000013	0.000005	0.000011	0.000013	<0.000005	0.000010	0.000013	<0.000005
T-Mo	***0.0548***	***0.0621***	***0.073***	0.00020	0.00023	0.00016	0.00018	0.00020	0.00014	0.00025	0.00026	0.0003	0.00037	0.00046	0.00042	0.00035	0.00042	0.00044	0.00042	0.00050	0.00068	0.00036	0.00043	0.00034	0.00026	0.00029	0.00034
T-Ni	***0.087***	***0.099***	***0.116***	0.0028	0.0034	0.0014	0.0044	0.0050	0.0036	0.0010	0.0011	0.0015	0.0011	0.0012	0.00093	0.0013	0.0016	0.0013	0.0011	0.0012	0.0016	0.0012	0.0015	0.0017	0.0012	0.0014	0.00087
T-Se	***0.0015***	***0.0017***	***0.002***	0.00023	0.00025	0.00025	0.00022	0.00027	0.000087	0.00024	0.00024	0.00015	0.00021	0.00025	0.00022	0.00024	0.00029	0.0002	0.00023	0.00026	0.0003	0.00023	0.00027	0.00015	0.00023	0.00025	0.00022
T-Ag	***0.00113***	***0.00128***	***0.0015***	0.000010	0.000010	<0.000010	0.000027	0.000035	0.000017	0.000010	0.000010	0.000011	0.000010	0.000010	0.00001	0.000010	0.000010	0.00001	0.000010	0.000010	0.00001	0.000010	0.000011	<0.000010	0.000010	0.000010	<0.000010
T-U	***0.0113***	***0.0128***	***0.015***	0.0021	0.0023	0.0019	0.0007	0.0008	0.00059	0.0009	0.0009	0.00075	0.0012	0.0014	0.0013	0.0014	0.0017	0.0013	0.0013	0.0014	0.0023	0.0014	0.0016	0.00069	0.0017	0.0018	0.0011
T-Zn	***0.0285***	***0.0323***	***0.038***	0.007	0.008	<0.0030	0.012	0.015	0.0098	0.003	0.004	0.0038	0.005	0.006	0.003	0.003	0.004	0.003	0.003	0.004	0.003	0.004	0.005	0.0032	0.003	0.003	<0.0030

All units in mg/L
Baseline period for W29 2009-2017, samples with TSS<50 mg/L excluded

Colour Coding Legend for Trend Assessment	
Monthly 2022 mean is ≤ any Tier and ≤ Baseline 2 stdev	no action
Monthly 2022 mean is ≥ any Tier but ≤ Baseline 2 stdev	high background
Monthly 2022 mean is ≥ Tier 2 < Tier 3 ≥ Baseline 2 stdev	monitor
Monthly 2022 mean is ≥ Tier 3 > Baseline 2 stdev	Short-term excursion

Table 3-13:
Summary Comparison of Key Water Quality Parameters at W99 for 2019 to 2022 Monthly Mean Values and Relative to AMP Threshold Values

Parameter	T1	T2	T3	W99 - Haggart Creek																				
				April			May			June			July			August			September			October			November		
				Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 2)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 2)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 3)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 2)	Baseline 1 stdev	Baseline 2 stdev	2022 mean	Baseline 1 stdev	Baseline 2 stdev	2022 mean	Baseline 1 stdev	Baseline 2 stdev	2022 mean
TSS				19	25	<3.0	45	62	48	17	26	18	3	4	4.3	5	6	3.5	3	3	<3.0	3	3	15.6	3	3	3.2
SO_4	***231.8***	***262.7***	***309***	98	102	110	58	82	26	72	90	38	82	83	62	86	86	63	92	92	65	82	82	39	90	90	69
Cl	***112.5***	***127.5***	***150***	3.4	4.3	<0.50	0.7	0.8	0.58	0.5	0.5	<0.50	0.5	0.5	0.53	0.5	0.5	<0.50	0.5	0.5	0.62	0.5	0.5	<0.50	0.5	0.5	<0.50
NO_3-N	***2.3***	***2.6***	***3***	0.104	0.113	0.16	0.204	0.312	0.04	0.068	0.075	0.067	0.063	0.066	0.14	0.058	0.058	0.077	0.060	0.060	0.2	0.118	0.118	0.078	0.141	0.141	0.09
NO_2-N	***0.015***	***0.017***	***0.02***	0.0011	0.0012	<0.0010	0.0017	0.0021	<0.0010	0.0016	0.0019	<0.0010	0.0010	0.0010	0.001	0.0010	0.0010	<0.0010	0.0010	0.0010	0.0026	0.0010	0.0010	<0.0010	0.0010	0.0010	<0.0010
NH_3-N	***0.848***	***0.961***	***1.13***	0.0158	0.0209	0.0071	0.0067	0.0067	0.0056	0.0056	0.0056	<0.0050	0.0122	0.0158	<0.0050	0.0050	0.0050	<0.0050	0.0201	0.0201	<0.0050	0.0050	0.0050	<0.0050	0.008	0.008	0.0063
CN_{WAD}	***0.005***	***0.005***	***0.005***	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	-	-	<0.0050	-	-	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050
Diss- Al	***0.075***	***0.085***	***0.1***	0.013	0.015	0.0022	0.191	0.269	0.14	0.066	0.095	0.047	0.008	0.010	0.0082	0.004	0.004	0.013	0.004	0.004	0.013	0.006	0.006	0.055	0.002	0.002	0.0045
T-Sb	***0.015***	***0.017***	***0.02***	0.0015	0.0018	0.00058	0.0010	0.0011	0.0006	0.0006	0.0007	0.00055	0.0007	0.0007	0.0008	0.0006	0.0006	0.0006	0.0006	0.0006	0.002	0.0005	0.0005	0.00064	0.0006	0.0006	0.00059
T-As	***0.0064***	***0.0072***	***0.0085***	0.0197	0.0231	0.0033	0.0178	0.0228	0.025	0.0042	0.0045	0.0079	0.0038	0.0040	0.0071	0.0037	0.0037	0.0057	0.0030	0.0030	0.0089	0.0029	0.0029	0.0081	0.0030	0.0030	0.0058
T-Cd	***0.00015***	***0.00017***	***0.0002***	0.00004	0.00005	0.000018	0.00006	0.00008	0.000074	0.00003	0.00004	0.000019	0.00001	0.00002	0.000013	0.00001	0.00001	0.000014	0.00001	0.00001	0.000017	0.00001	0.00001	0.000025	0.00002	0.00002	0.000017
T-Co	***0.003***	***0.0034***	***0.004***	0.00065	0.00072	0.00017	0.00108	0.00140	0.001	0.00038	0.00050	0.00039	0.00011	0.00012	0.00021	0.00013	0.00013	0.00017	0.00011	0.00011	0.00045	0.00010	0.00010	0.0004	0.00012	0.00012	0.00013
T-Cu	***0.00375***	***0.00425***	***0.005***	0.00222	0.00260	0.0005	0.00373	0.00479	0.0039	0.00231	0.00310	0.0013	0.00063	0.00065	0.00063	0.00057	0.00057	0.00088	0.00058	0.00058	0.0016	0.00063	0.00063	0.002	0.00081	0.00081	0.0007
T-Fe	***0.75***	***0.85***	***1***	0.99	1.19	0.086	1.89	2.49	1.4	0.70	1.00	0.52	0.09	0.11	0.12	0.11	0.11	0.14	0.04	0.04	0.11	0.05	0.05	0.79	0.04	0.04	0.075
T-Pb	***0.00578***	***0.00655***	***0.0077***	0.0019	0.0024	0.000057	0.0023	0.0030	0.0024	0.0008	0.0011	0.00071	0.0001	0.0001	0.0002	0.0002	0.0002	0.00015	0.0001	0.0001	0.00011	0.0001	0.0001	0.00089	0.00006	0.00006	0.00015
T-Mn	***0.878***	***0.995***	***1.17***	0.132	0.148	0.087	0.108	0.132	0.1	0.053	0.058	0.045	0.049	0.049	0.034	0.063	0.063	0.043	0.067	0.067	0.049	0.056	0.056	0.045	0.067	0.067	0.033
T-Hg	***0.000015***	***0.000017***	***0.00002***	0.000005	0.000005	<0.000005	0.00005	0.000068	0.000013	0.000007	0.000007	0.0000063	0.000005	0.000005	<0.000005	0.000005	0.000005	<0.000005	0.000005	0.000005	<0.000005	0.000005	0.000005	<0.000005	0.000005	0.000005	<0.000005
T-Mo	***0.0548***	***0.0621***	***0.073***	0.00034	0.00040	0.00019	0.00025	0.00030	0.00012	0.00019	0.00019	0.00028	0.00019	0.00019	0.00043	0.00019	0.00019	0.00034	0.00029	0.00029	0.00066	0.00021	0.00021	0.00027	0.00025	0.00025	0.00032
T-Ni	***0.087***	***0.099***	***0.116***	0.0027	0.0029	0.0014	0.0039	0.0048	0.0037	0.0025	0.0032	0.0015	0.0010	0.0010	0.00094	0.0010	0.0010	0.0012	0.0010	0.0010	0.0016	0.0010	0.0010	0.002	0.0009	0.0009	0.0009
T-Se	***0.0015***	***0.0017***	***0.002***	0.00024	0.00026	0.00025	0.00018	0.00022	0.00013	0.00014	0.00015	0.00014	0.00015	0.00016	0.00019	0.00012	0.00012	0.00017	0.00012	0.00012	0.00029	0.00020	0.00020	0.00015	0.00014	0.00014	0.00019
T-Ag	***0.00113***	***0.00128***	***0.0015***	0.000019	0.000023	<0.00001	0.000033	0.000044	0.000014	0.000013	0.000015	0.000012	0.000010	0.000010	<0.000010	0.000010	0.000010	<0.000010	0.000010	0.000010	<0.000010	0.000010	0.000010	0.000011	0.000010	0.000010	<0.00001
T-U	***0.0113***	***0.0128***	***0.015***	0.0027	0.0031	0.0022	0.0011	0.0015	0.00055	0.0011	0.0014	0.00065	0.0013	0.0014	0.0013	0.0014	0.0014	0.0011	0.0017	0.0017	0.0023	0.0014	0.0014	0.00064	0.0018	0.0018	0.0011
T-Zn	***0.0285***	***0.0323***	***0.038***	0.006	0.007	<0.0030	0.010	0.013	0.0096	0.004	0.004	0.004	0.003	0.003	<0.0030	0.003	0.003	<0.003	0.003	0.003	<0.0030	0.003	0.003	0.0045	0.0030	0.0030	<0.0030

All units in mg/L
No baseline available for W99 – sampling commenced in April 2019

Colour Coding Legend for Trend Assessment	
Monthly 2022 mean is ≤ any Tier and ≤ Baseline 2 stdev	no action
Monthly 2022 mean is ≥ any Tier but ≤ Baseline 2 stdev	high background
Monthly 2022 mean is ≥ Tier 2 < Tier 3 ≥ Baseline 2 stdev	monitor
Monthly 2022 mean is ≥ Tier 3 > Baseline 2 stdev	Short-term excursion

Table 3-14:
Summary Comparison of Key Water Quality Parameters at W23 for Baseline Period (2007 – 2017) to 2022 Monthly Mean Values and Relative to AMP Threshold Values

Parameter	*T1*	*T2*	*T3*	W23 - Haggart Creek																				
				April			May			June			July			August			September			October			November		
				Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 mean (n = 2)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)	Baseline 1 stdev	Baseline 2 stdev	2022 observed (n = 1)
TSS				15	22	<3.0	91	135	60	45	67	18	4	4	<3.0	3	3	<3.0	9	13	<3.0	3	3	7.9	3	3	<3.0
SO_4	***231.8***	***262.7***	***309***	89	89	110	24	30	21	53	60	25	74	82	71	72	79	69	68	75	67	74	82	57	91	99	83
Cl	***112.5***	***127.5***	***150***	0.5	0.5	<0.50	1.5	2.2	<0.50	0.5	0.5	<0.50	0.5	0.5	<0.50	0.5	0.5	<0.50	0.6	0.7	<0.50	0.6	0.7	<0.50	0.6	0.7	<0.50
NO_3-N	***2.3***	***2.6***	***3***	0.179	0.191	0.26	0.035	0.042	0.038	0.071	0.084	0.061	0.055	0.065	0.095	0.068	0.082	0.066	0.099	0.118	0.075	0.160	0.179	0.14	0.205	0.222	0.11
NO_2-N	***0.015***	***0.017***	***0.02***	0.0010	0.0010	<0.0010	0.0030	0.0044	<0.0010	0.0010	0.0010	<0.0010	0.0010	0.0010	<0.0010	0.0010	0.0010	<0.0010	0.0010	0.0011	0.001	0.0010	0.0010	<0.0010	0.0010	0.0010	0.0015
NH_3-N	***0.848***	***0.961***	***1.13***	0.0071	0.0083	<0.0050	0.0100	0.0124	<0.0050	0.0299	0.0427	<0.0050	0.0050	0.0050	0.014	0.0158	0.0225	<0.0050	0.0118	0.0168	0.043	0.0133	0.0187	<0.0050	0.006	0.006	0.0068
CN_{WAD}	***0.005***	***0.005***	***0.005***	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050	0.005	0.005	<0.0050
Diss- Al	***0.075***	***0.085***	***0.1***	0.006	0.008	0.0026	0.167	0.215	0.12	0.038	0.052	0.051	0.019	0.027	0.007	0.010	0.013	0.0076	0.017	0.022	0.01	0.008	0.010	0.015	0.004	0.005	0.0048
T-Sb	***0.015***	***0.017***	***0.02***	0.0015	0.0021	0.00055	0.0010	0.0012	0.00062	0.0014	0.0019	0.00047	0.0006	0.0007	0.00069	0.0006	0.0006	0.00046	0.0007	0.0008	0.00062	0.0005	0.0006	0.0006	0.0005	0.0005	0.00059
T-As	***0.0064***	***0.0072***	***0.0085***	0.0291	0.0436	0.0051	0.0178	0.0238	0.017	0.0271	0.0398	0.0068	0.0055	0.0061	0.0068	0.0059	0.0063	0.0061	0.0072	0.0084	0.006	0.0056	0.0061	0.0083	0.0046	0.0047	0.0054
T-Cd	***0.00015***	***0.00017***	***0.0002***	0.00006	0.00008	0.0000086	0.00011	0.00015	0.000078	0.00016	0.00024	0.000034	0.00003	0.00004	0.000015	0.00003	0.00004	0.000016	0.00003	0.00004	0.000018	0.00003	0.00004	0.000022	0.00002	0.00002	0.000033
T-Co	***0.003***	***0.0034***	***0.004***	0.00086	0.00130	<0.00010	0.00149	0.00213	0.00088	0.00267	0.00414	0.00037	0.00010	0.00010	0.00014	0.00010	0.00010	<0.00010	0.00020	0.00026	0.00014	0.00019	0.00026	0.00024	0.00024	0.00032	<0.00010
T-Cu	***0.00375***	***0.00425***	***0.005***	0.00325	0.00492	0.0005	0.00554	0.00719	0.0037	0.00612	0.00882	0.0018	0.00087	0.00097	0.00068	0.00085	0.00096	0.0007	0.00172	0.00225	0.00097	0.00097	0.00114	0.0013	0.00087	0.00106	0.00085
T-Fe	***0.75***	***0.85***	***1***	1.77	2.78	0.052	2.63	3.79	1.4	0.75	1.04	0.51	0.07	0.10	0.076	0.09	0.12	0.079	0.14	0.19	0.11	0.09	0.13	0.4	0.04	0.05	0.041
T-Pb	***0.00578***	***0.00655***	***0.0077***	0.0032	0.0051	<0.000050	0.0037	0.0055	0.002	0.0078	0.0123	0.00069	0.0001	0.0001	0.000084	0.0001	0.0001	<0.000050	0.0005	0.0007	0.000073	0.0003	0.0004	0.00049	0.00036	0.00055	<0.000050
T-Mn	***0.878***	***0.995***	***1.17***	0.092	0.123	0.039	0.154	0.217	0.11	0.305	0.472	0.037	0.021	0.023	0.022	0.025	0.029	0.021	0.035	0.043	0.035	0.032	0.037	0.034	0.033	0.037	0.035
T-Hg	***0.000015***	***0.000017***	***0.00002***	0.000009	0.000009	<0.000005	0.000042	0.000061	0.0000071	0.000044	0.000061	0.0000051	0.000042	0.000062	<0.000005	0.000040	0.000059	<0.000005	0.000038	0.000056	<0.000005	0.000047	0.000068	<0.000005	0.000016	0.000022	<0.000005
T-Mo	***0.0548***	***0.0621***	***0.073***	0.00050	0.00057	0.00061	0.00035	0.00041	0.00025	0.00089	0.00116	0.00033	0.00056	0.00058	0.00066	0.00060	0.00064	0.00061	0.00076	0.00093	0.00064	0.00077	0.00091	0.00056	0.00087	0.00106	0.00063
T-Ni	***0.087***	***0.099***	***0.116***	0.0026	0.0039	0.0009	0.0047	0.0062	0.0032	0.0052	0.0076	0.0018	0.0007	0.0008	0.0008	0.0008	0.0009	0.00095	0.0011	0.0013	0.0011	0.0009	0.0011	0.0015	0.0009	0.0011	0.0009
T-Se	***0.0015***	***0.0017***	***0.002***	0.00109	0.00138	0.00046	0.00094	0.00133	0.00019	0.00111	0.00147	0.00025	0.00100	0.00138	0.00034	0.00104	0.00141	0.00029	0.00104	0.00143	0.00032	0.00090	0.00124	0.00029	0.00081	0.00108	0.00046
T-Ag	***0.00113***	***0.00128***	***0.0015***	0.000029	0.000039	<0.000010	0.000049	0.000072	0.000019	0.000033	0.000046	<0.000010	0.000010	0.000010	<0.000010	0.000010	0.000010	0.000015	0.000015	0.000018	<0.000010	0.000015	0.000018	<0.000010	0.000017	0.000021	<0.000010
T-U	***0.0113***	***0.0128***	***0.015***	0.0017	0.0017	0.0022	0.0004	0.0005	0.00042	0.0011	0.0013	0.00036	0.0011	0.0011	0.0013	0.0010	0.0011	0.001	0.0011	0.0012	0.0011	0.0013	0.0015	0.00097	0.0016	0.0017	0.0012
T-Zn	***0.0285***	***0.0323***	***0.038***	0.011	0.016	<0.0030	0.014	0.019	0.0093	0.023	0.035	0.0035	0.003	0.004	<0.0030	0.003	0.004	<0.0030	0.005	0.006	<0.0030	0.004	0.005	<0.0030	0.0044	0.0052	0.0044

All units in mg/L
Baseline period for W23 2007-2017

Colour Coding Legend for Trend Assessment	
Monthly 2022 mean is ≤ any Tier and ≤ Baseline 2 stdev	no action
Monthly 2022 mean is ≥ any Tier but ≤ Baseline 2 stdev	high background
Monthly 2022 mean is ≥ Tier 2 < Tier 3 ≥ Baseline 2 stdev	monitor
Monthly 2022 mean is ≥ Tier 3 > Baseline 2 stdev	Short-term excursion

Appendix A: Water Quality Database Dashboard -Electronic

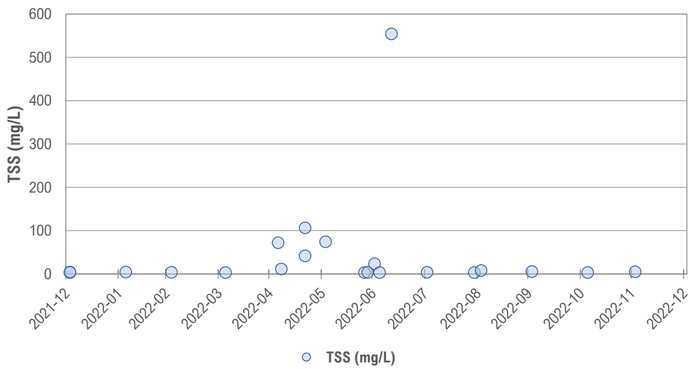
Eagle Gold Project Water Quality Database Dashboard (provided electronically)

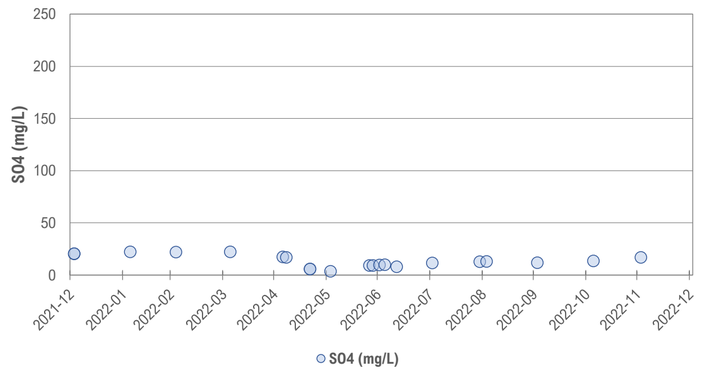
VICTORIA GOLD CORP

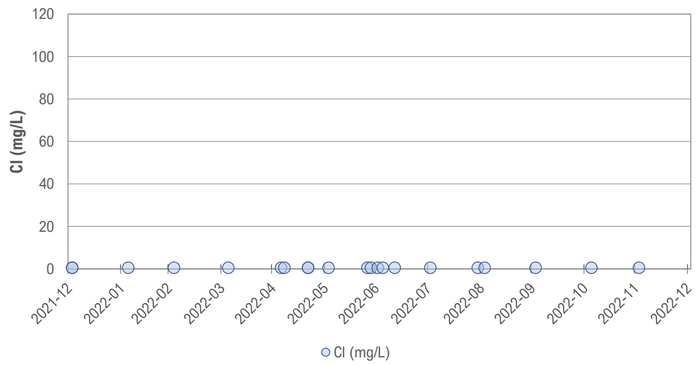
Appendix B: Graphical Results of 2022 Monitoring Data

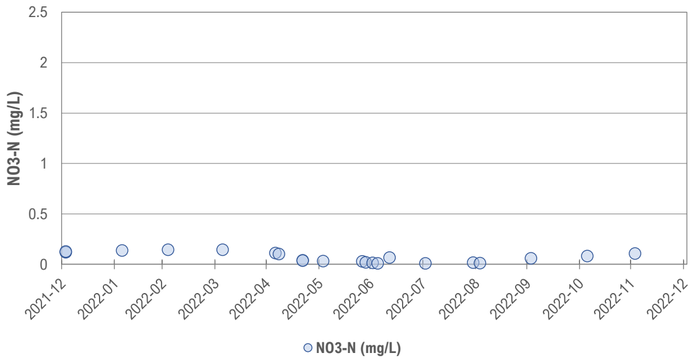
VICTORIA GOLD CORP

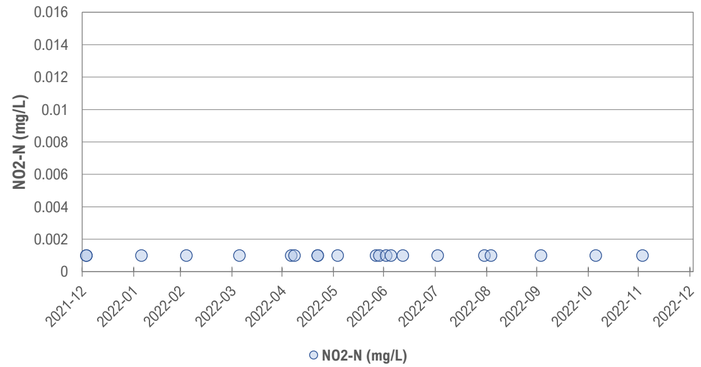
Station ID: W1

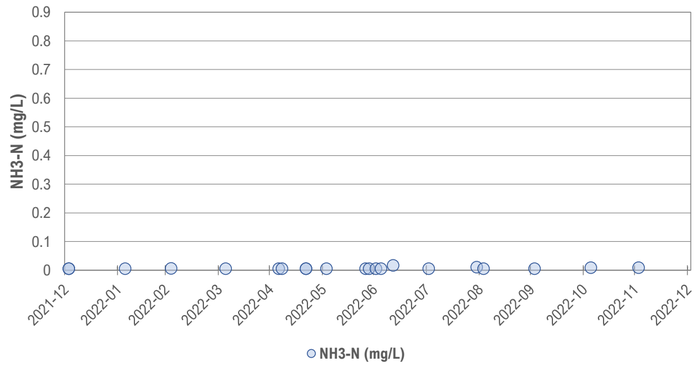












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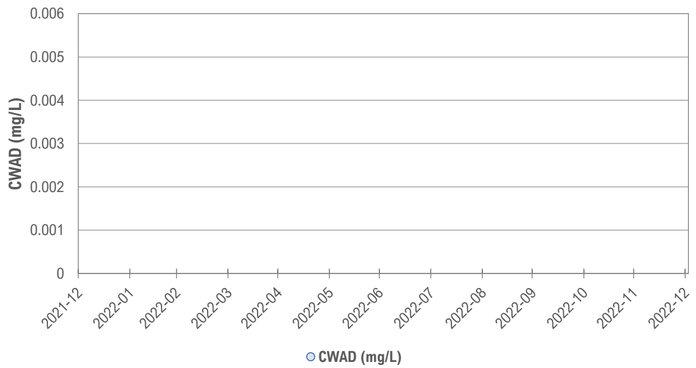

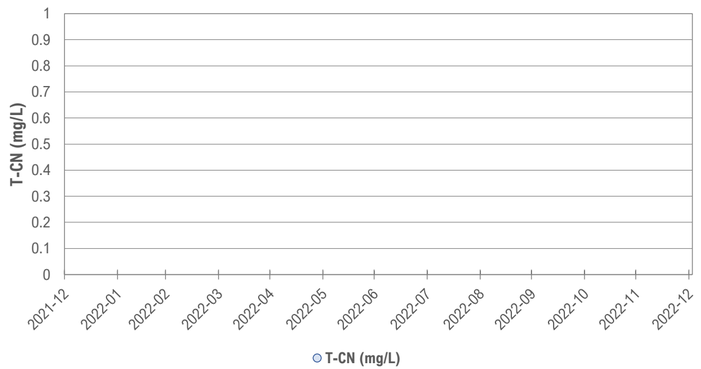

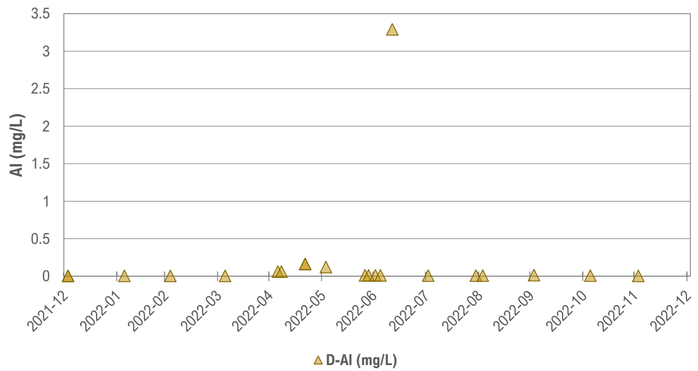

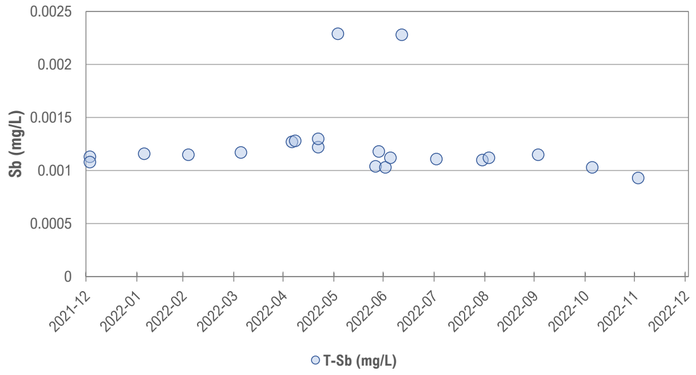

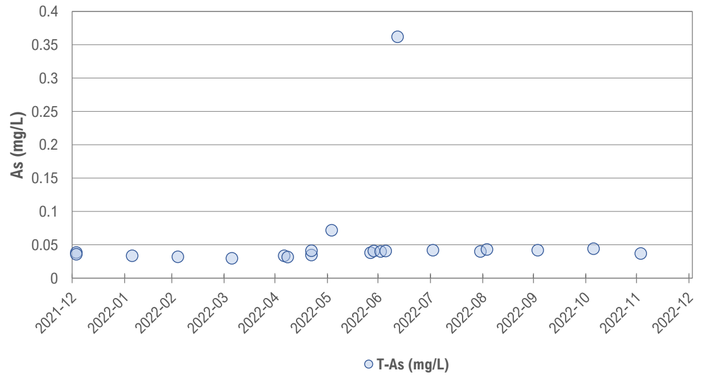

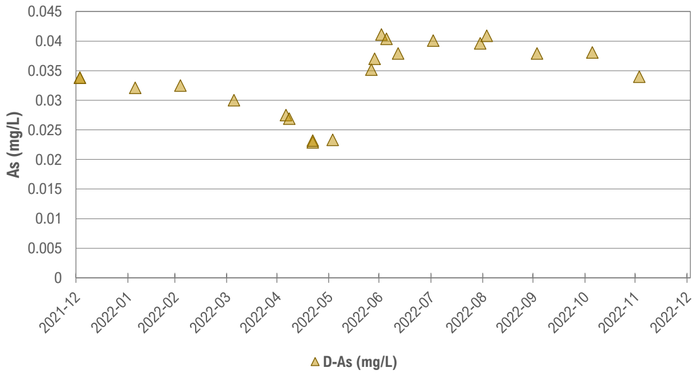

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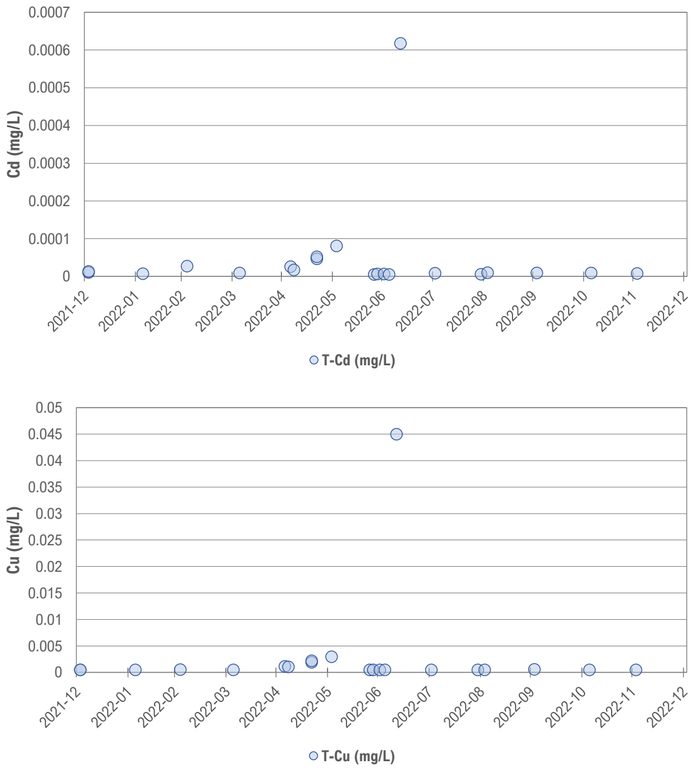

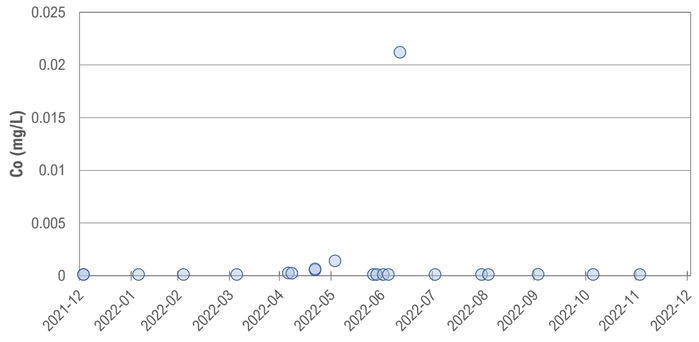

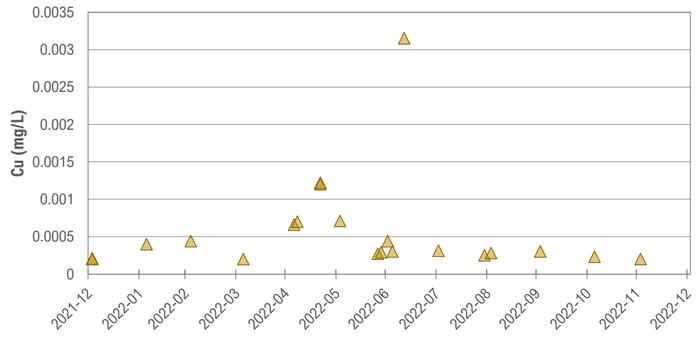

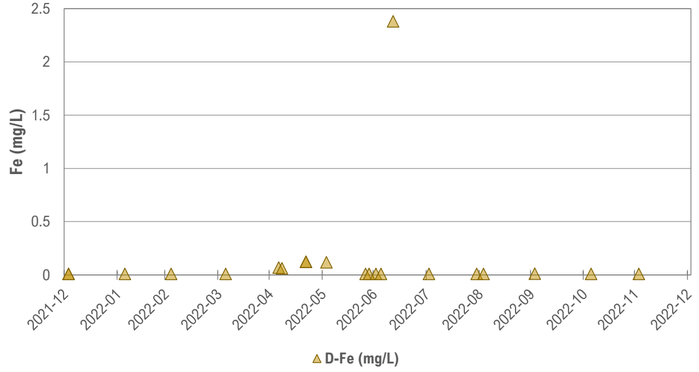

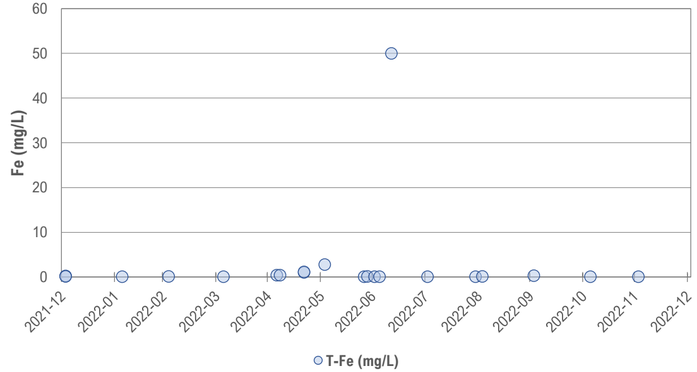

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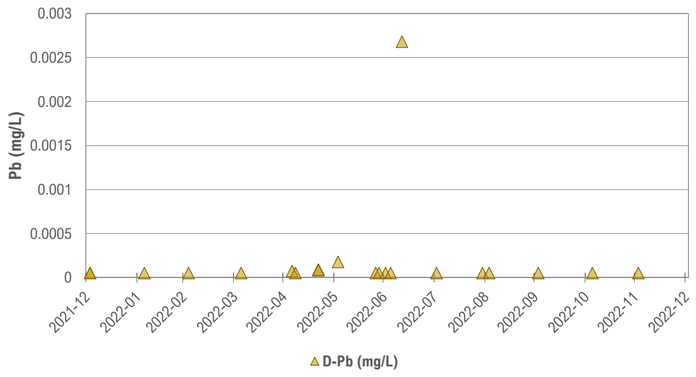

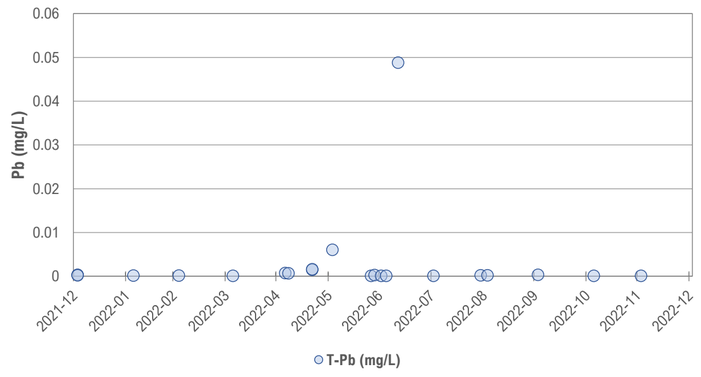

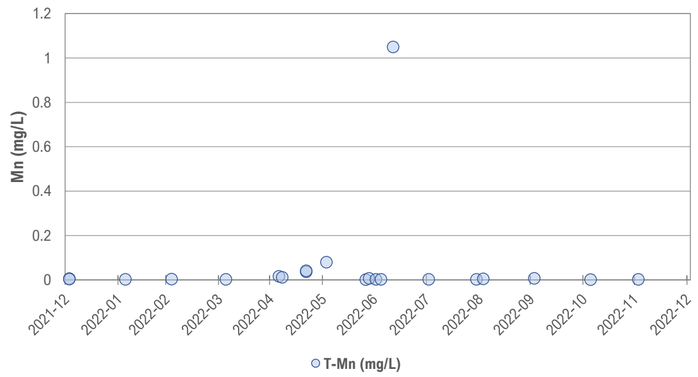

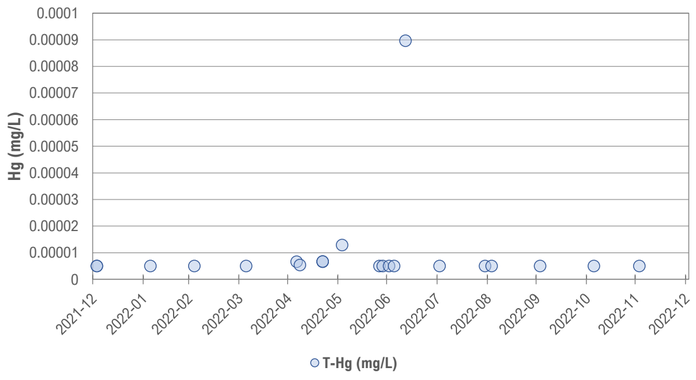

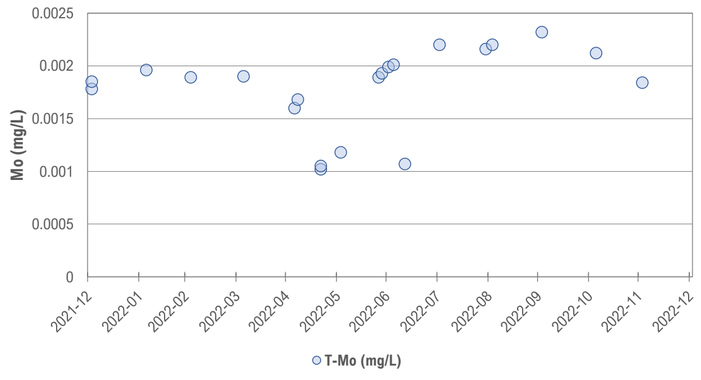

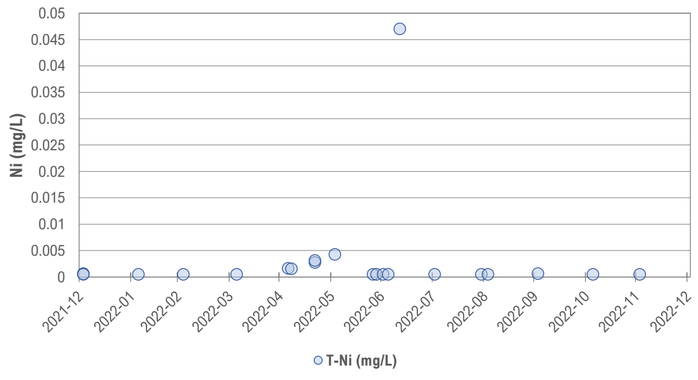

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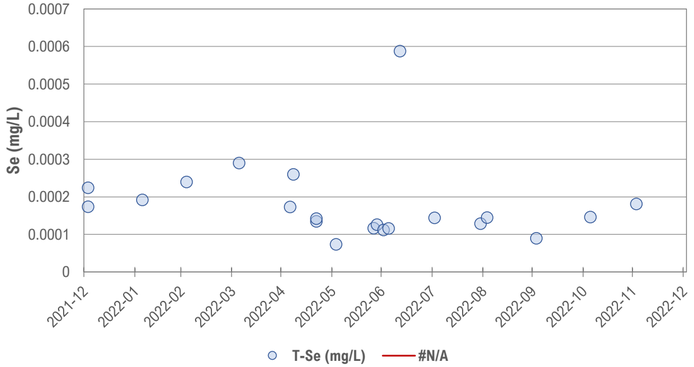

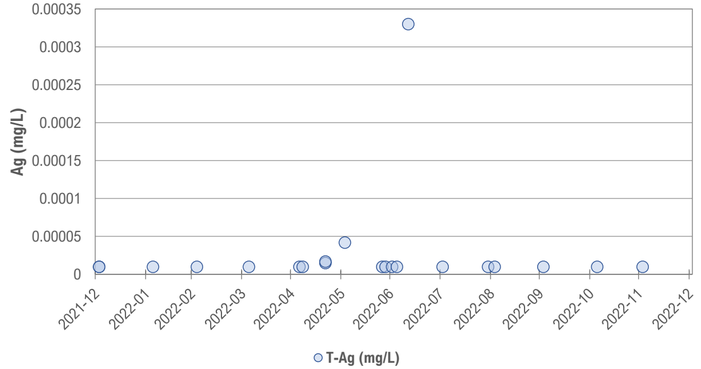

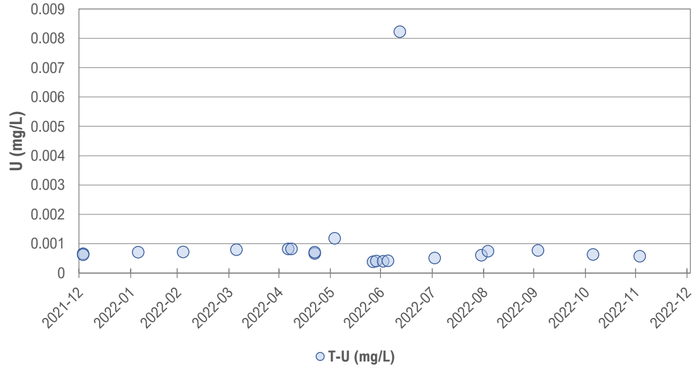

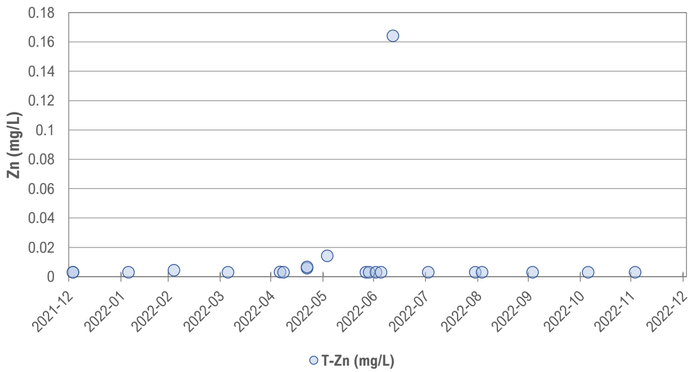

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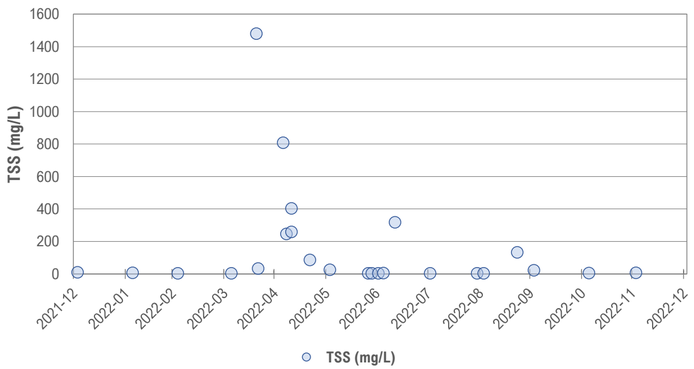

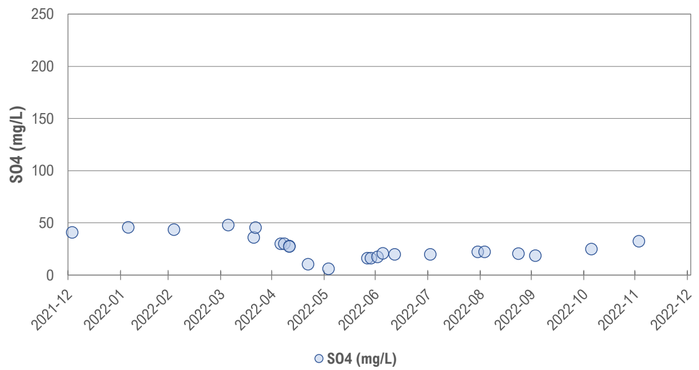

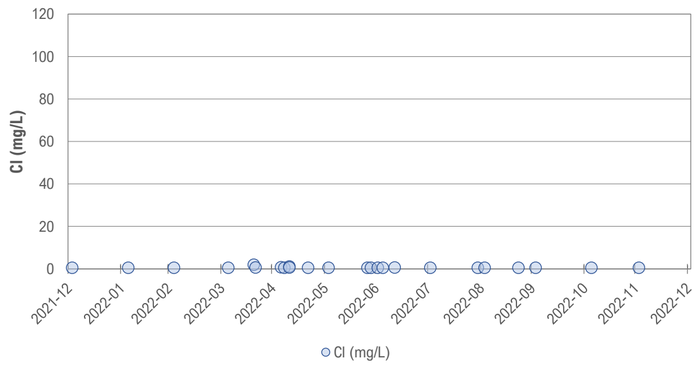

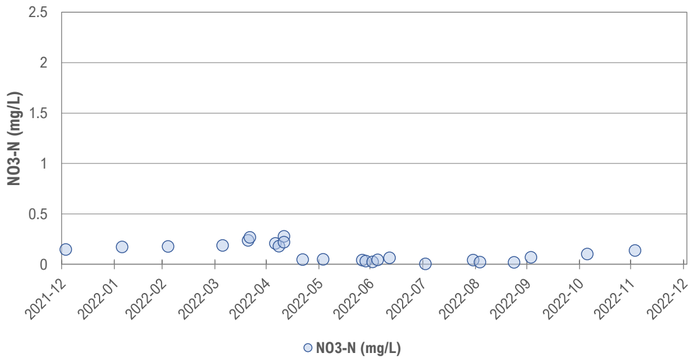

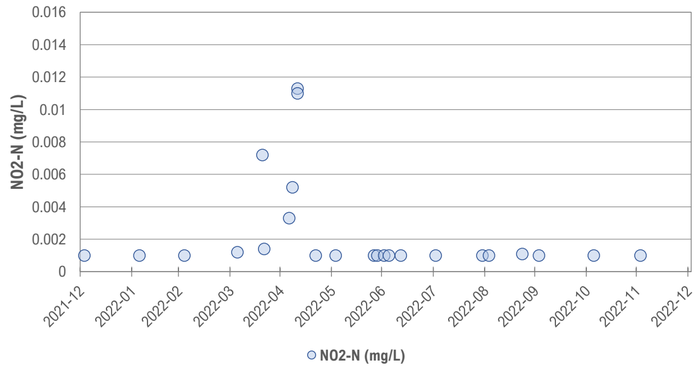

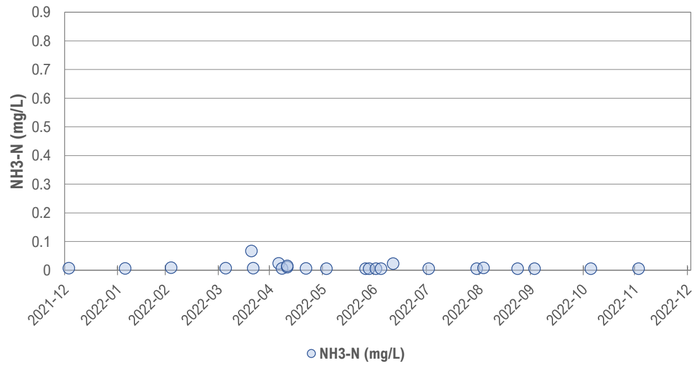

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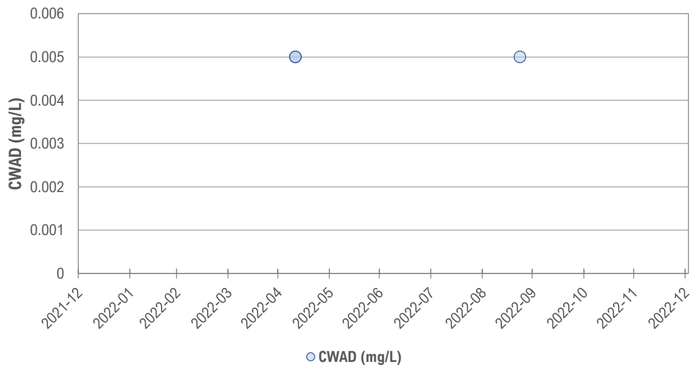

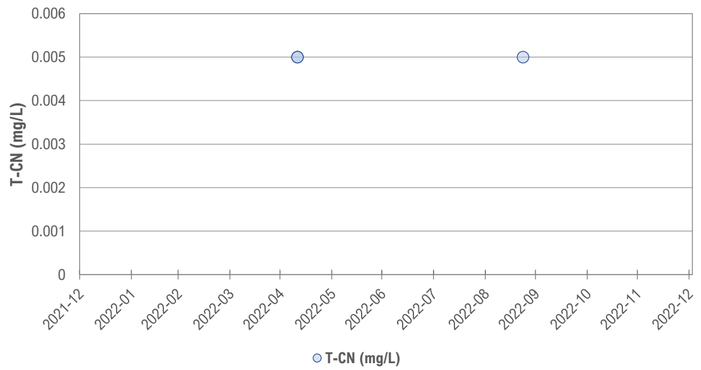

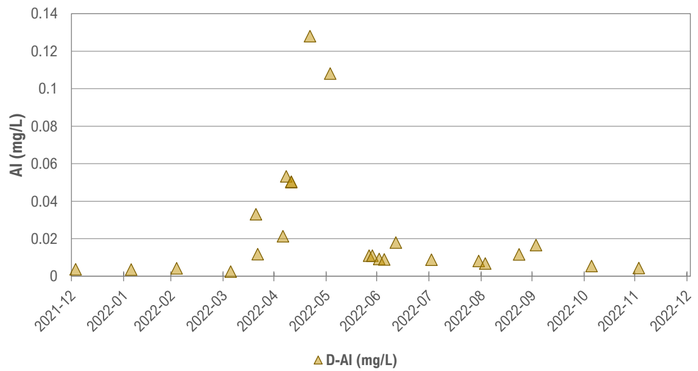

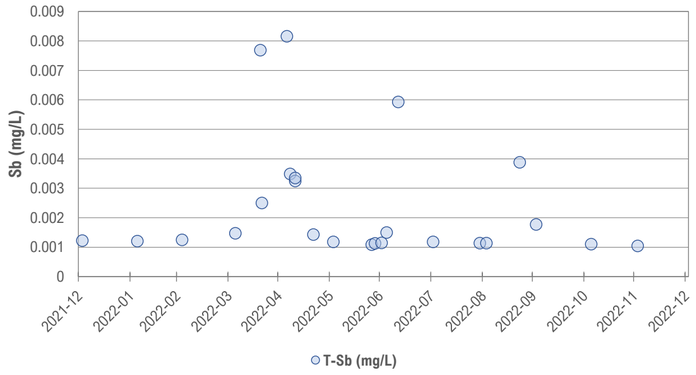

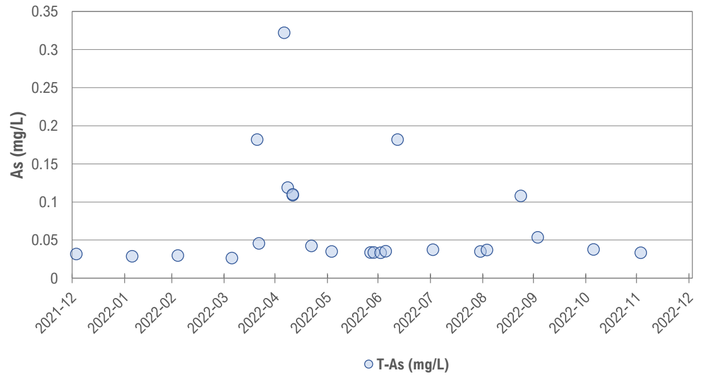

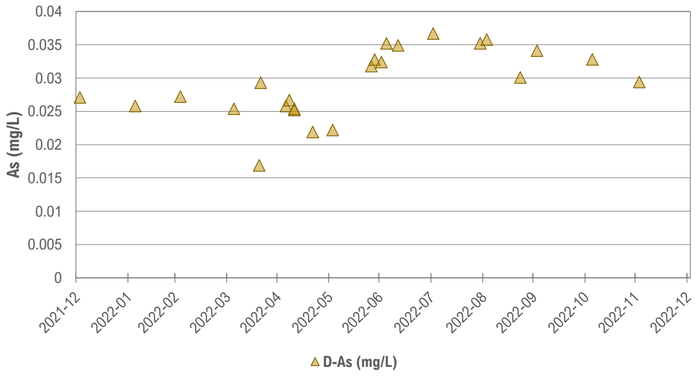

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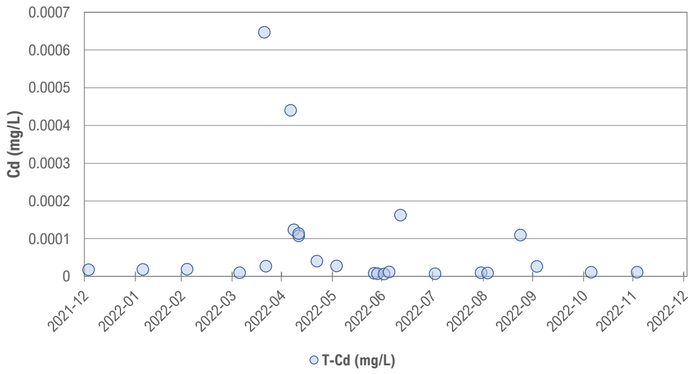

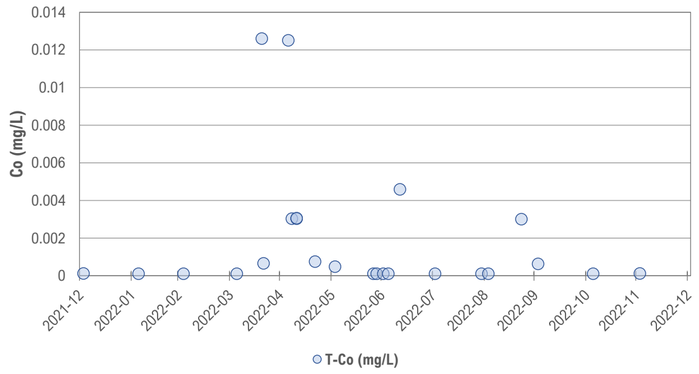

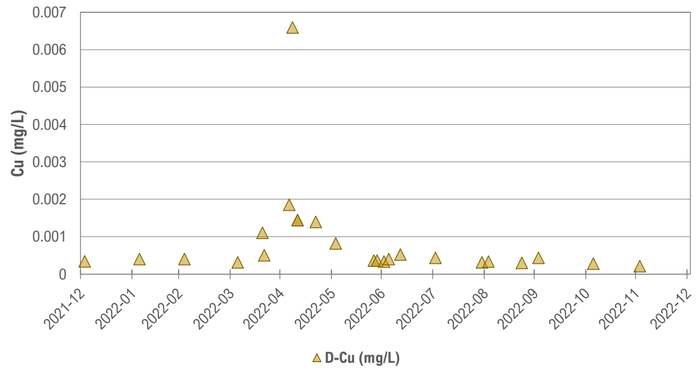

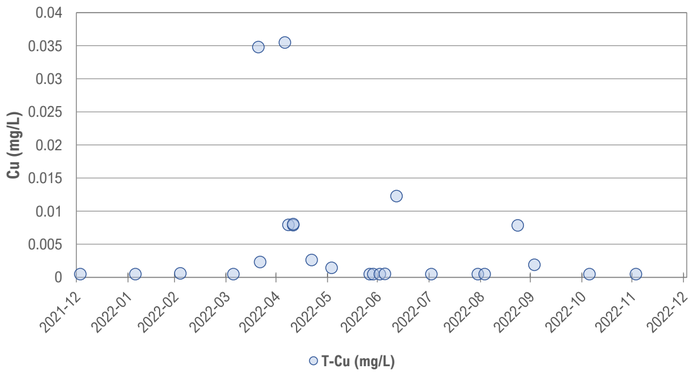

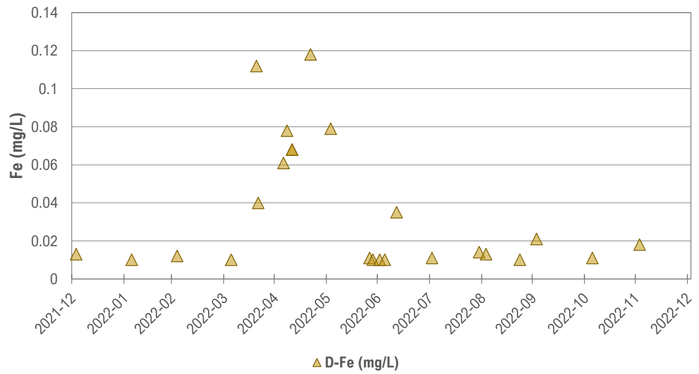

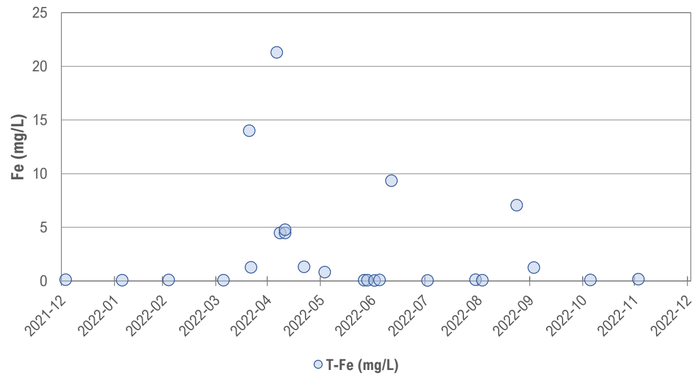

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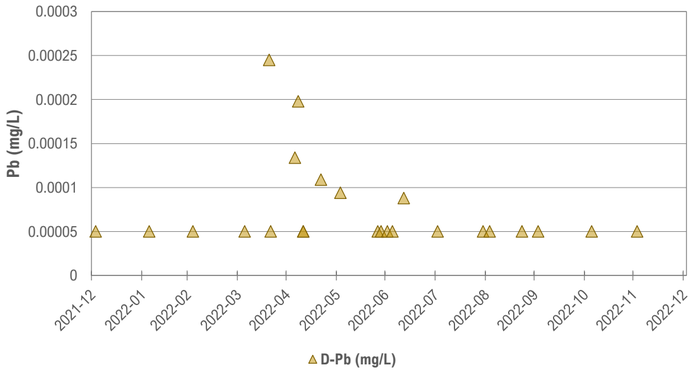

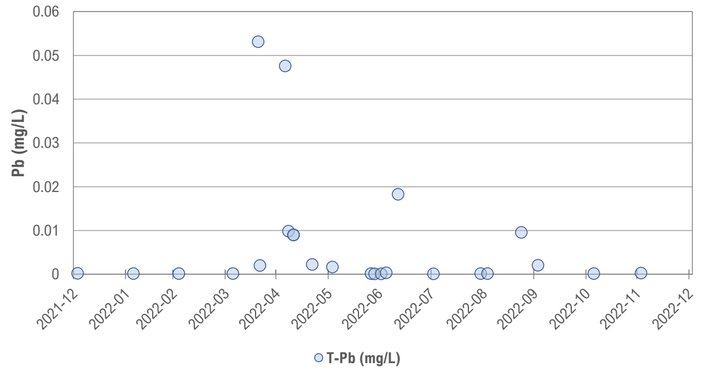

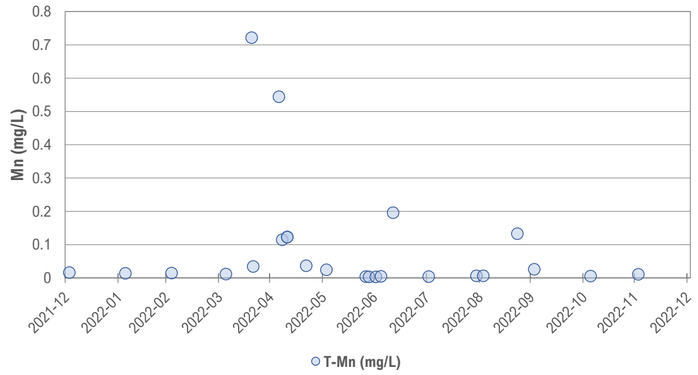

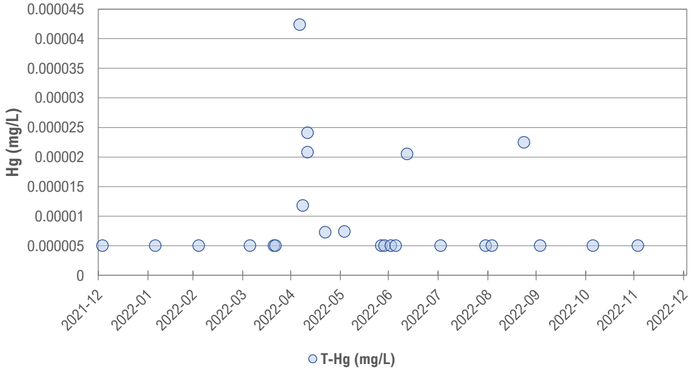

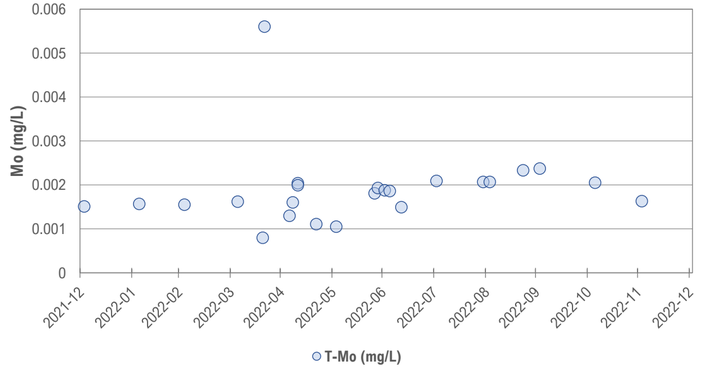

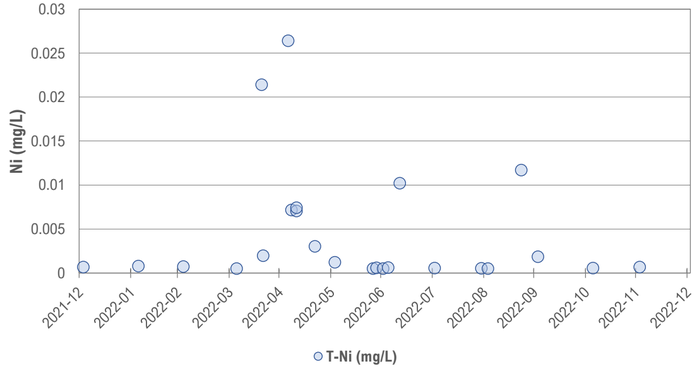

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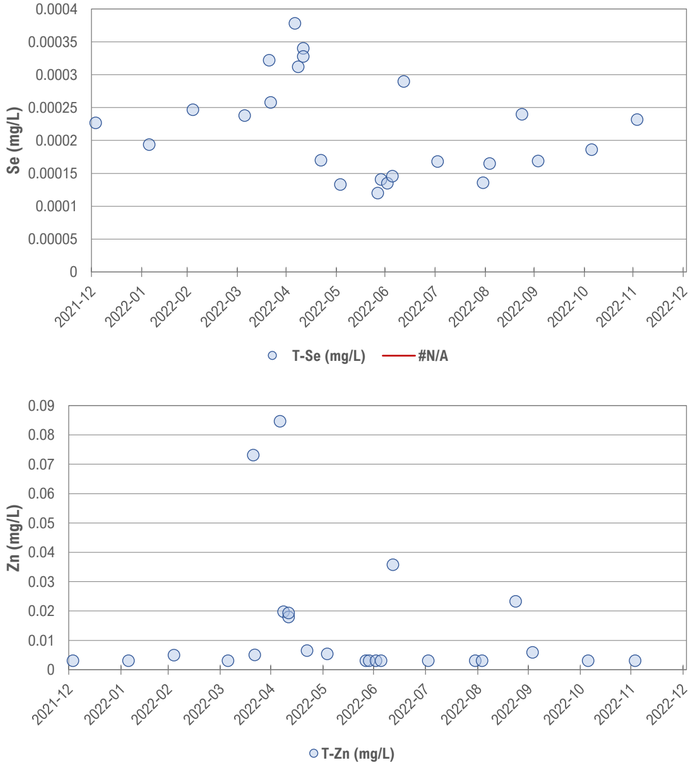

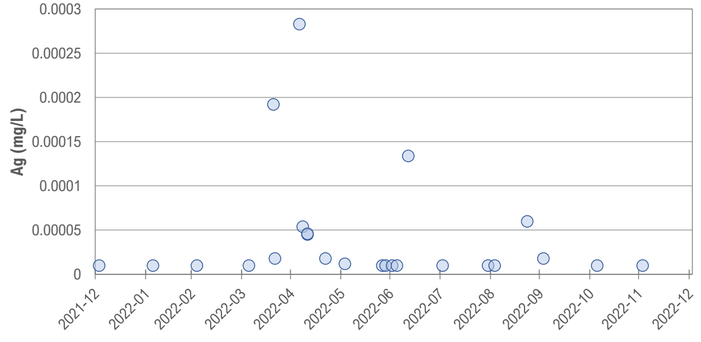

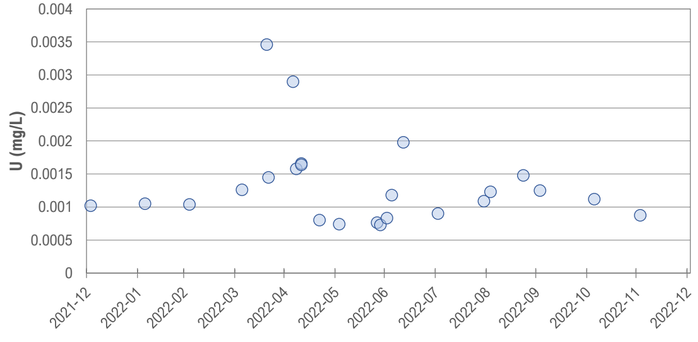

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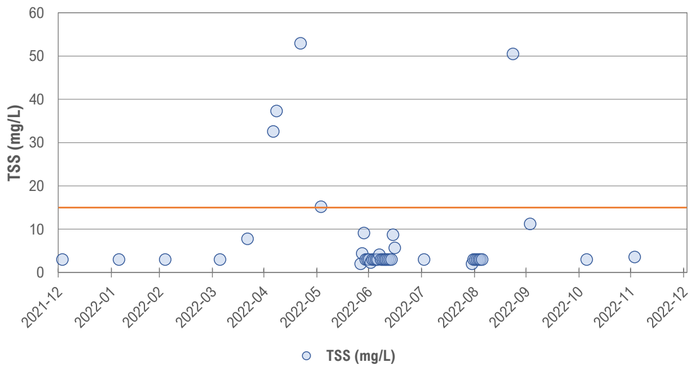

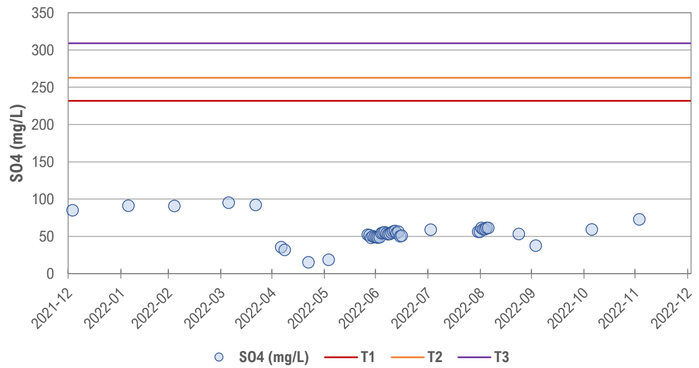

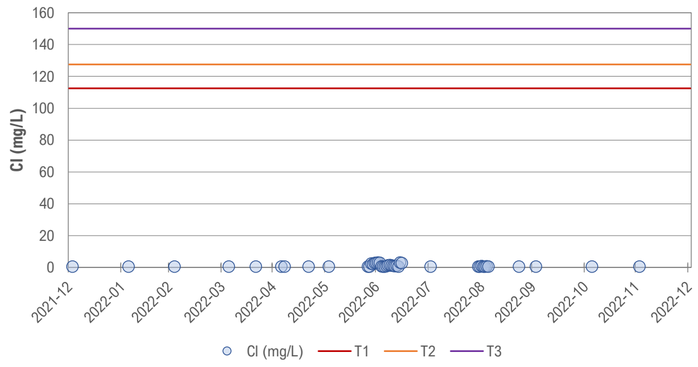

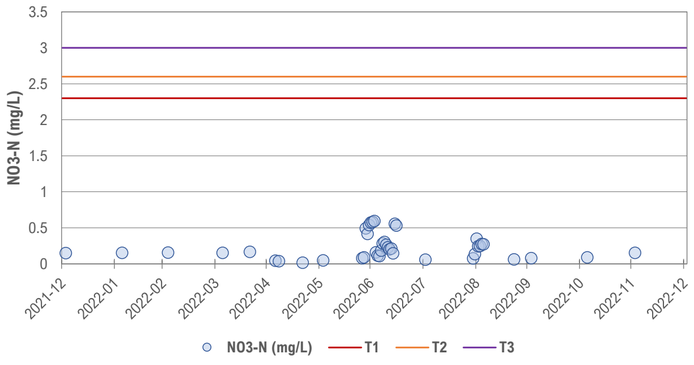

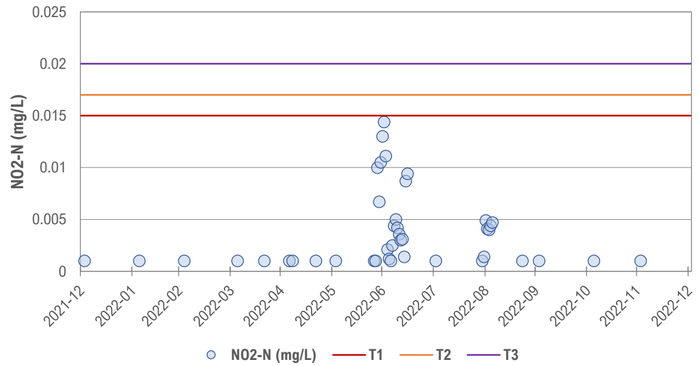

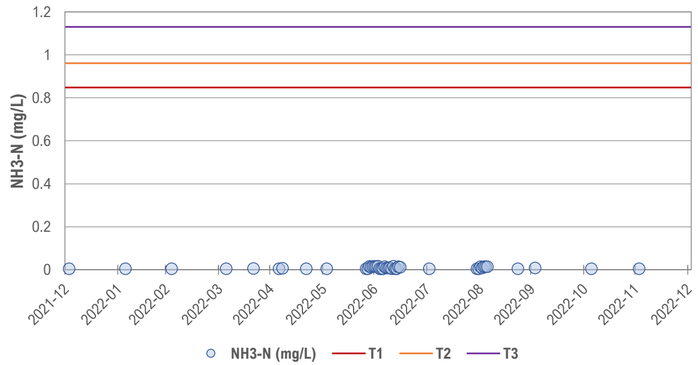

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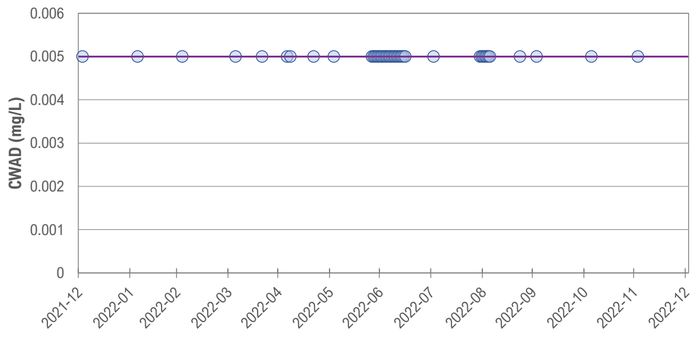

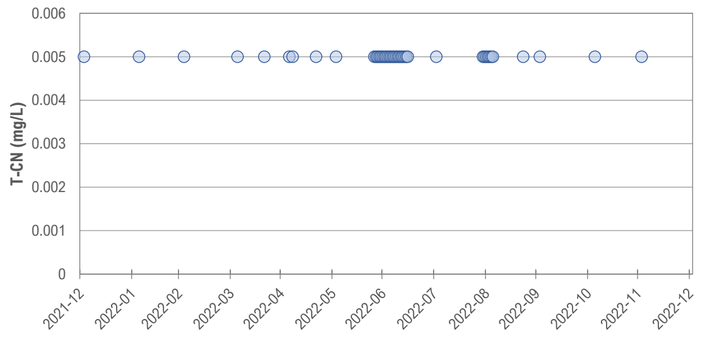

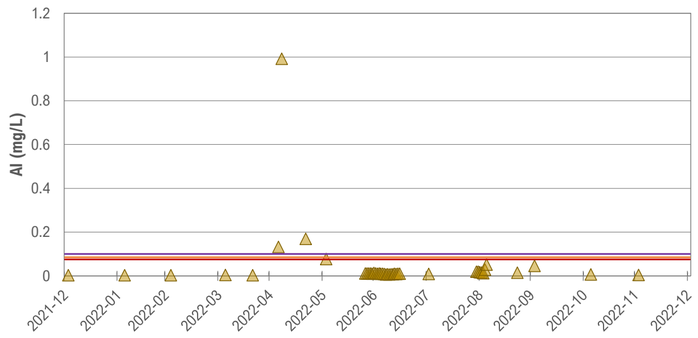

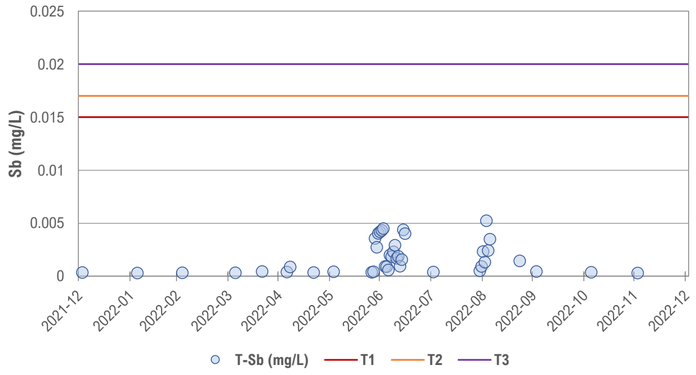

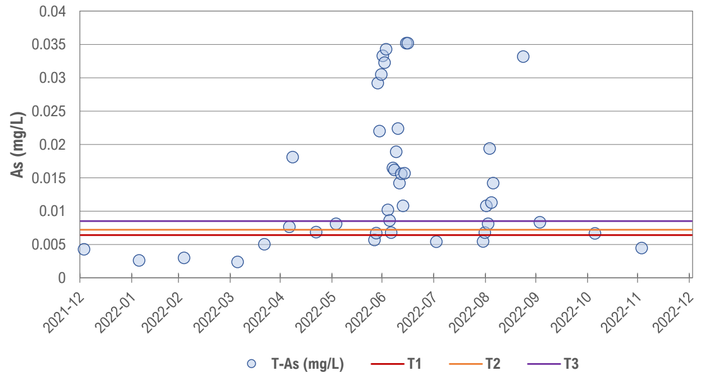

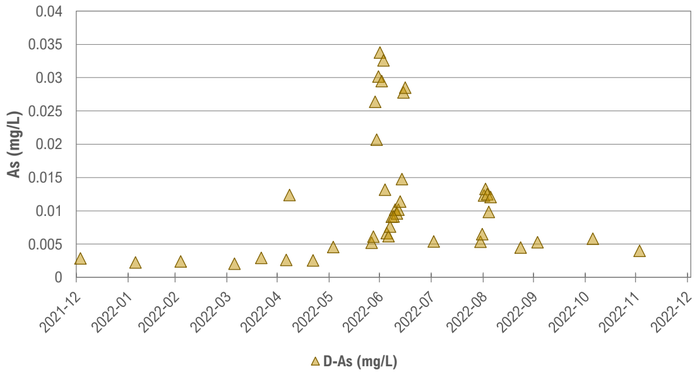

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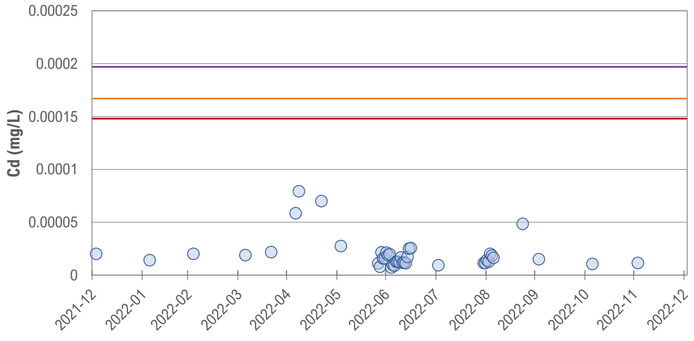

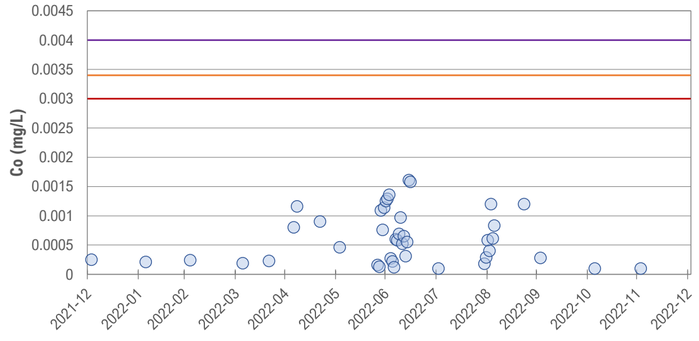

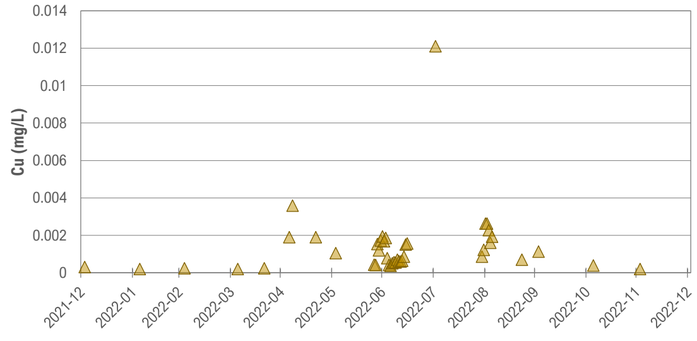

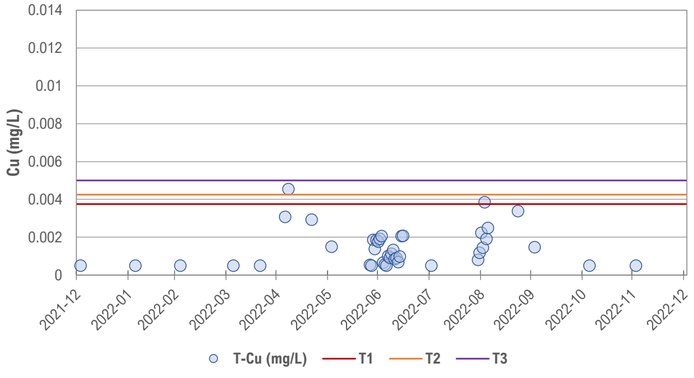

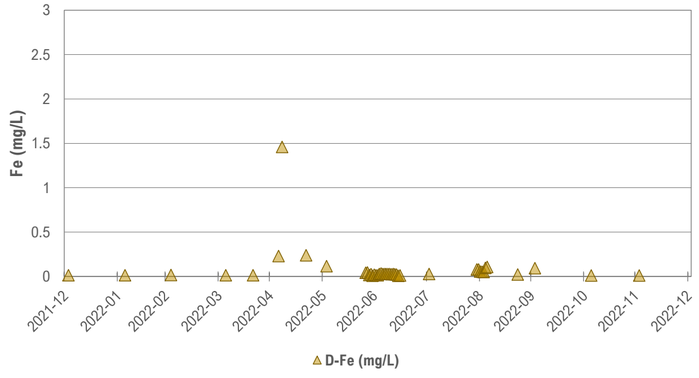

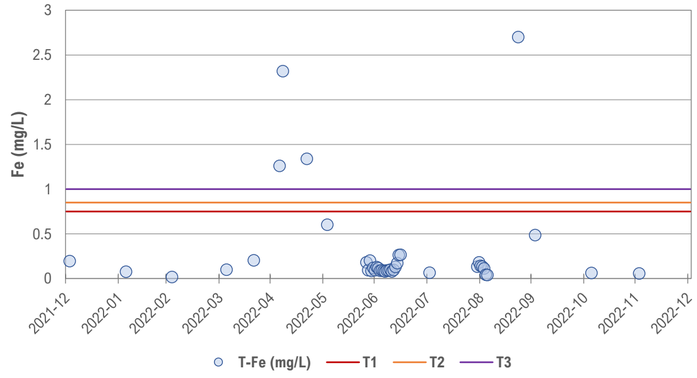

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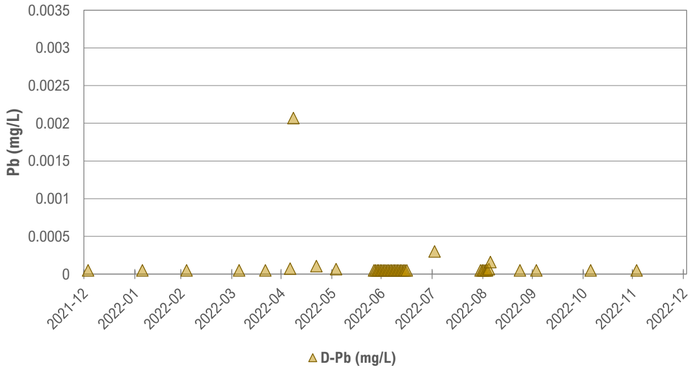

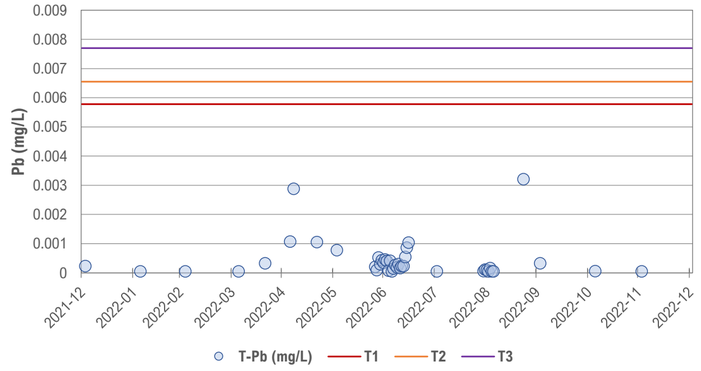

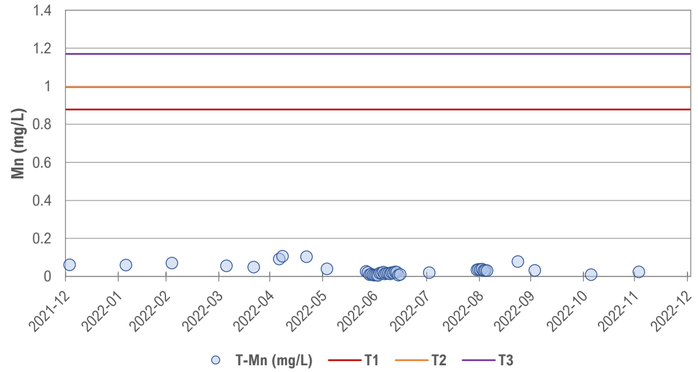

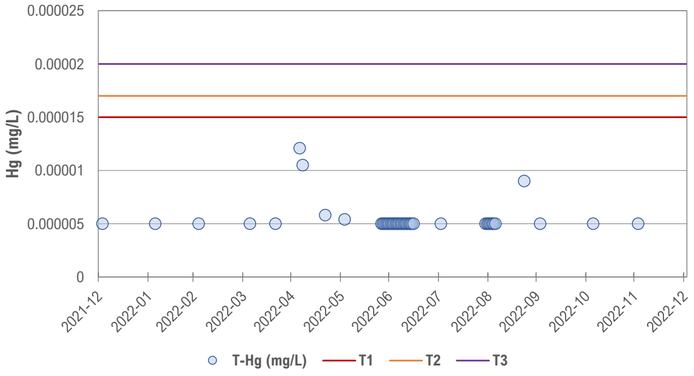

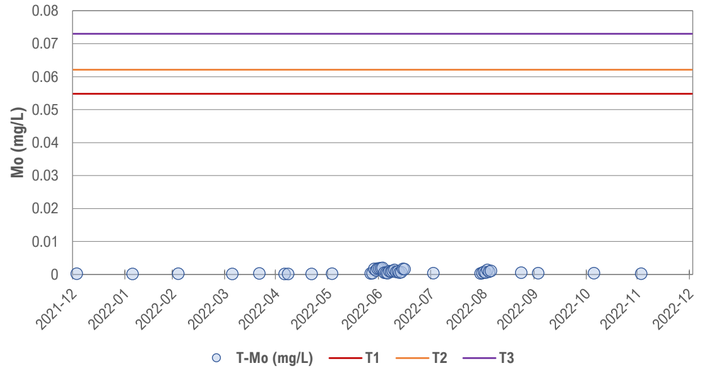

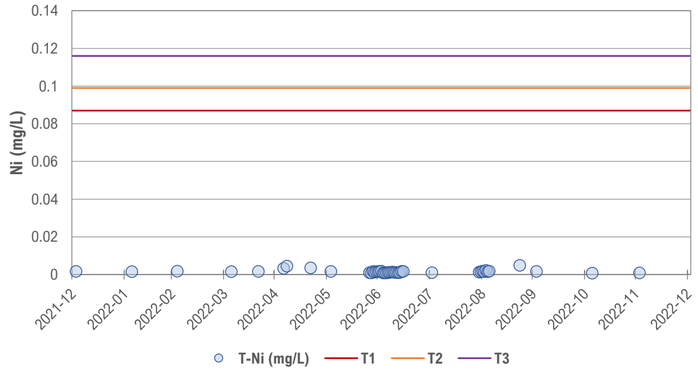

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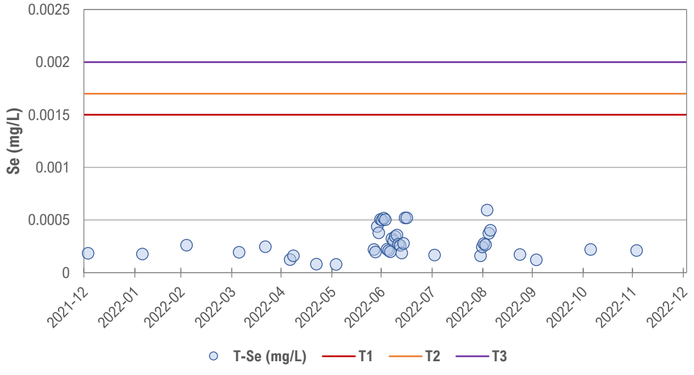

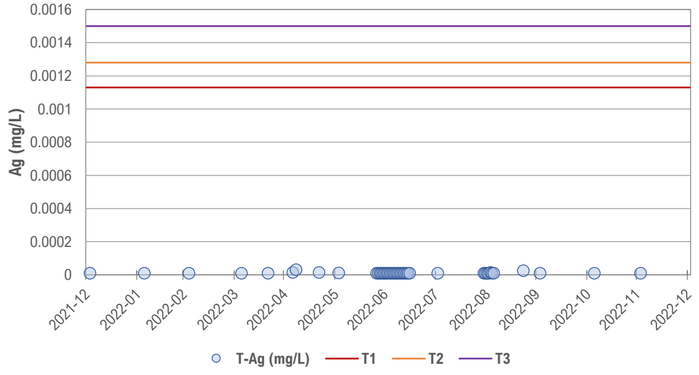

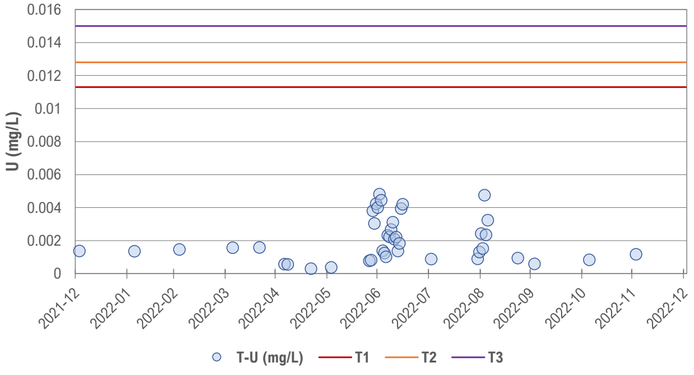

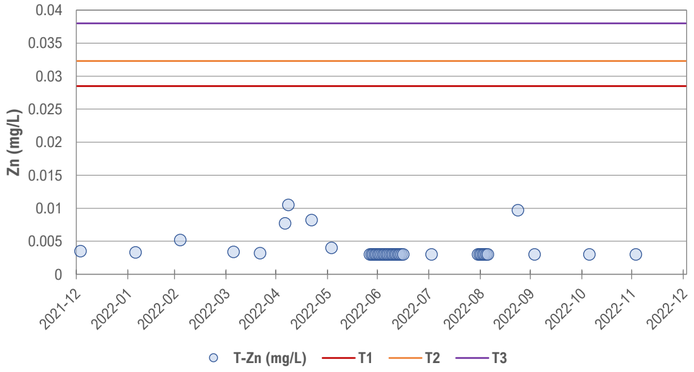

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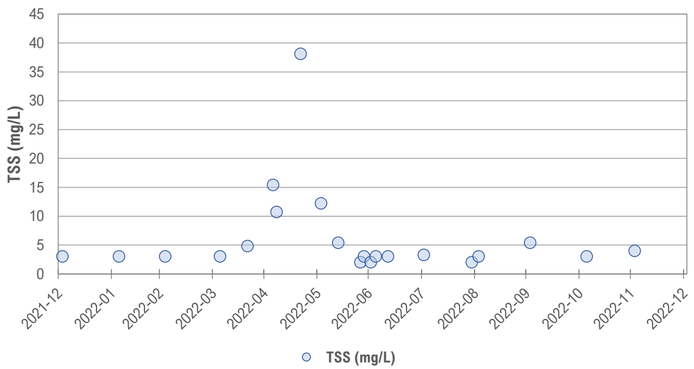

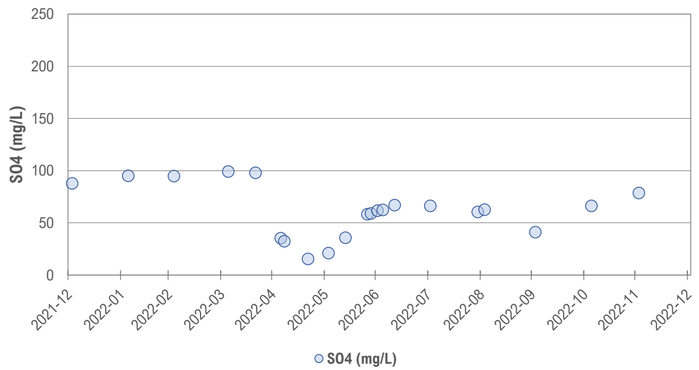

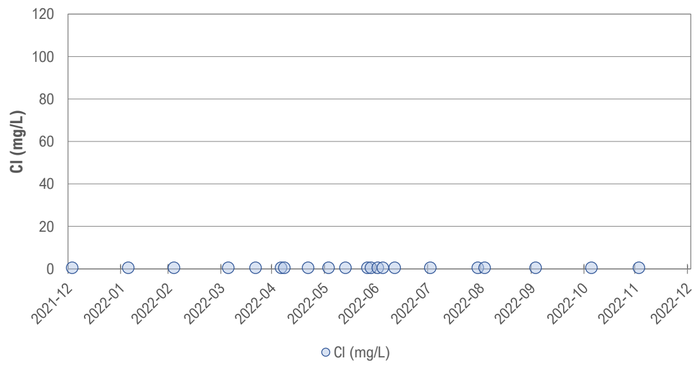

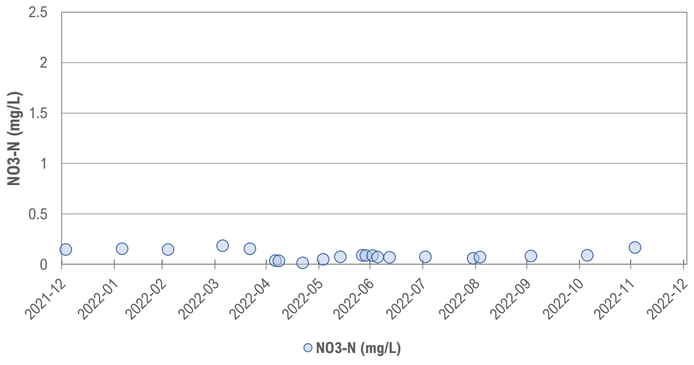

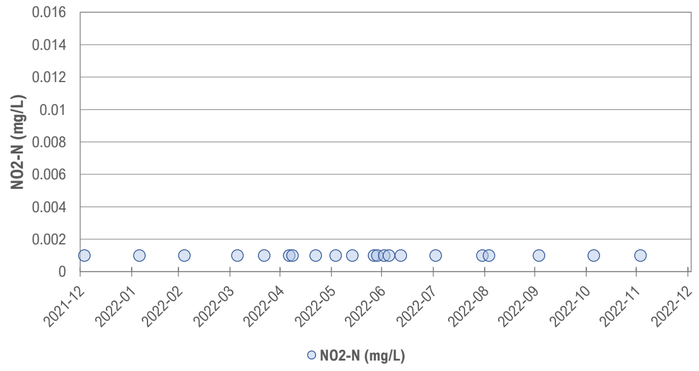

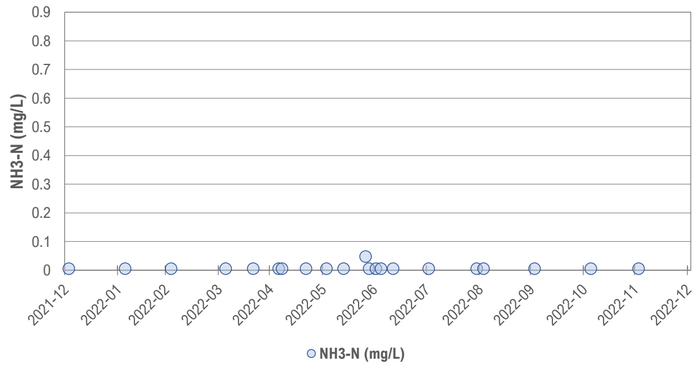

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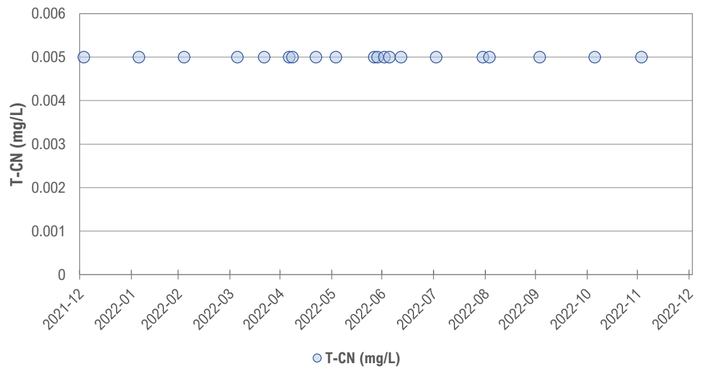

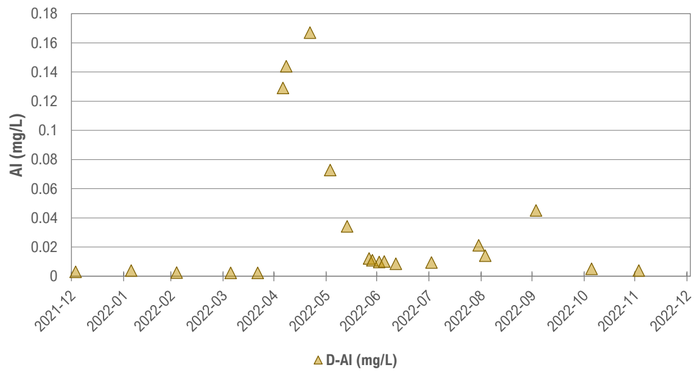

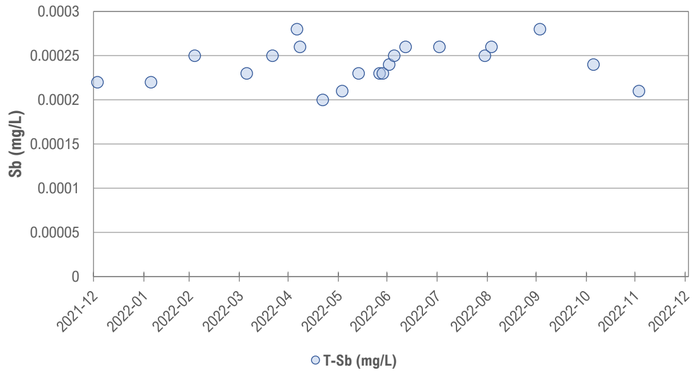

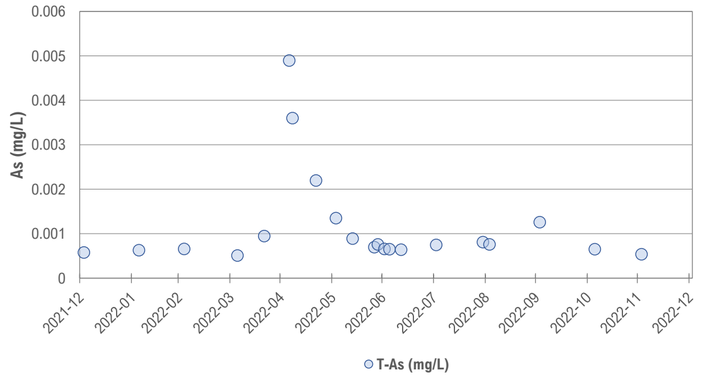

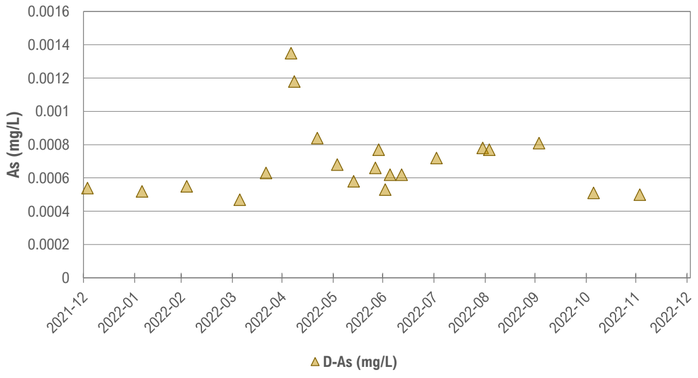

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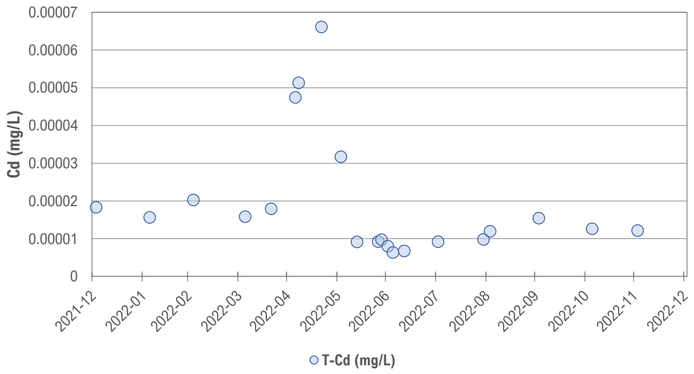

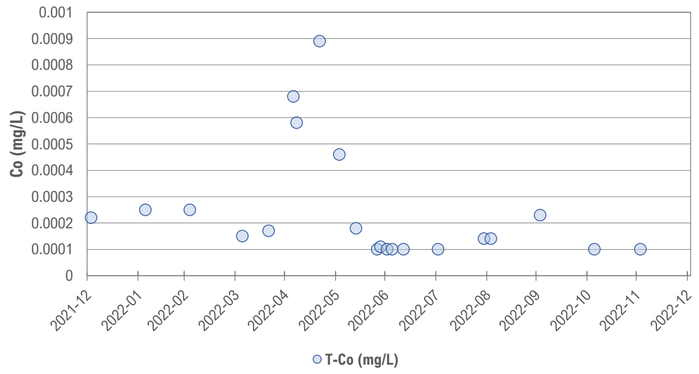

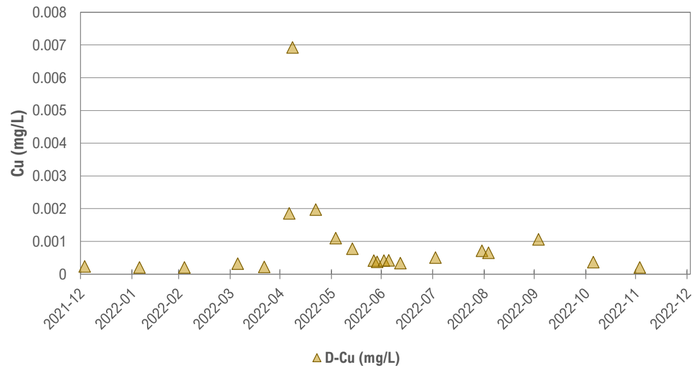

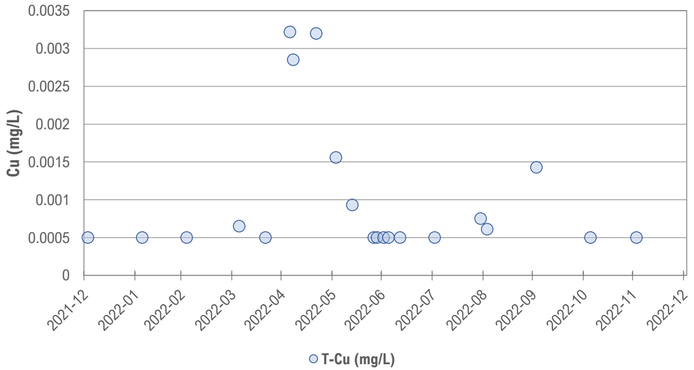

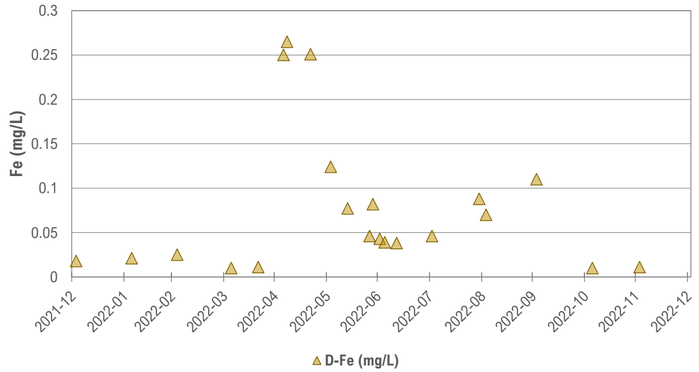

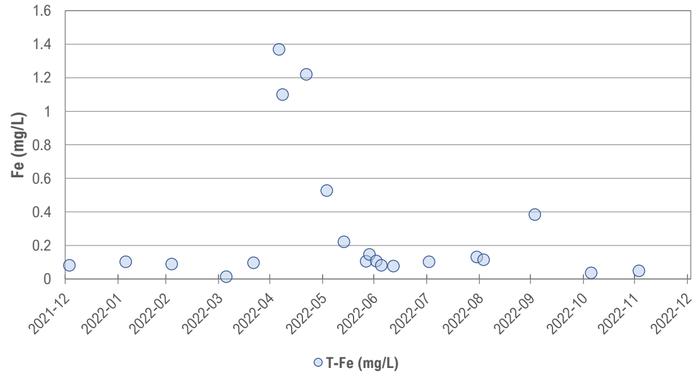

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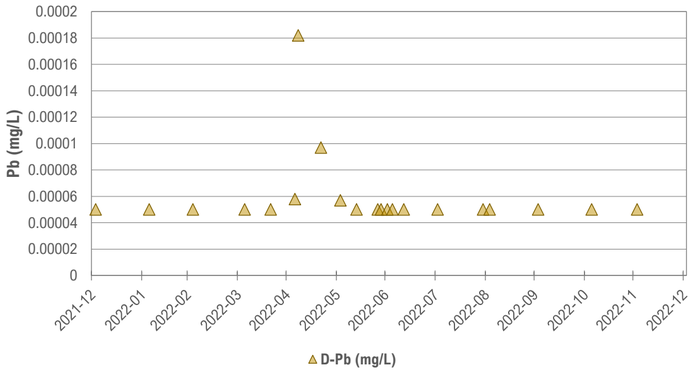

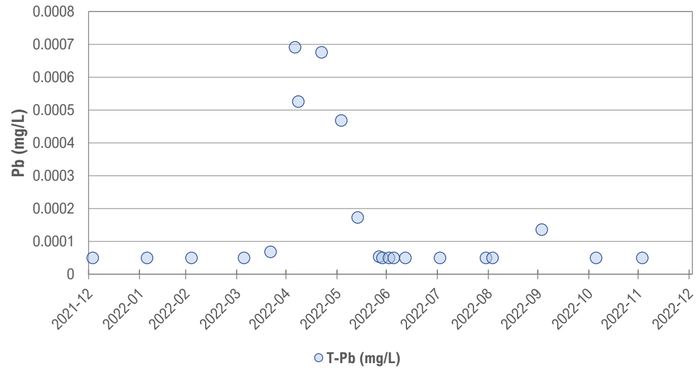

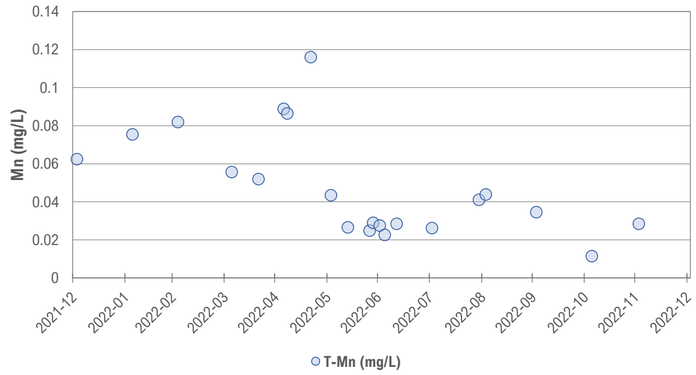

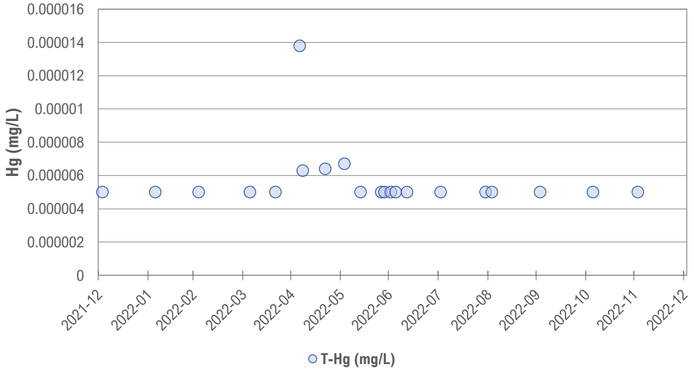

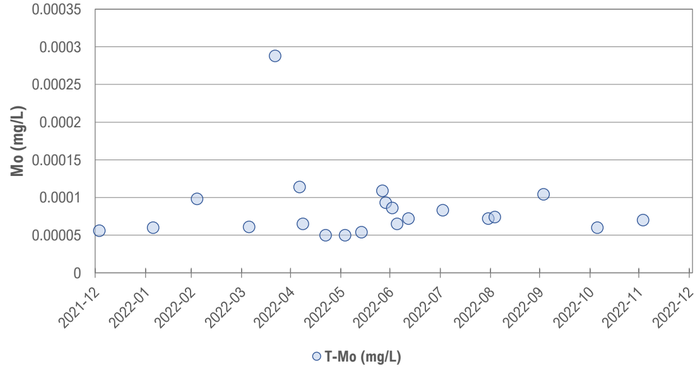

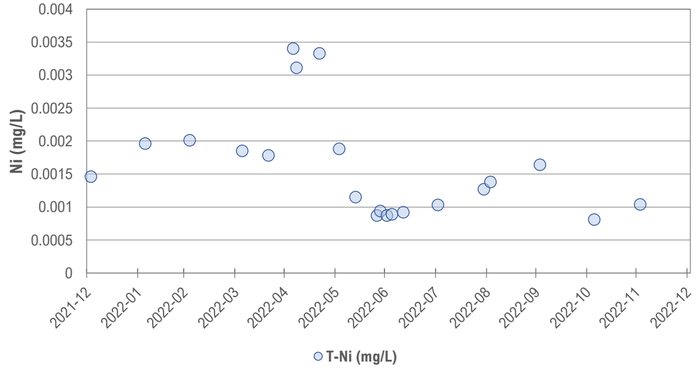

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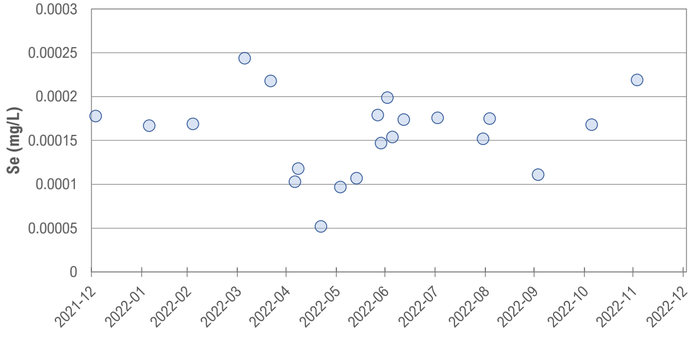

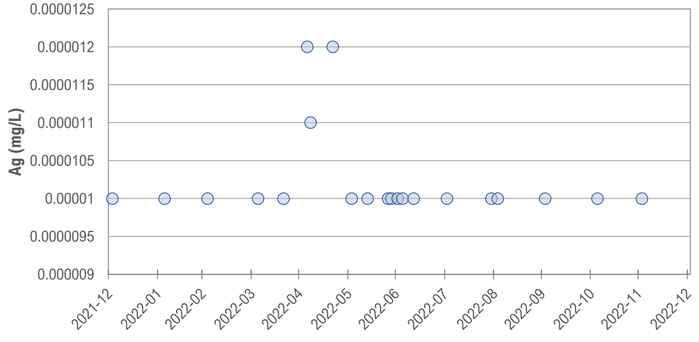

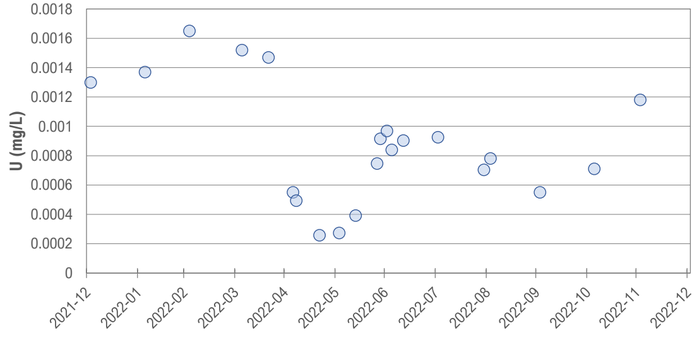

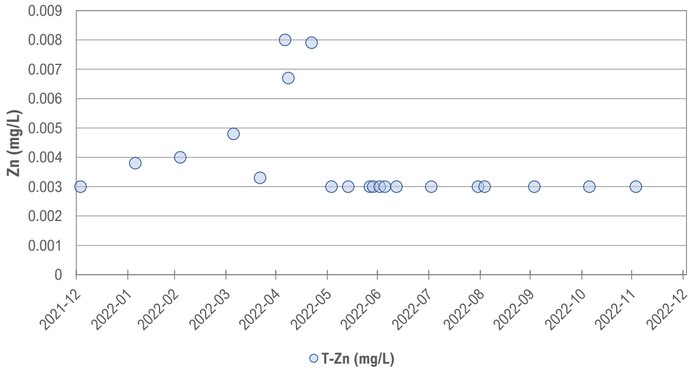

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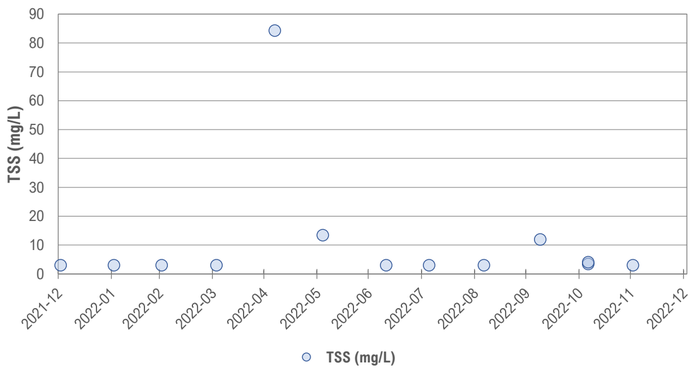

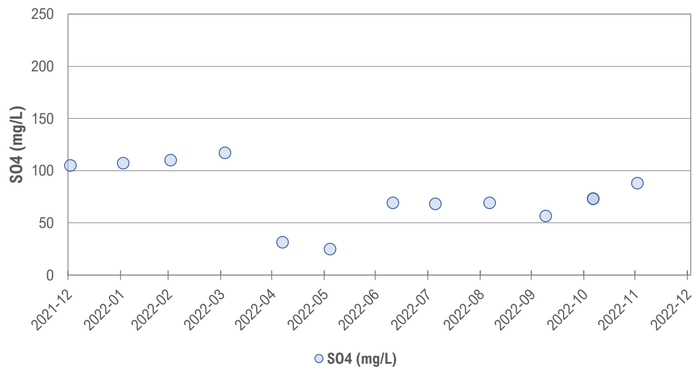

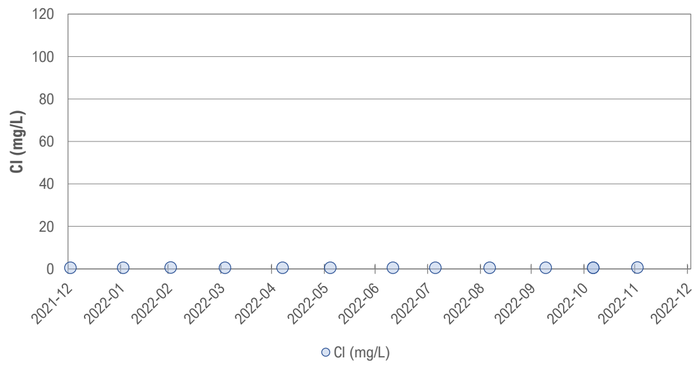

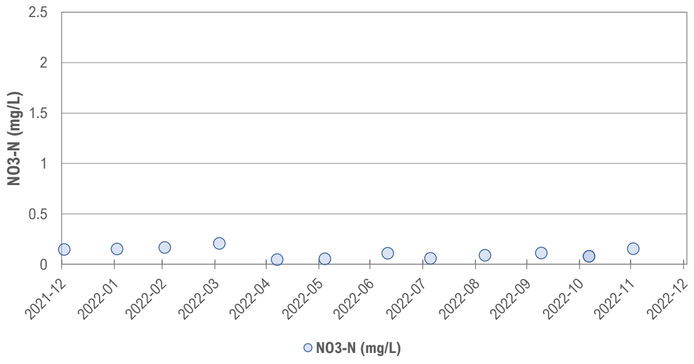

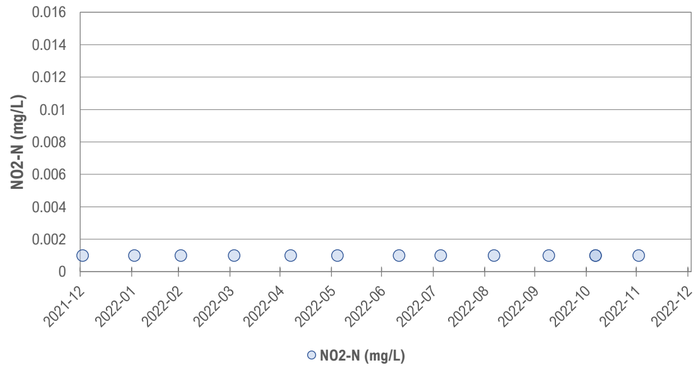

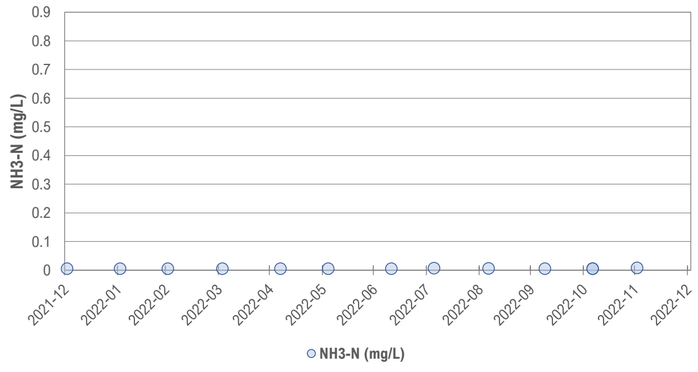

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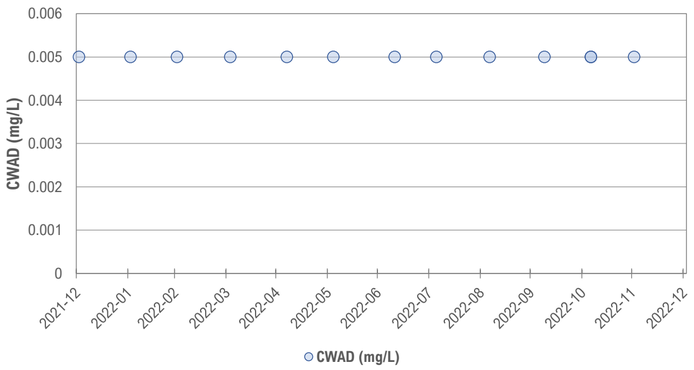

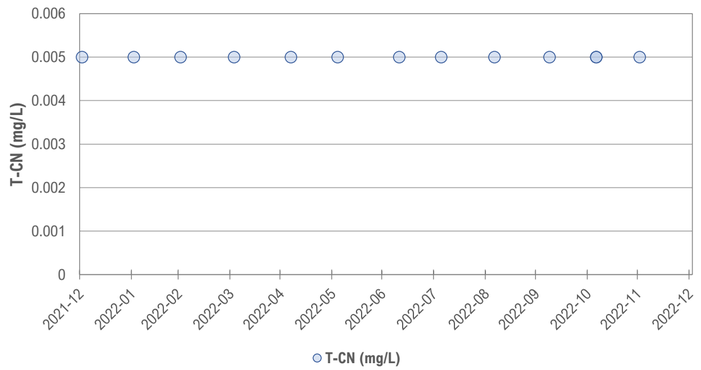

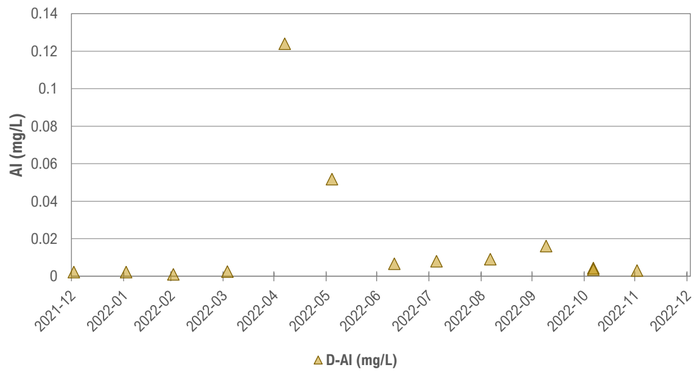

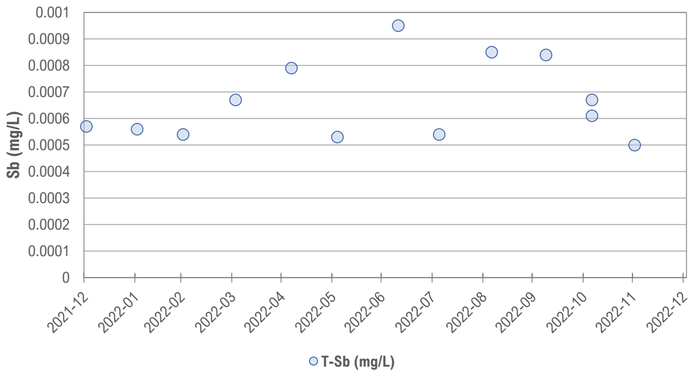

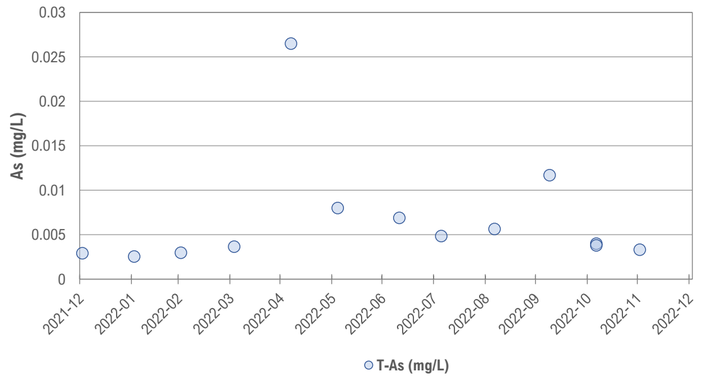

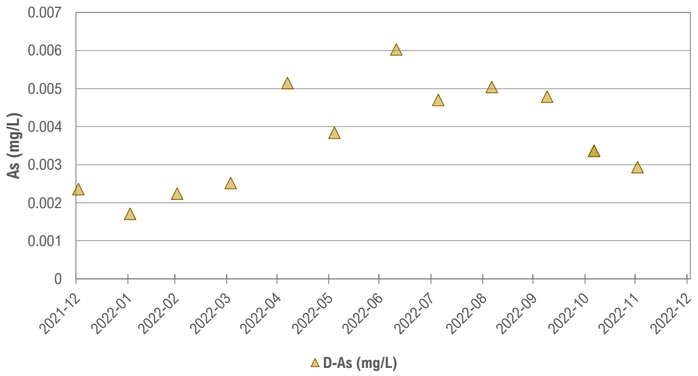

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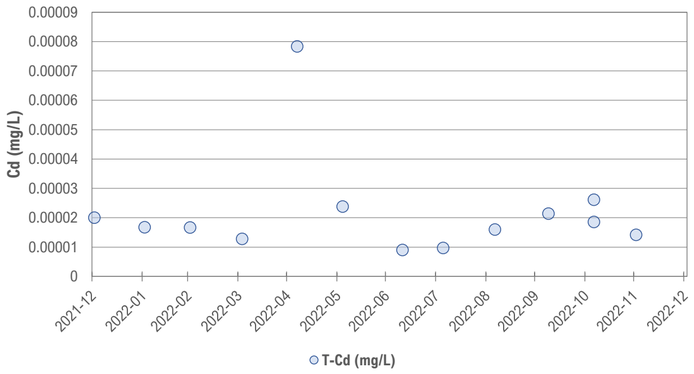

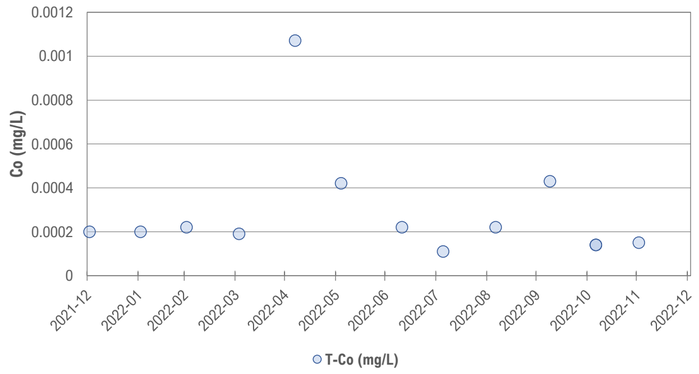

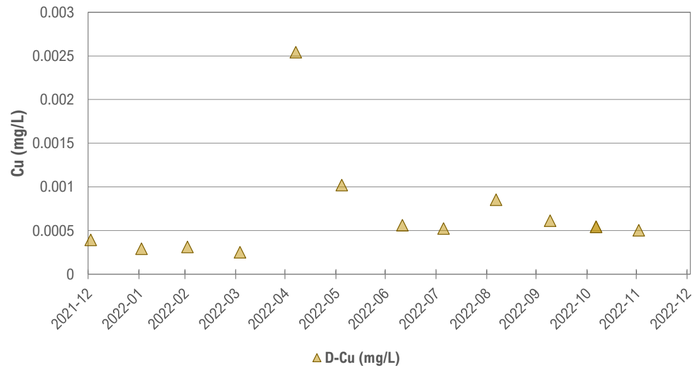

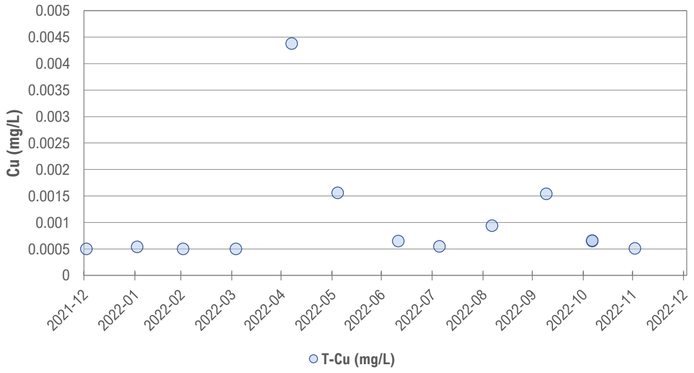

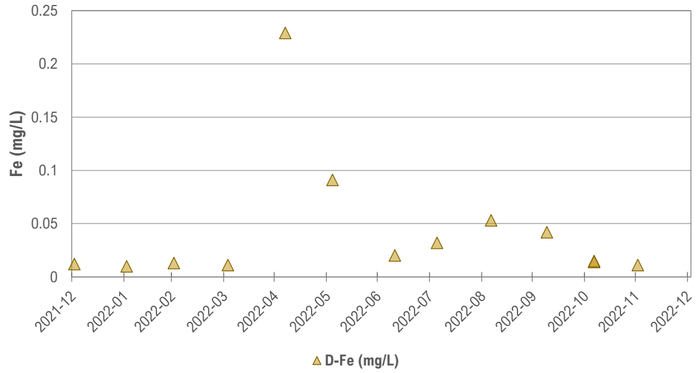

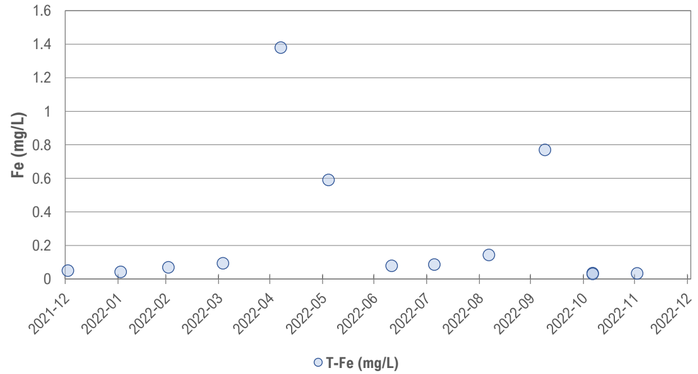

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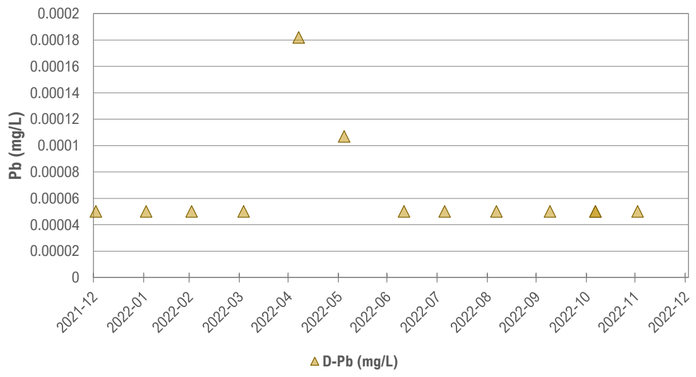

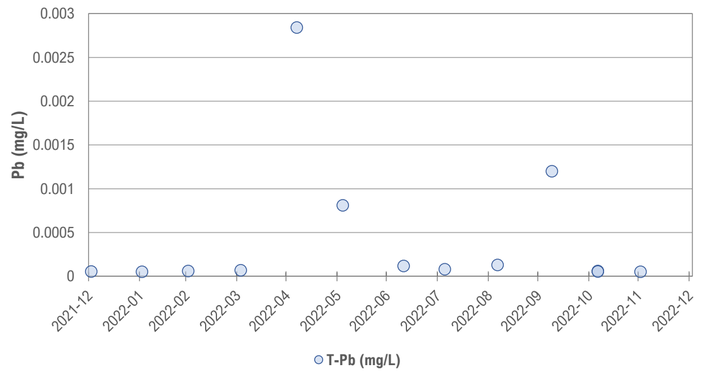

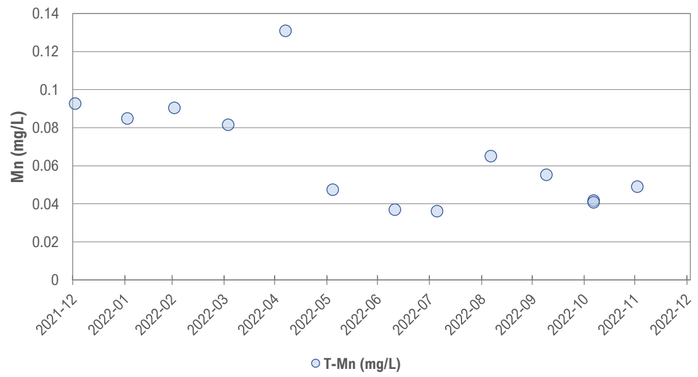

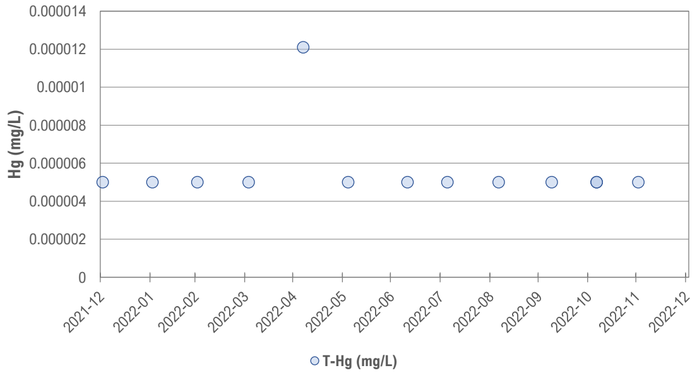

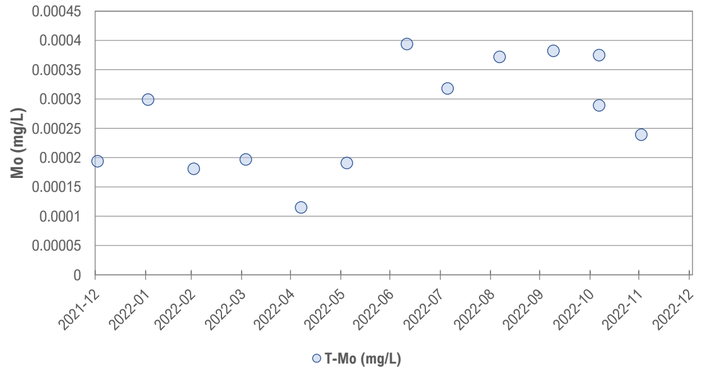

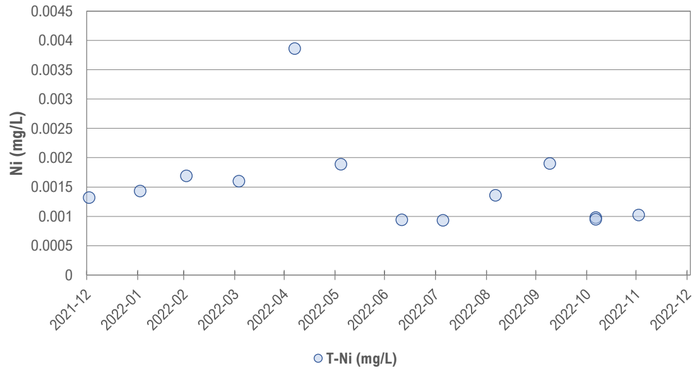

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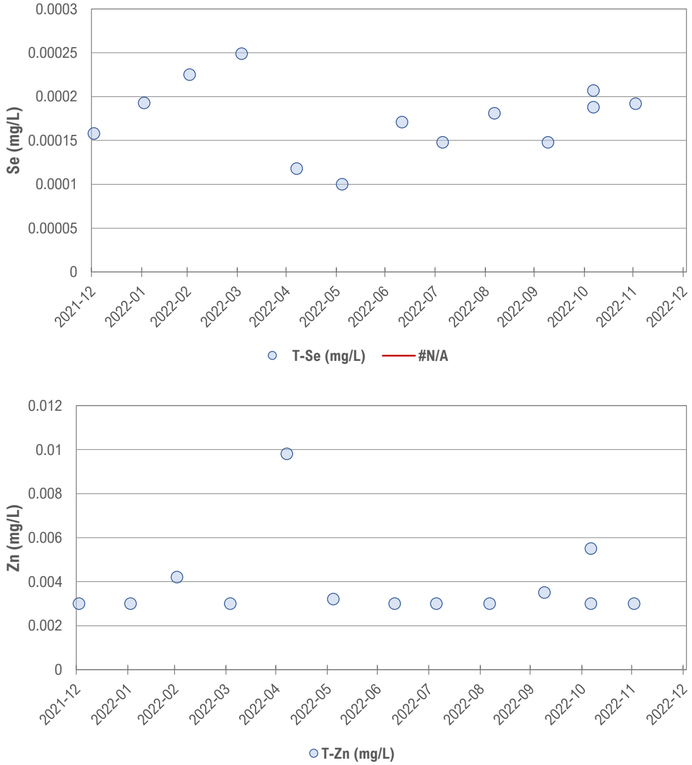

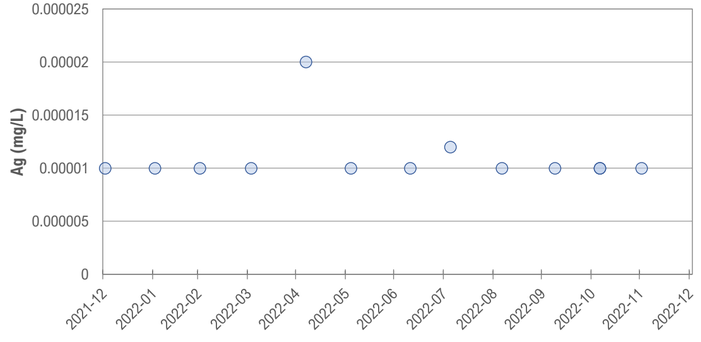

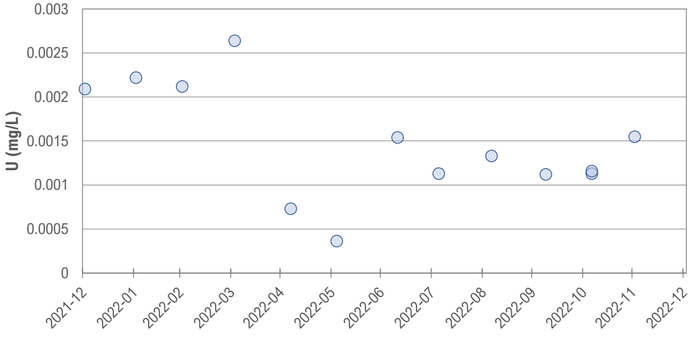

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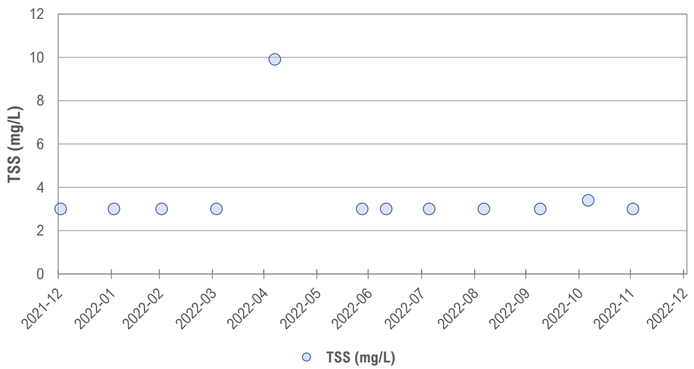

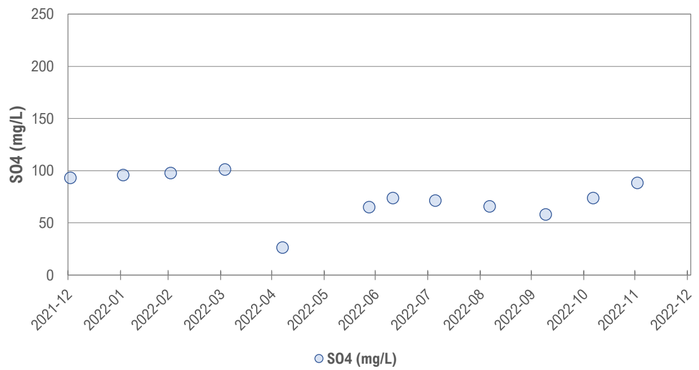

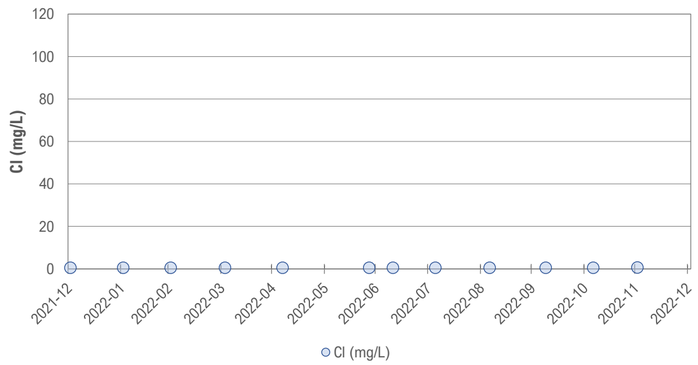

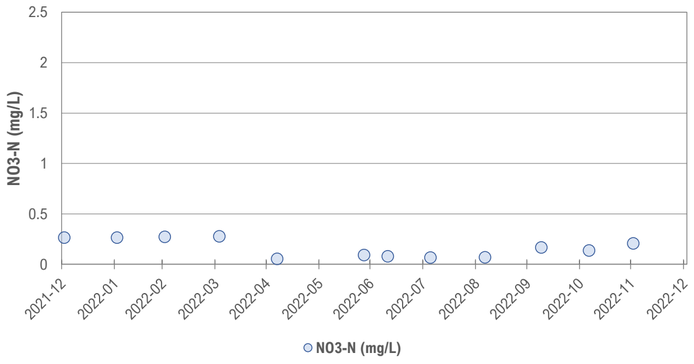

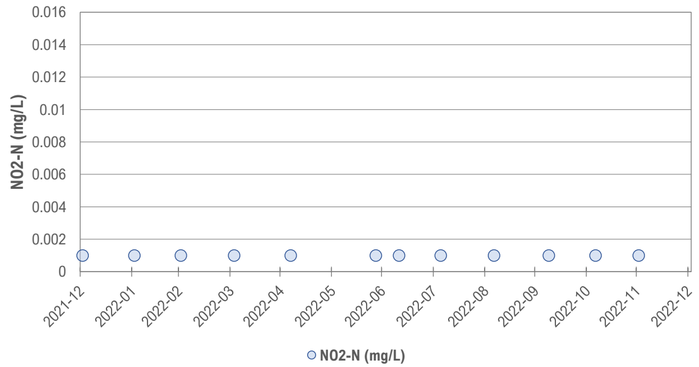

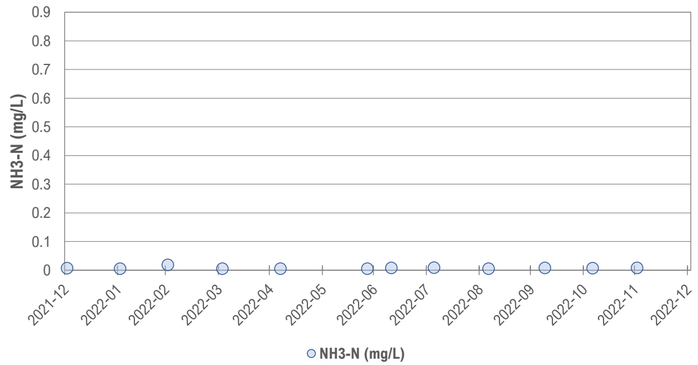

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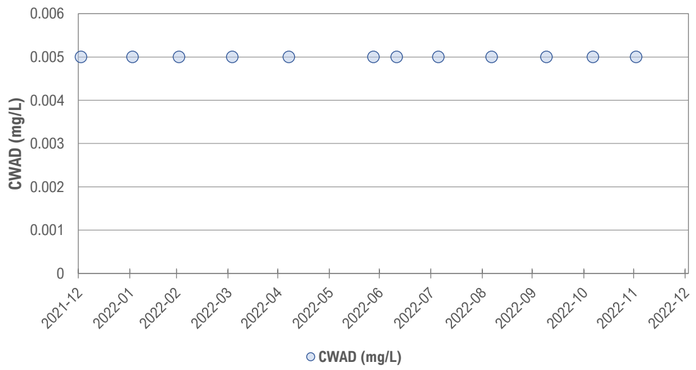

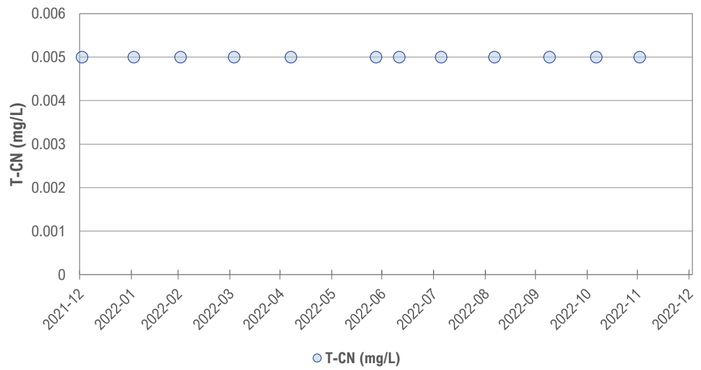

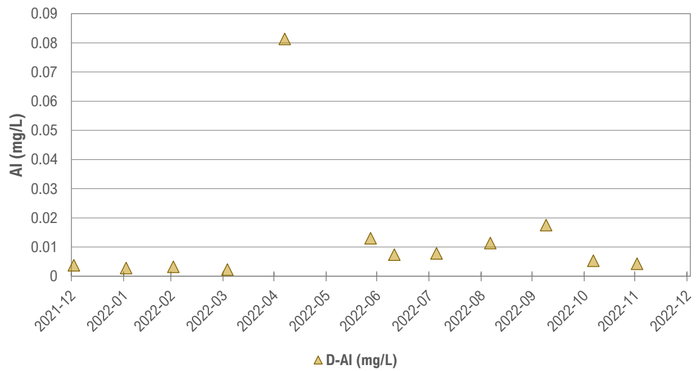

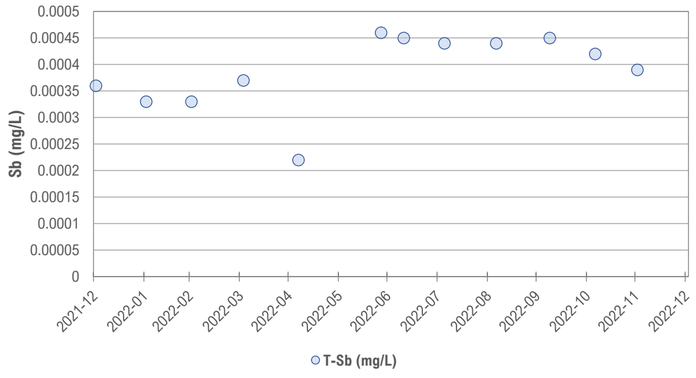

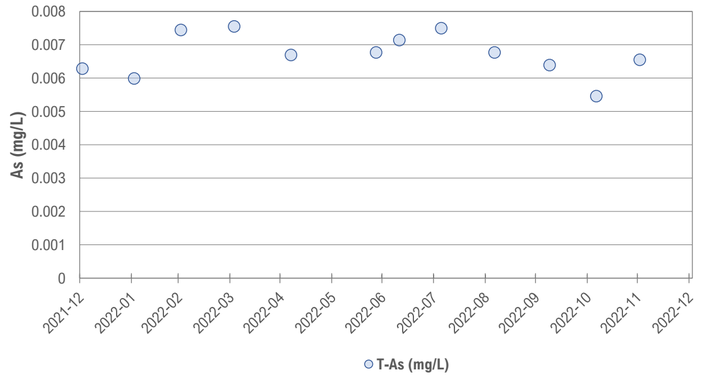

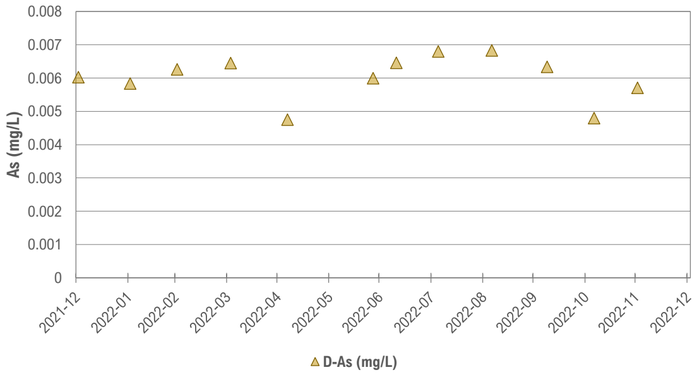

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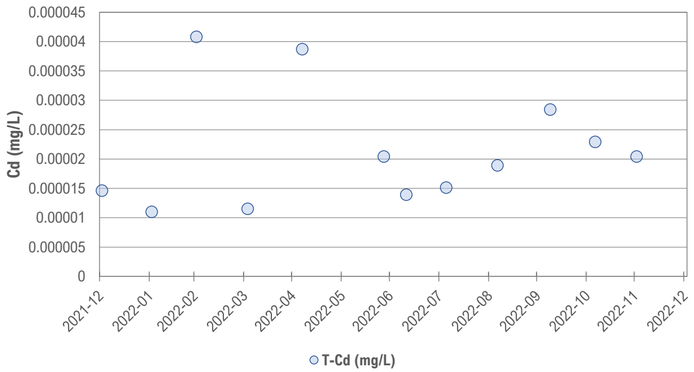

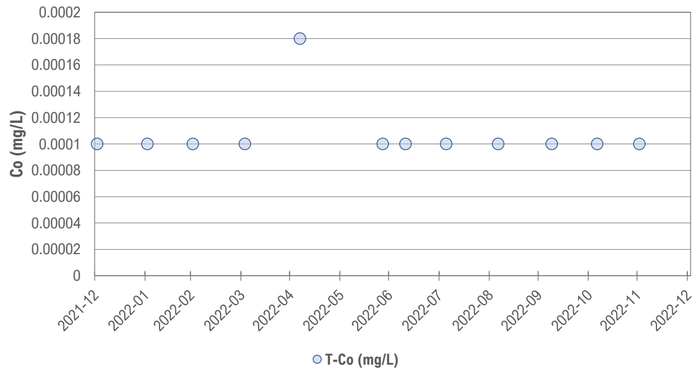

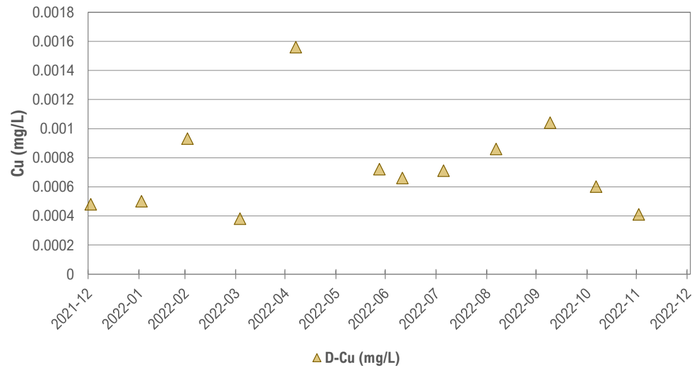

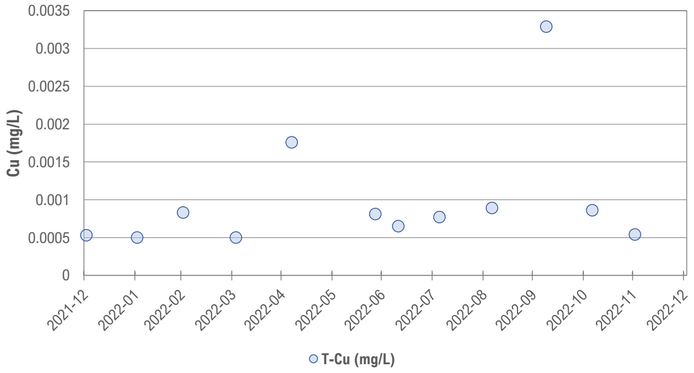

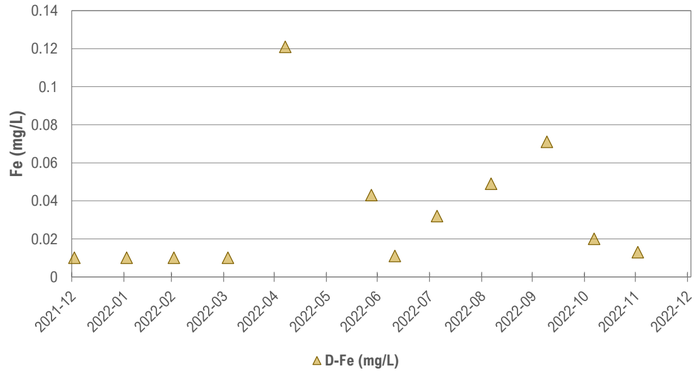

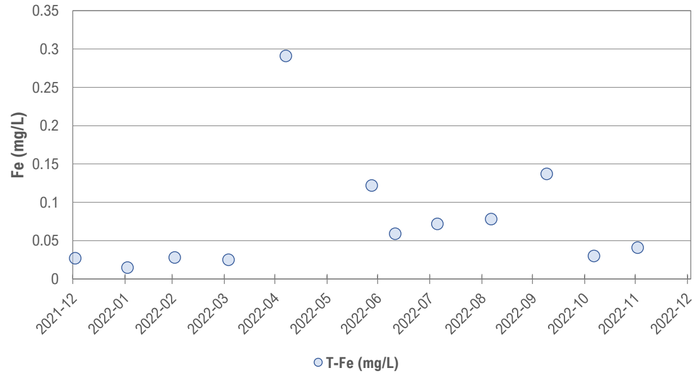

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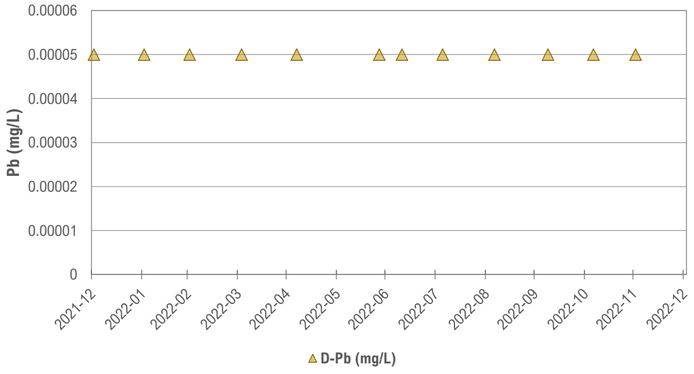

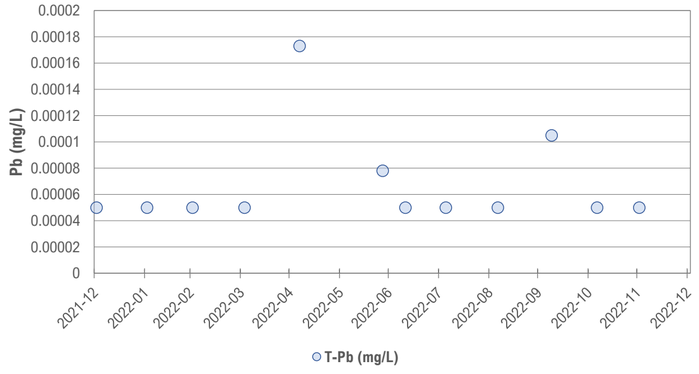

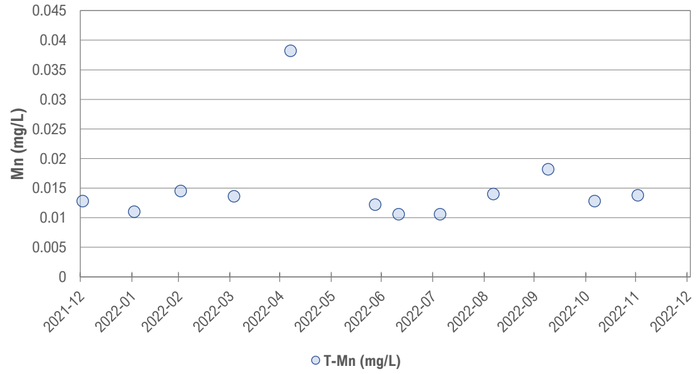

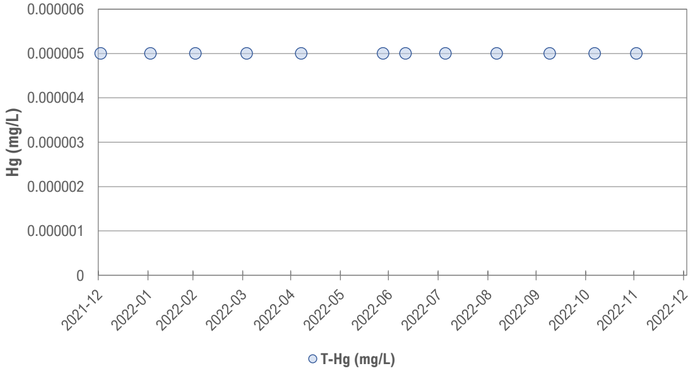

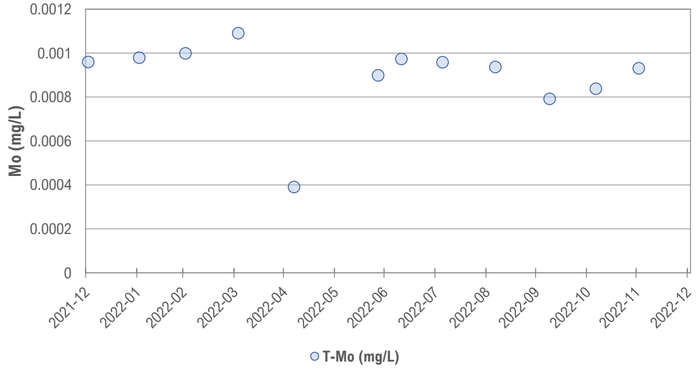

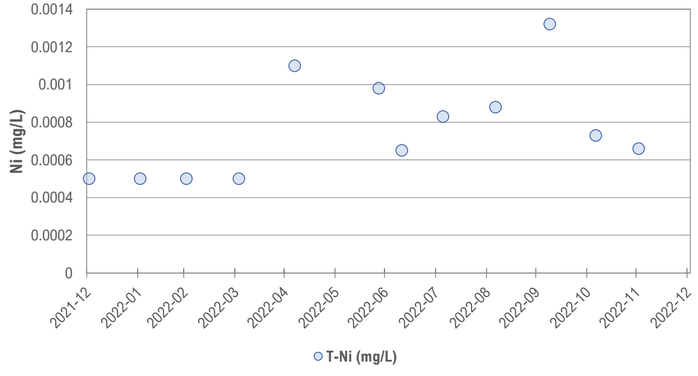

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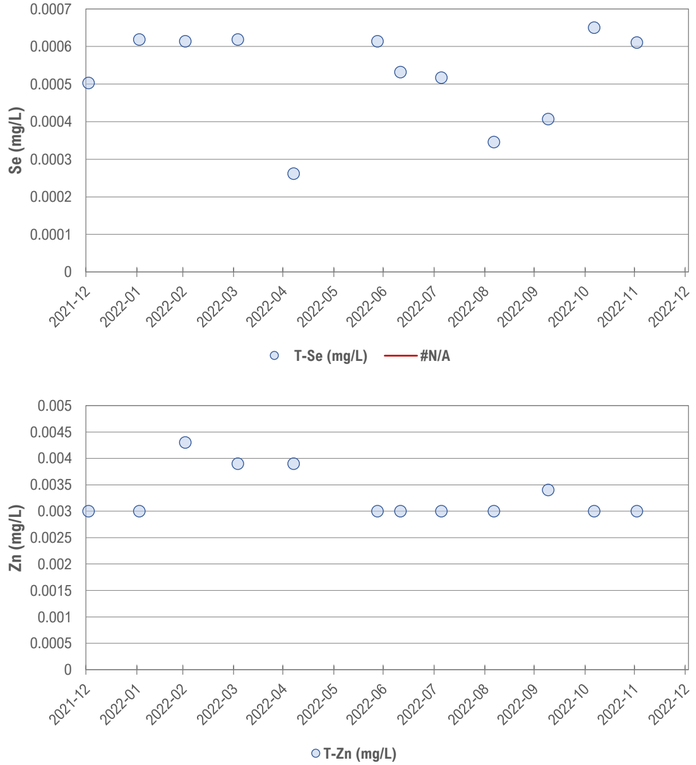

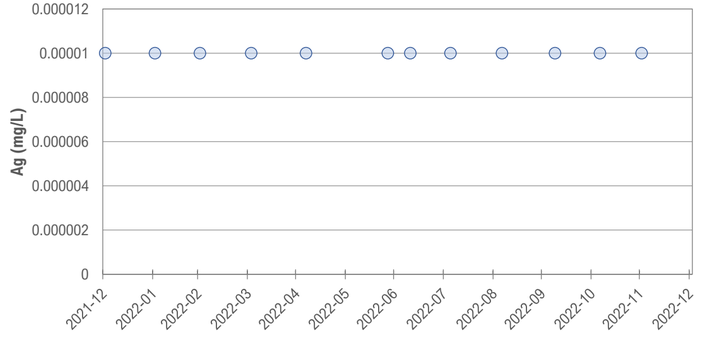

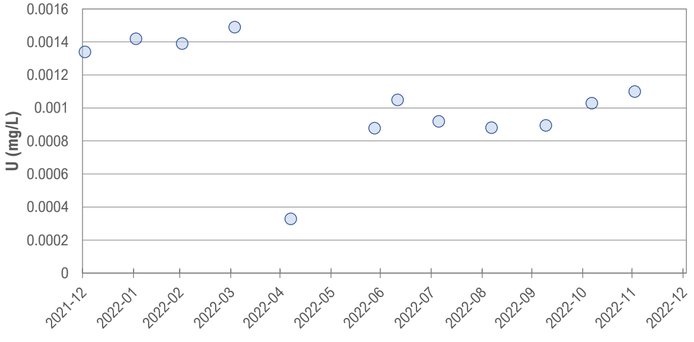

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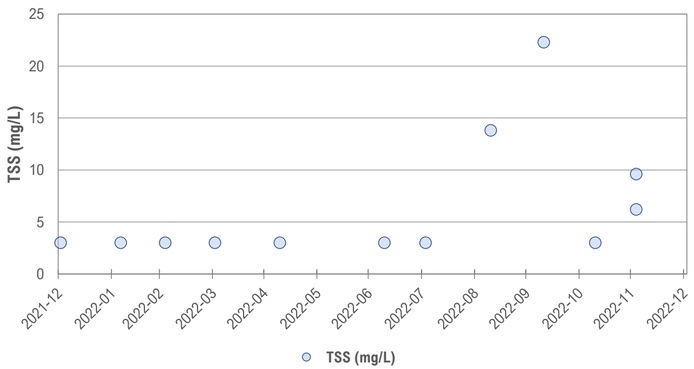

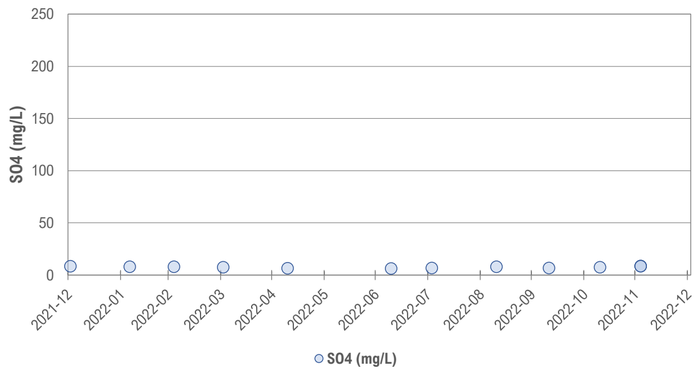

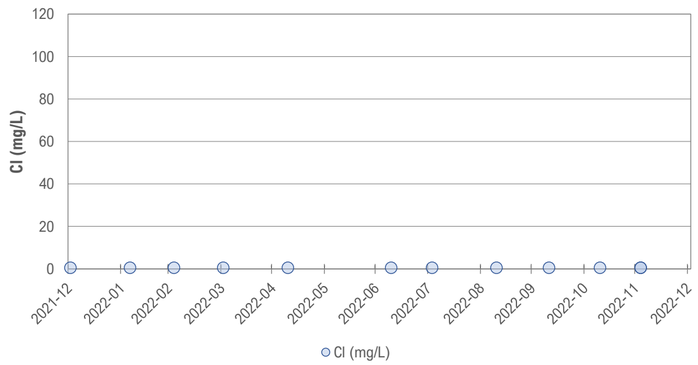

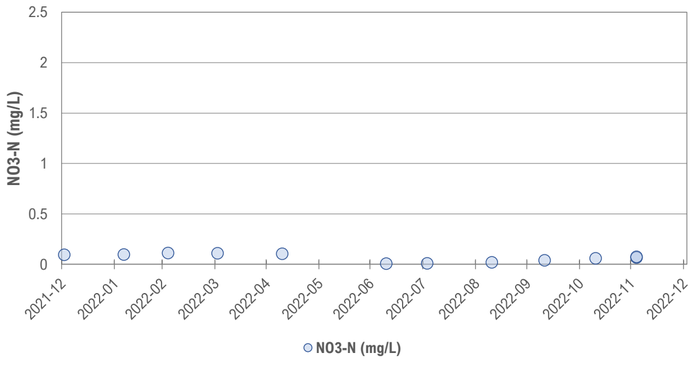

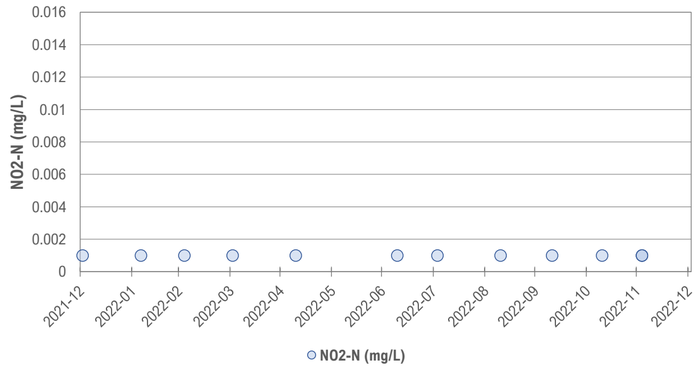

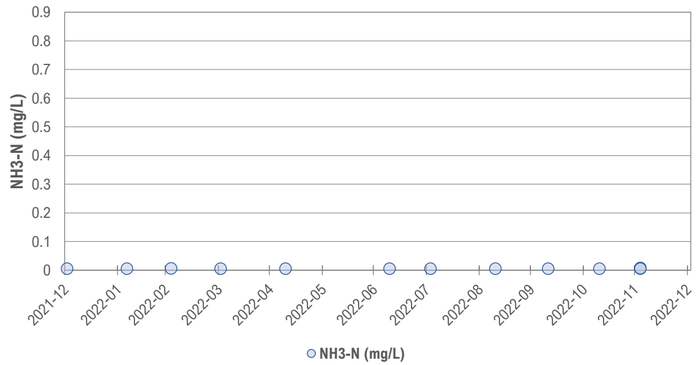

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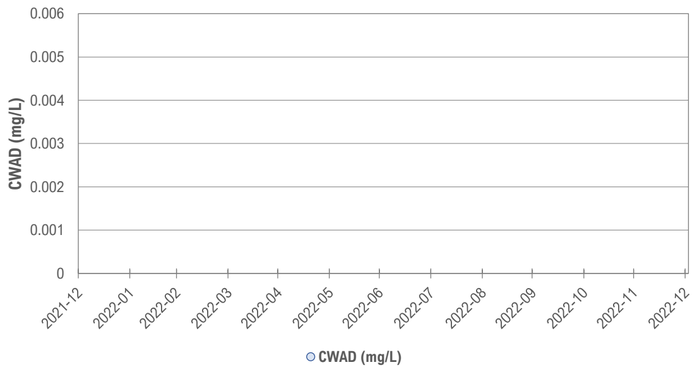

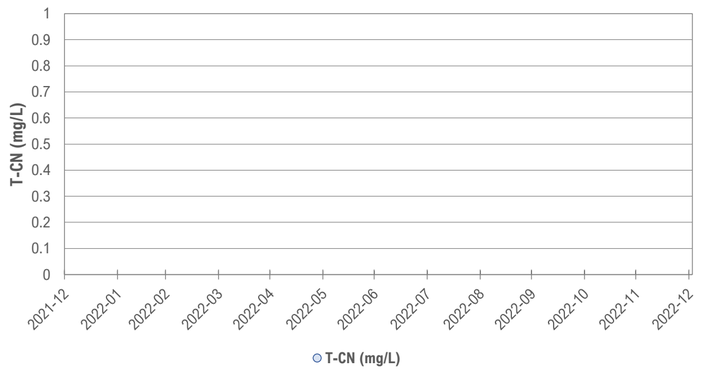

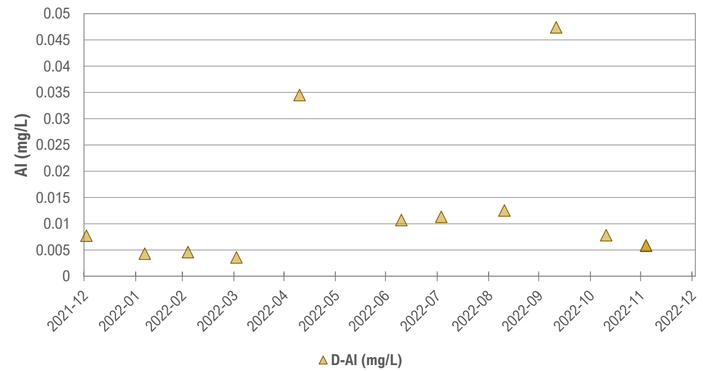

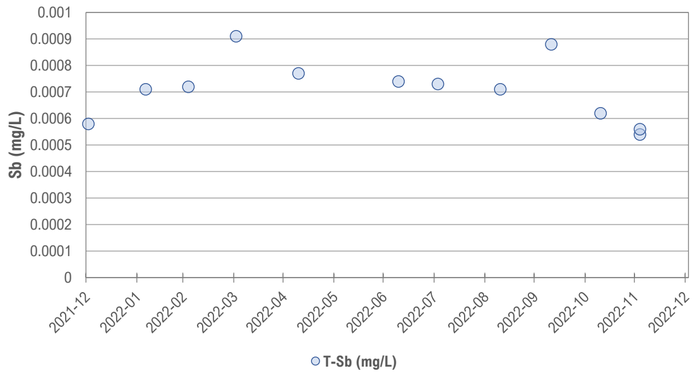

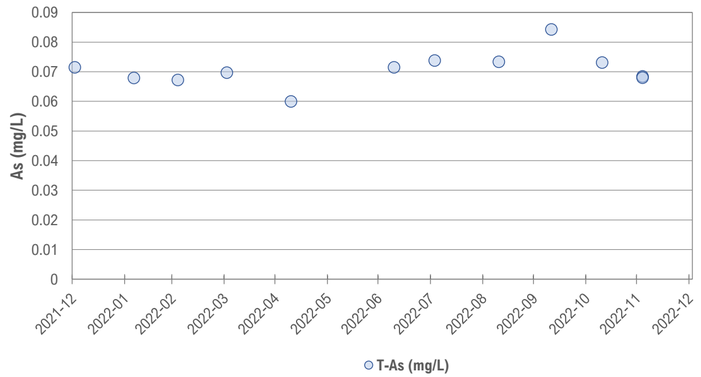

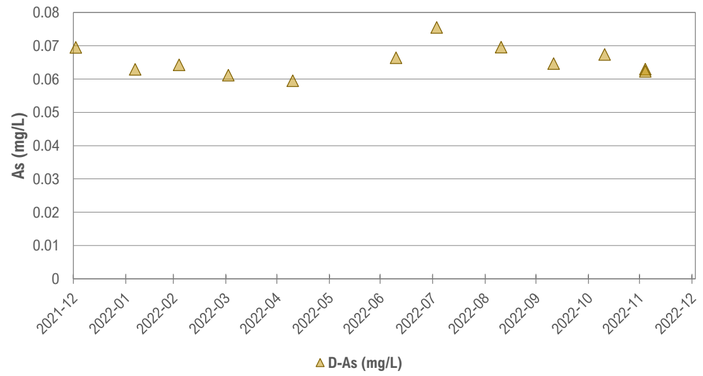

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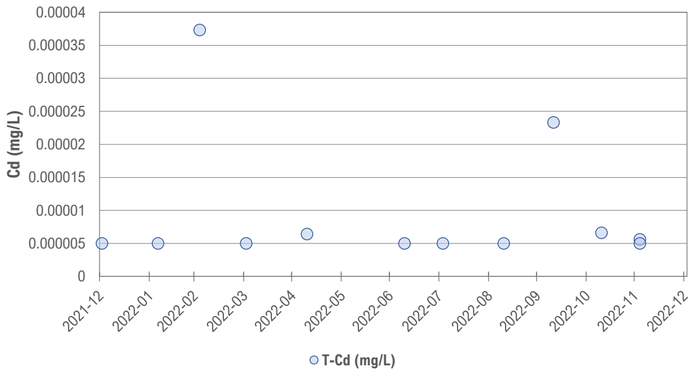

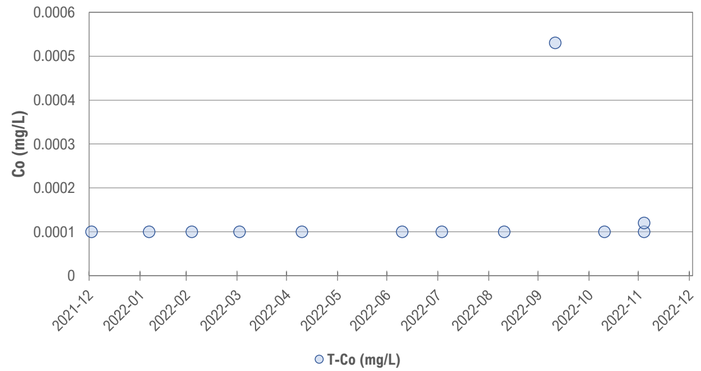

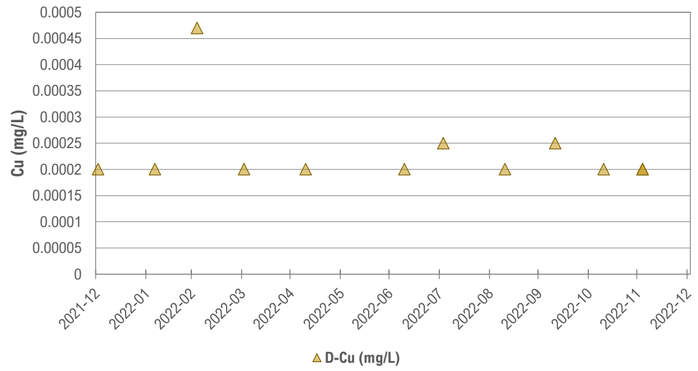

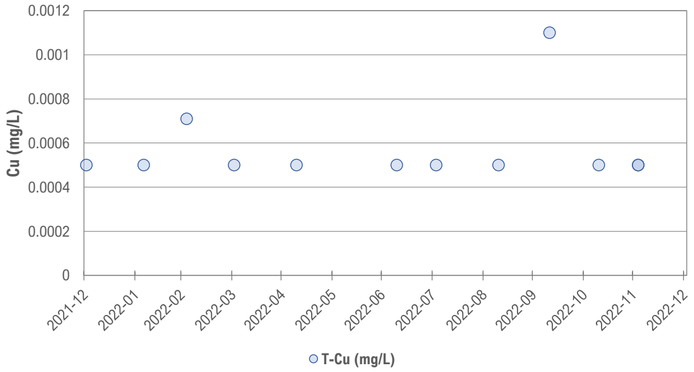

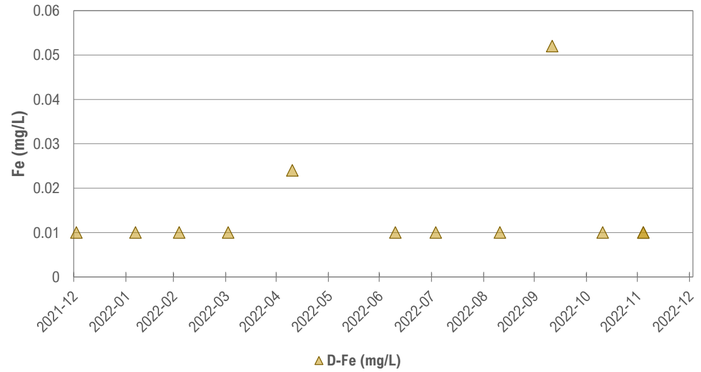

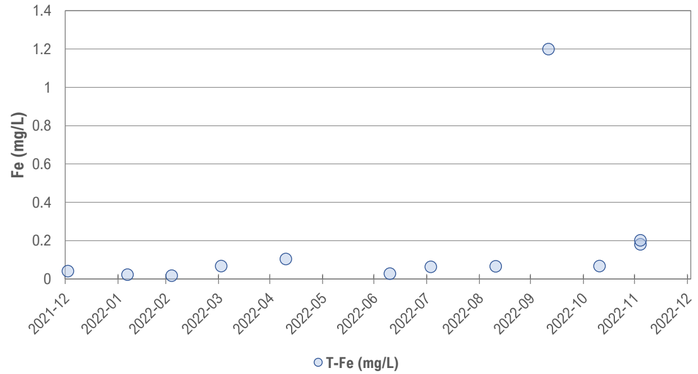

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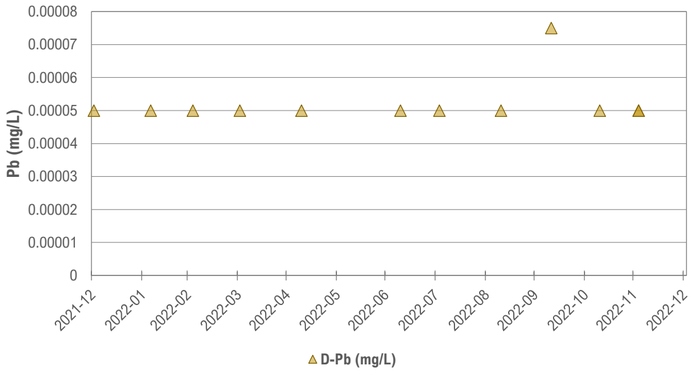

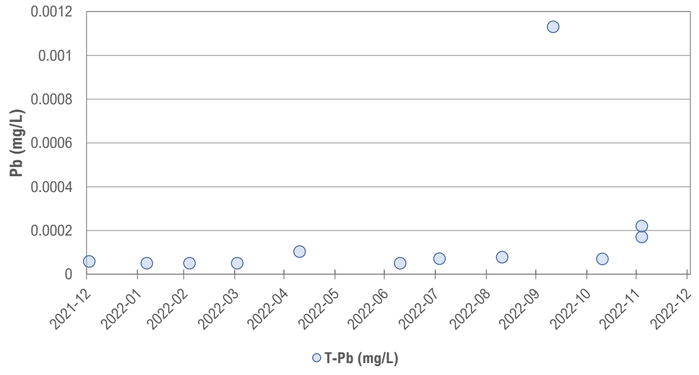

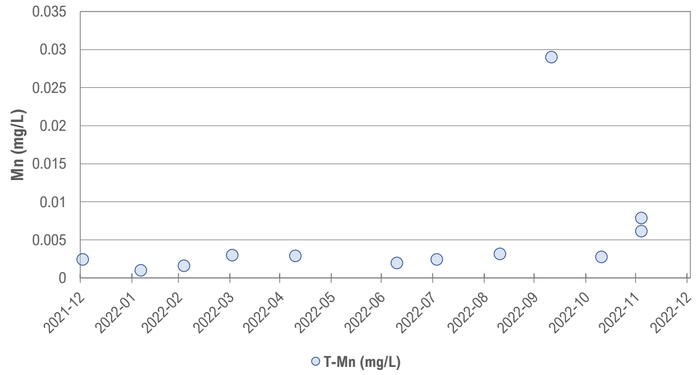

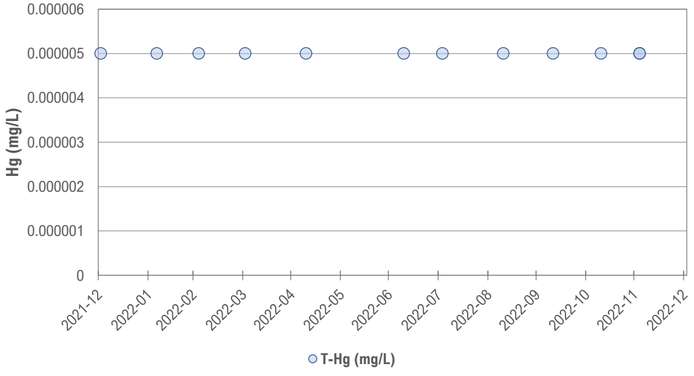

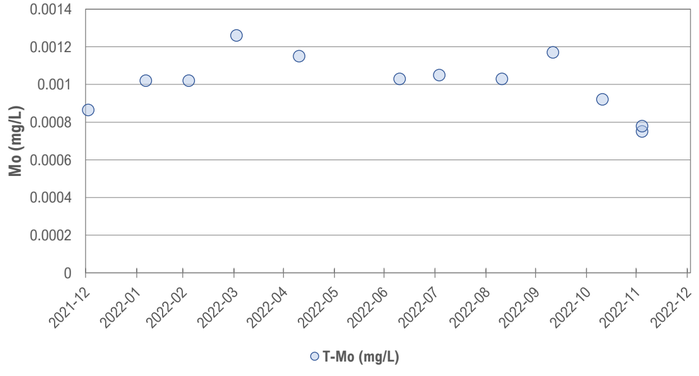

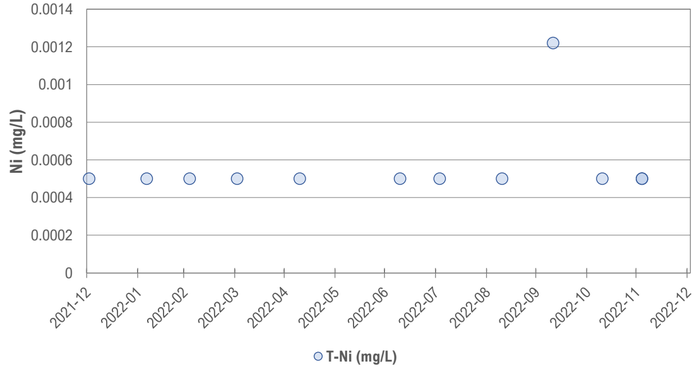

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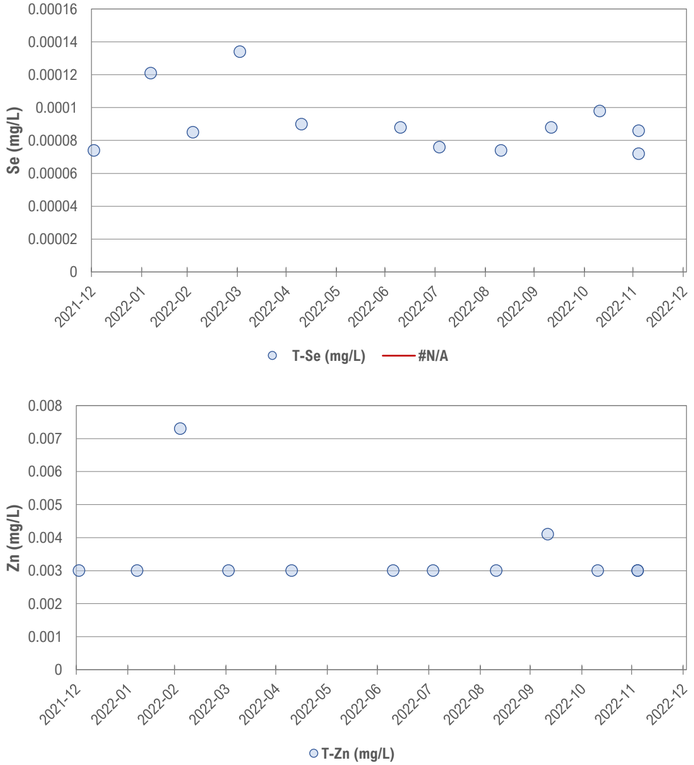

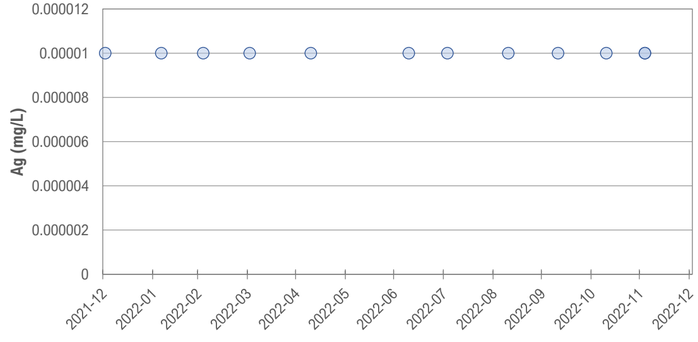

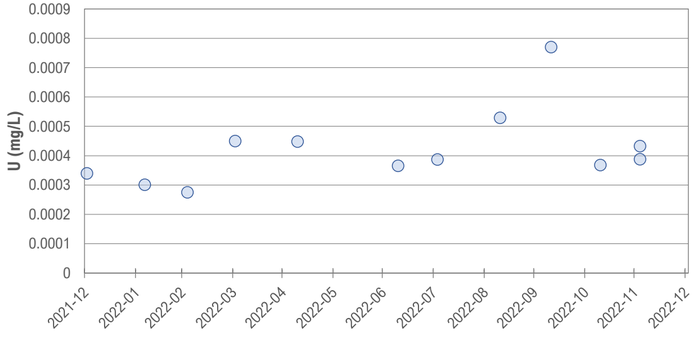

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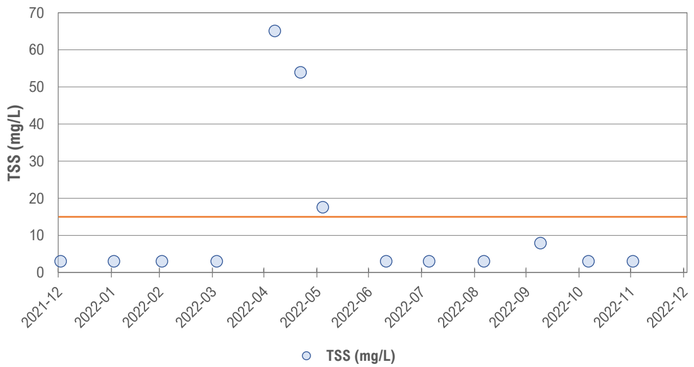

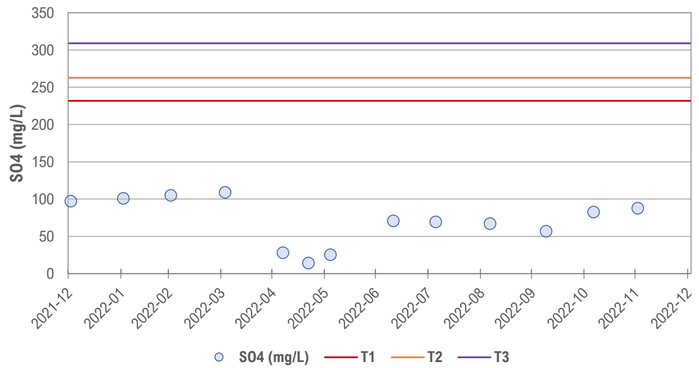

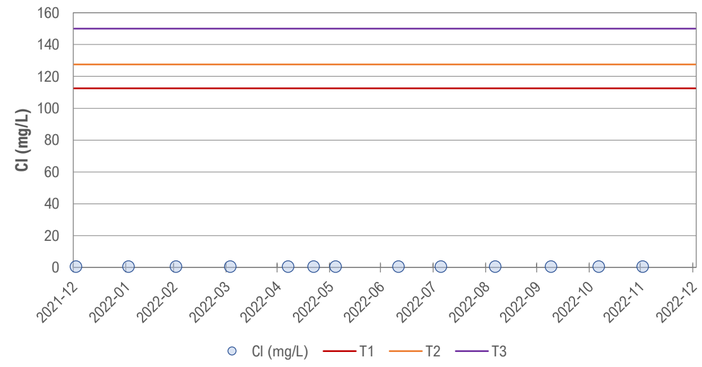

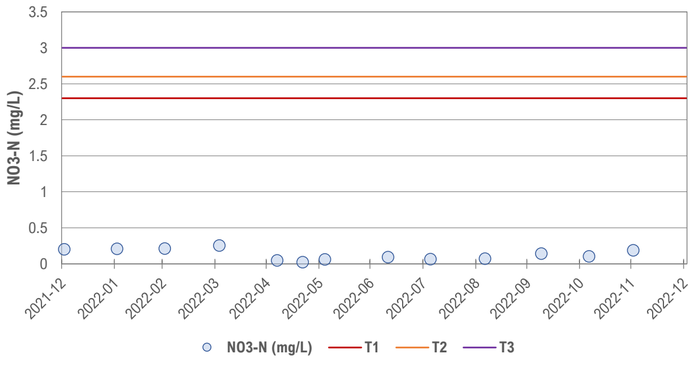

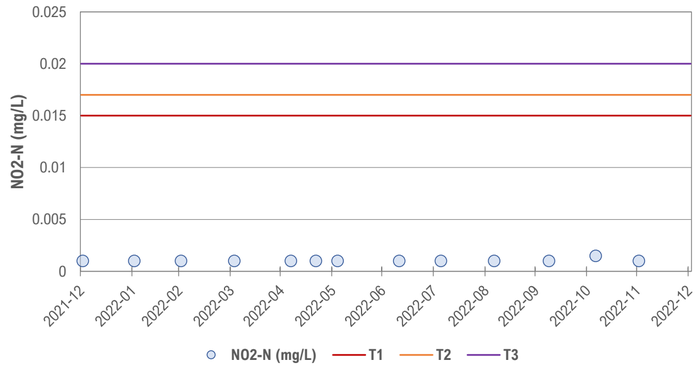

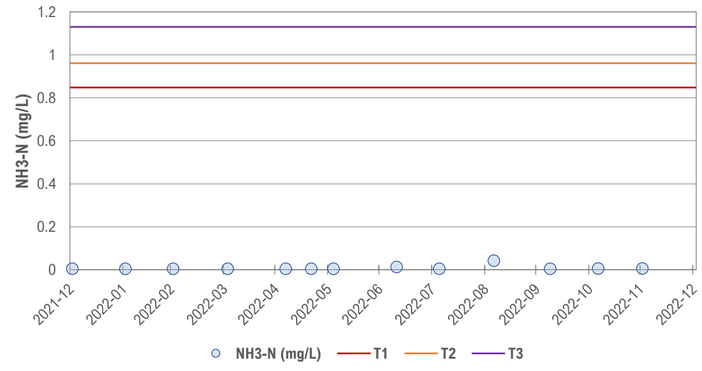

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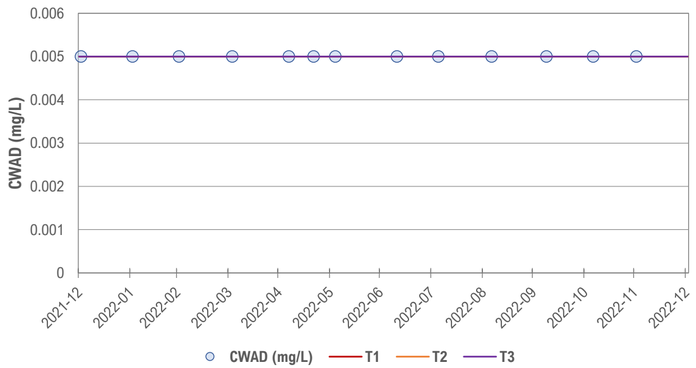

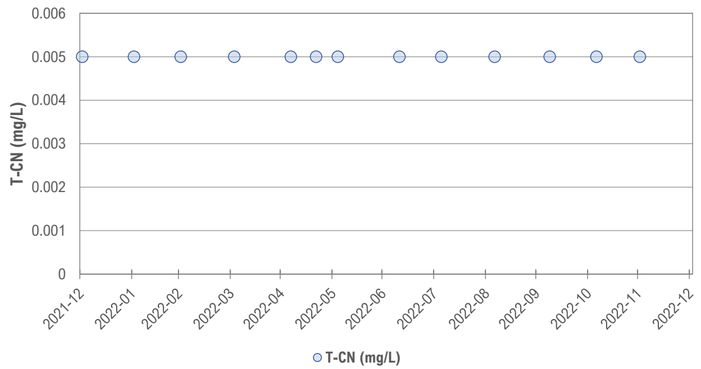

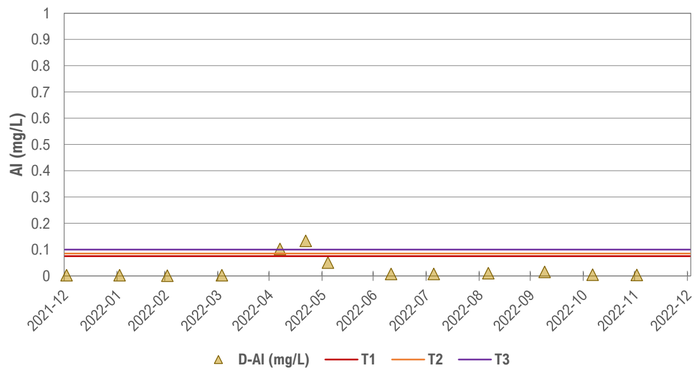

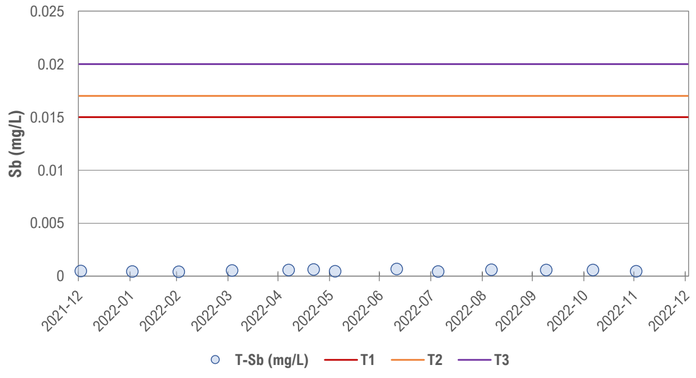

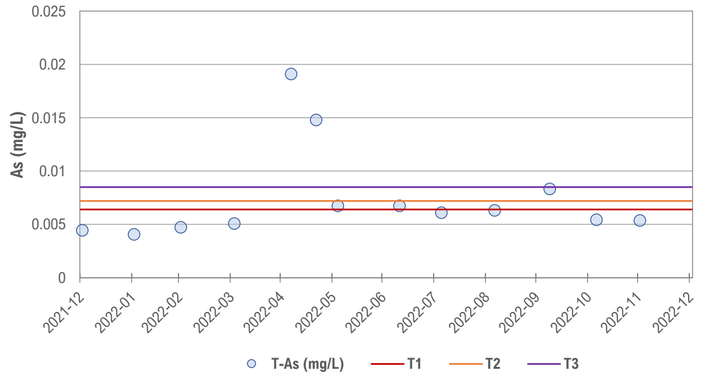

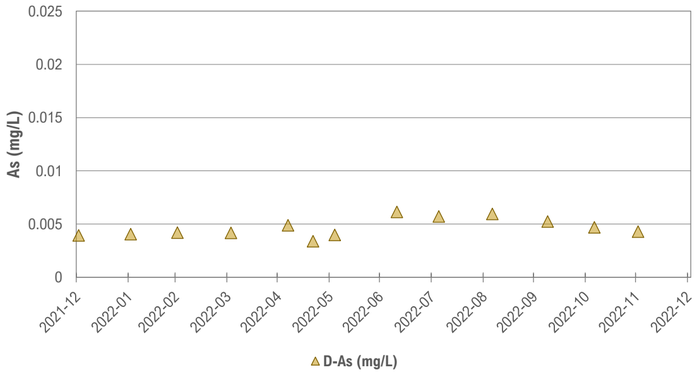

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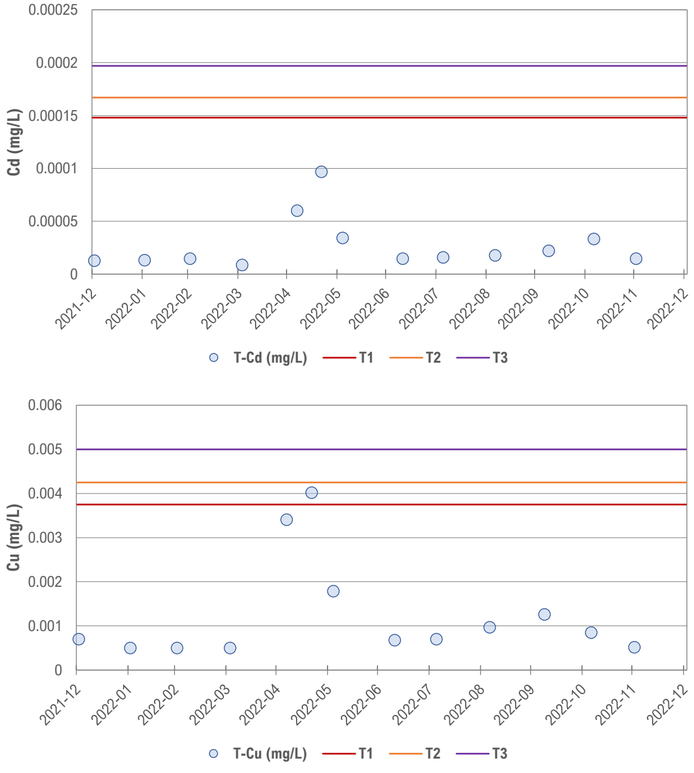

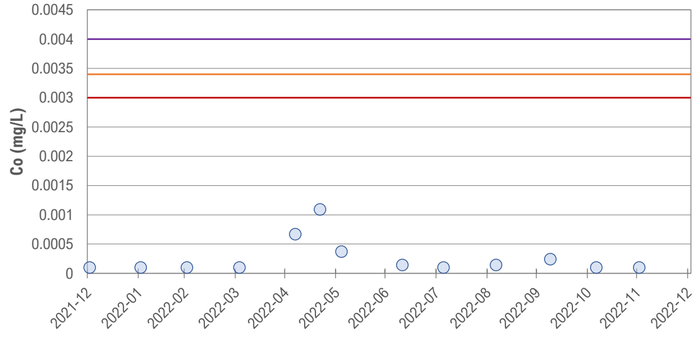

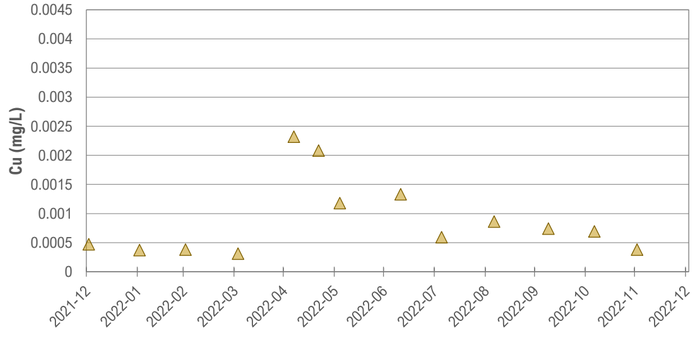

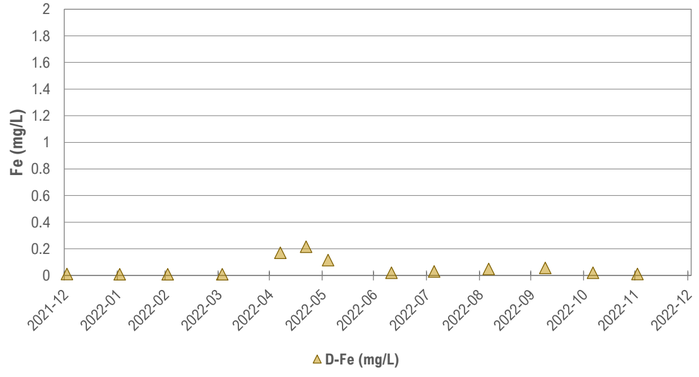

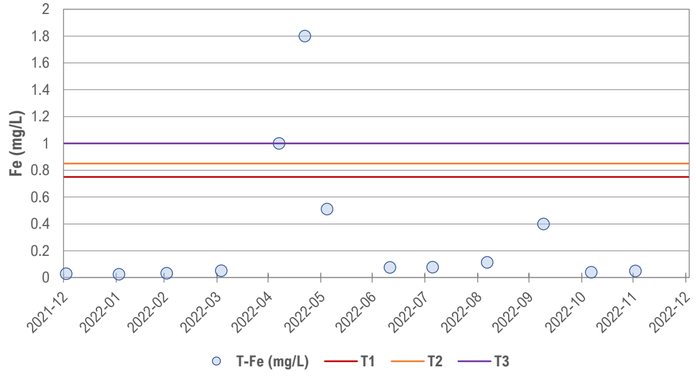

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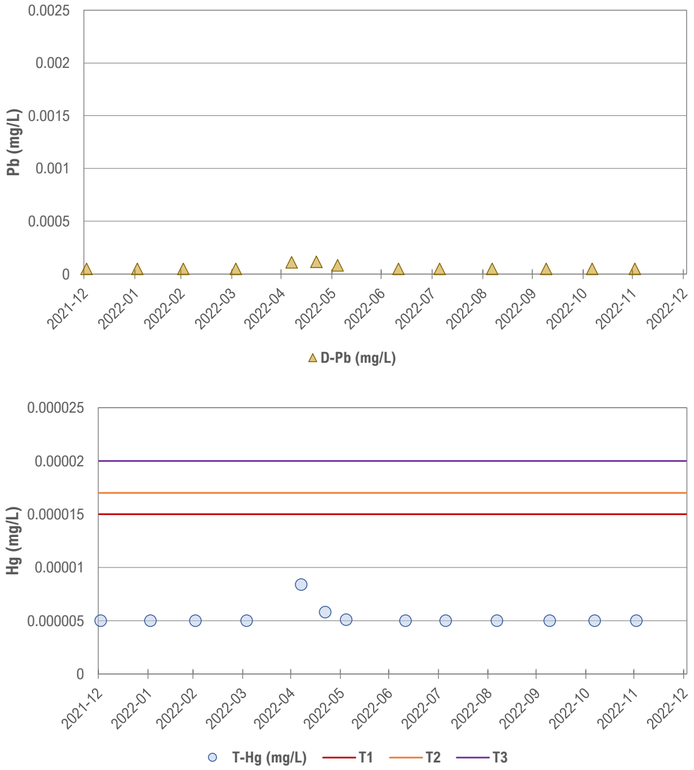

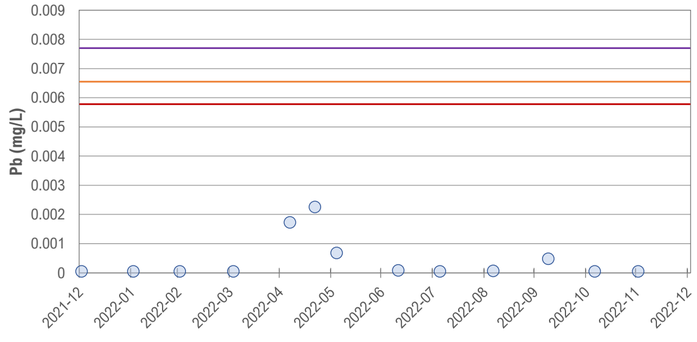

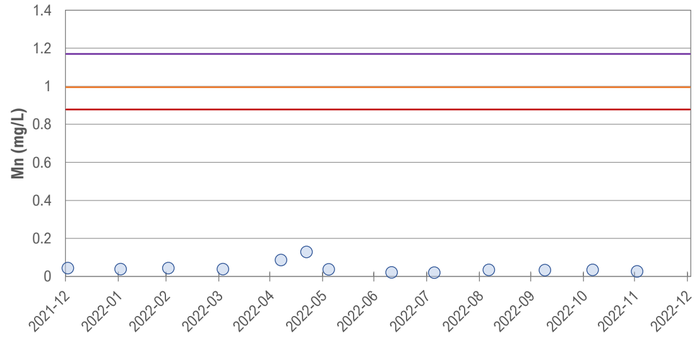

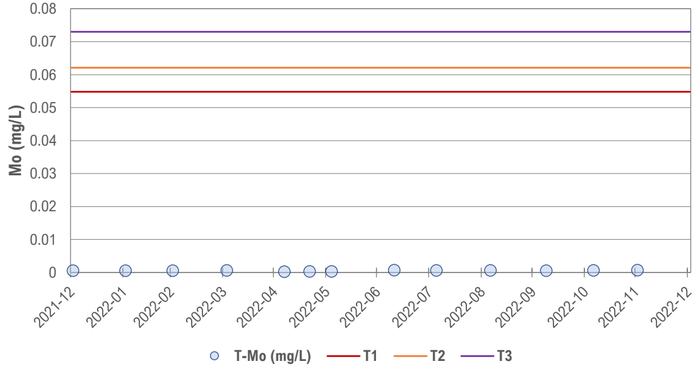

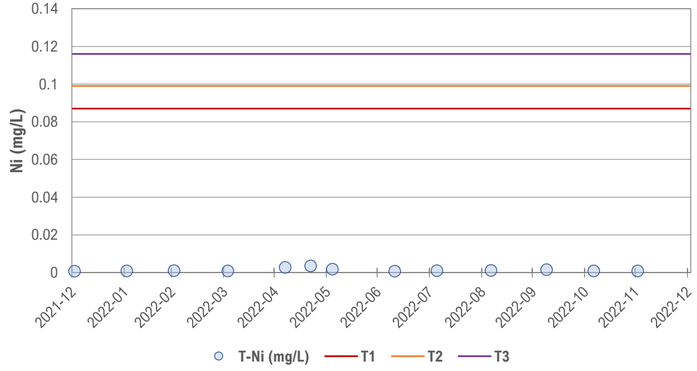

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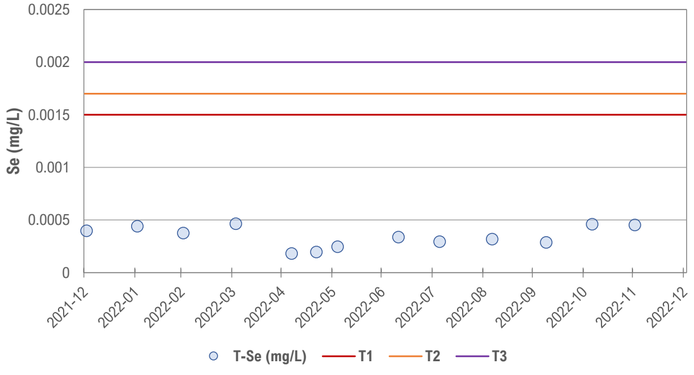

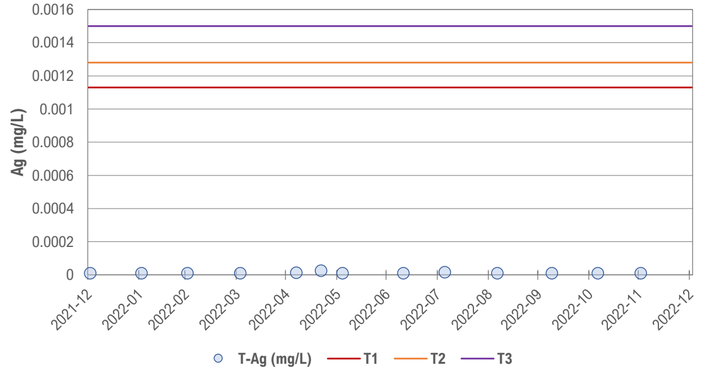

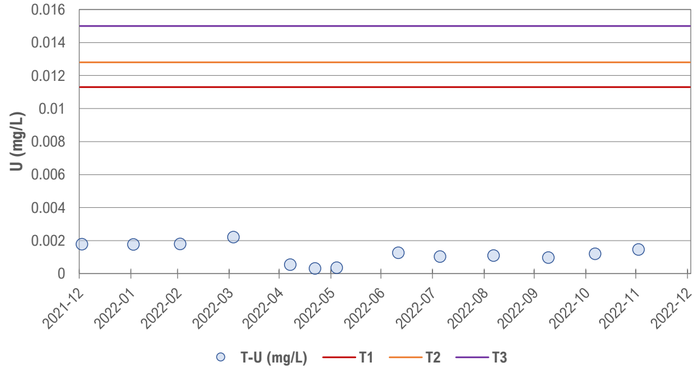

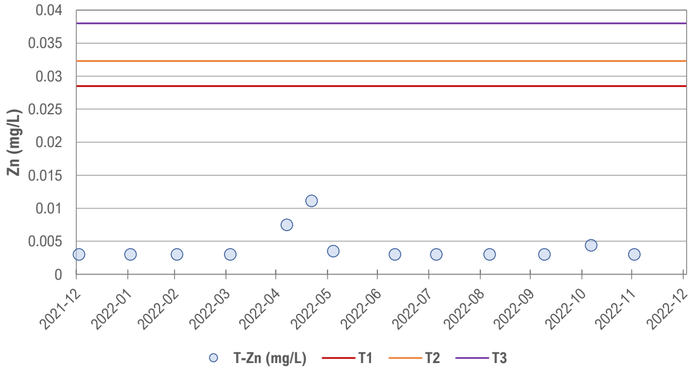

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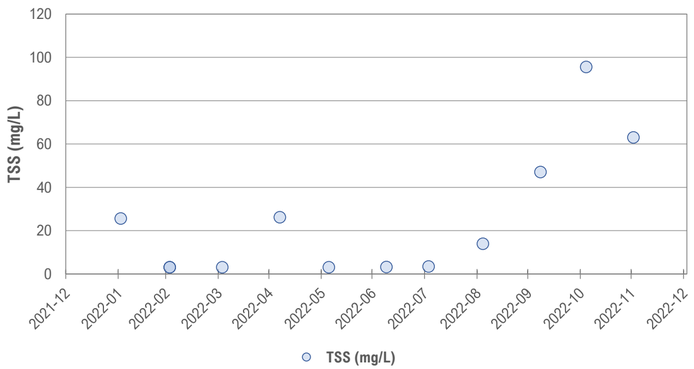

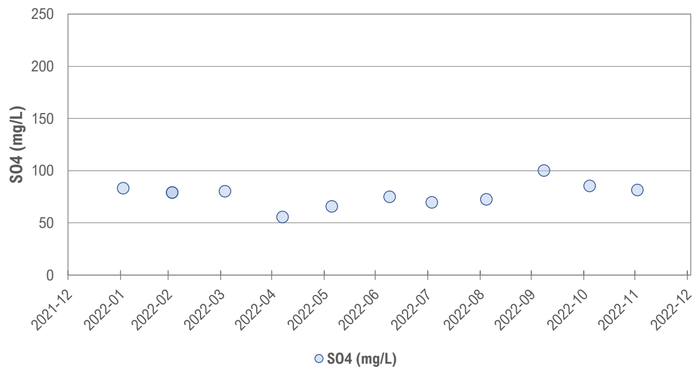

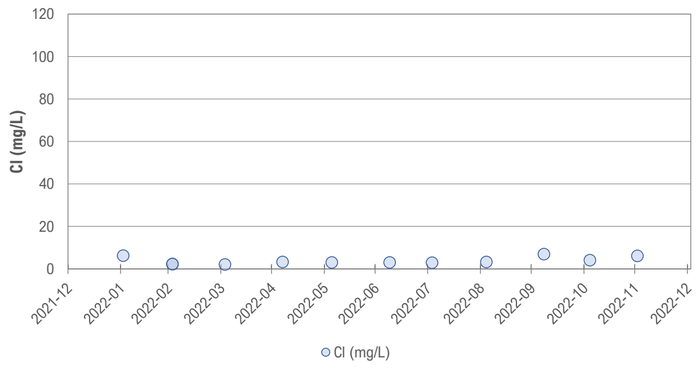

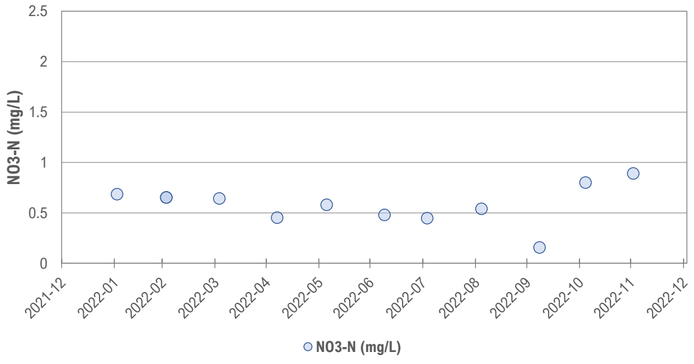

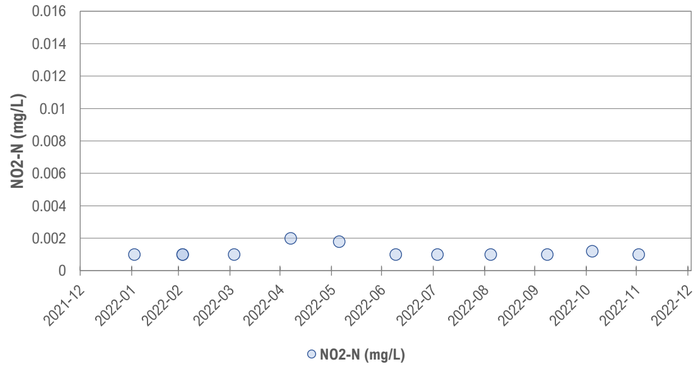

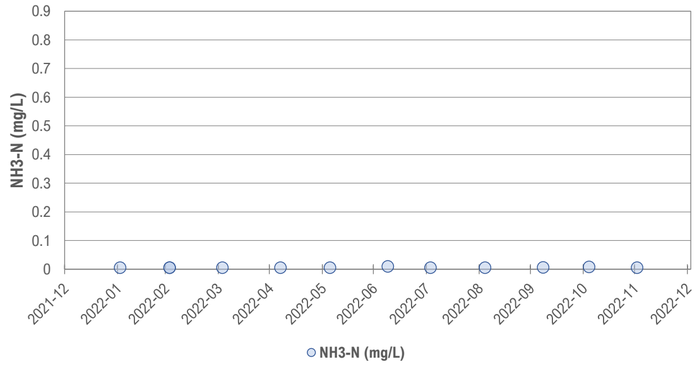

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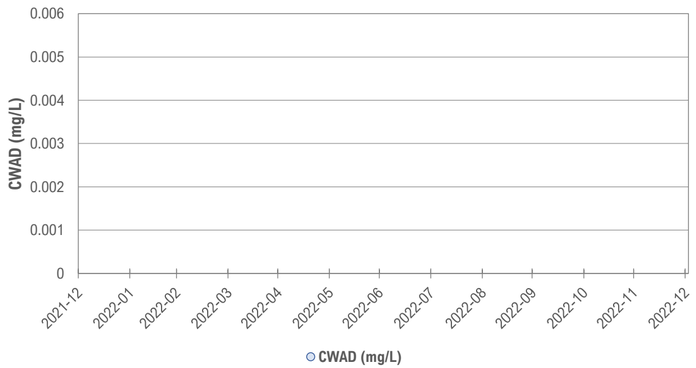

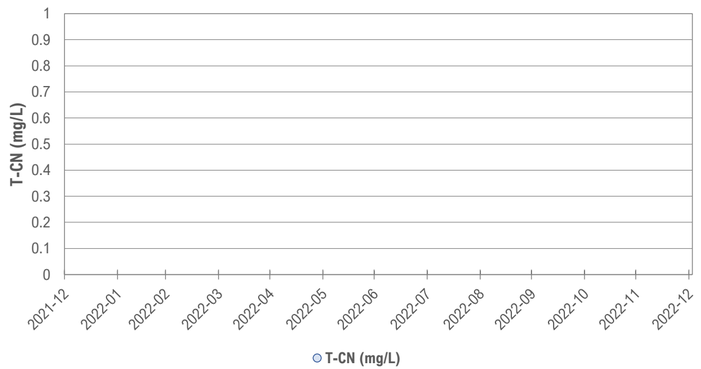

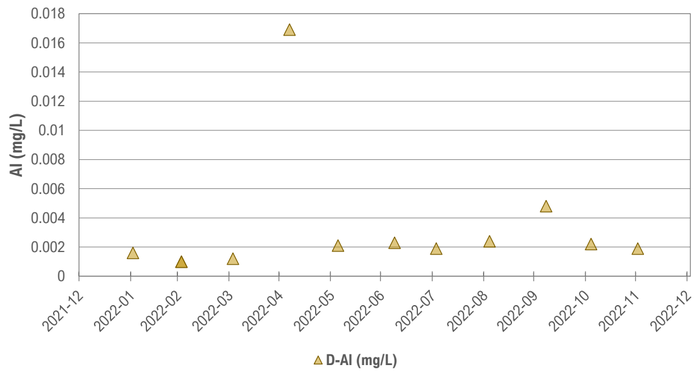

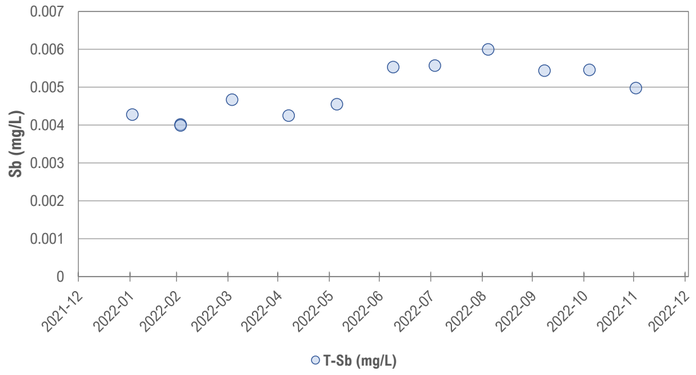

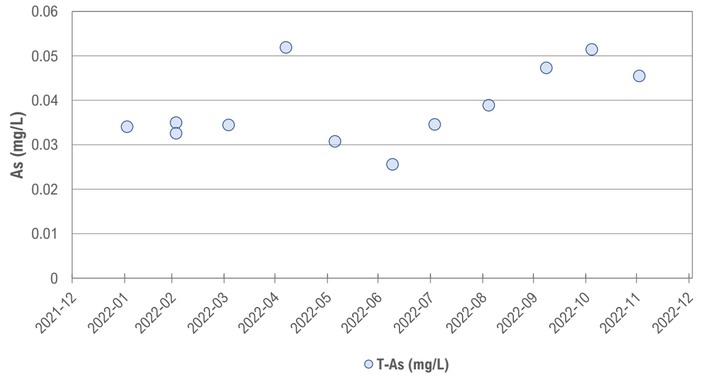

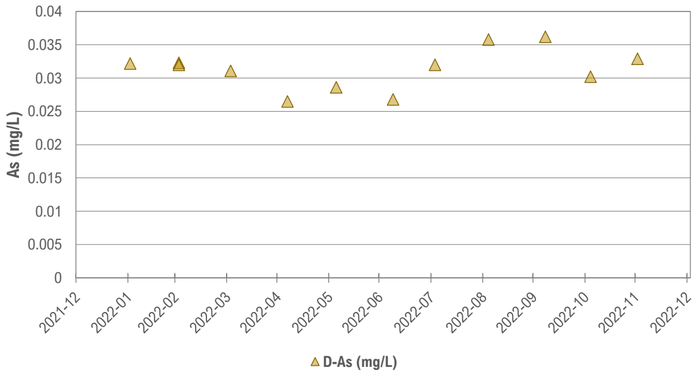

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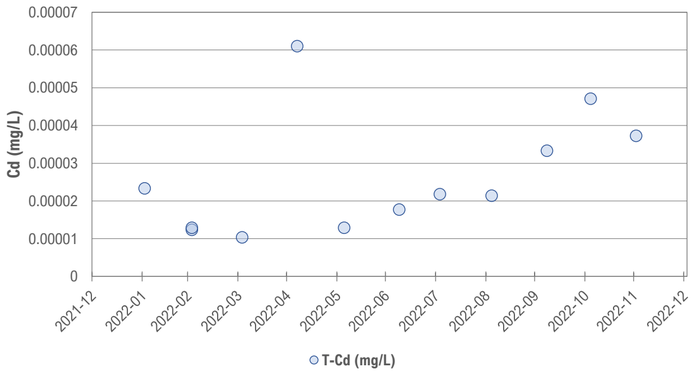

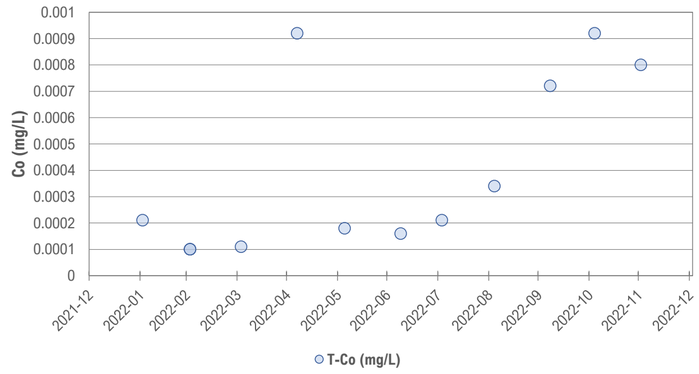

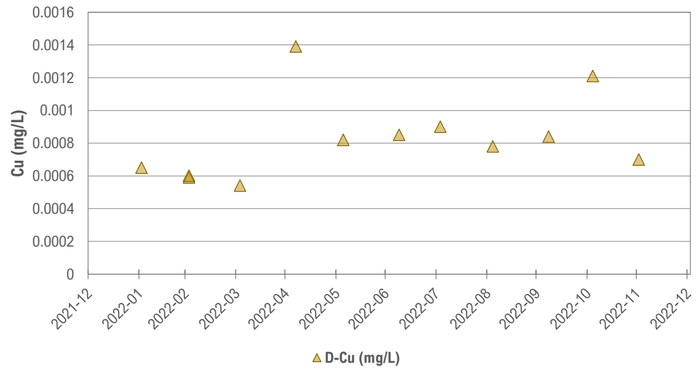

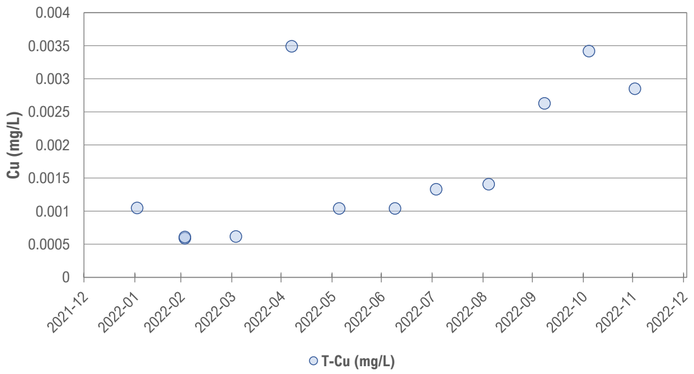

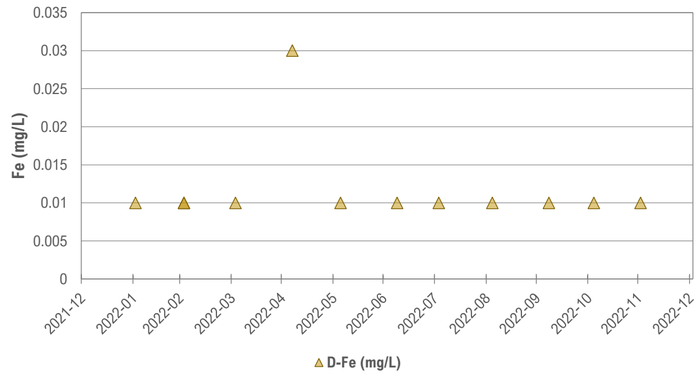

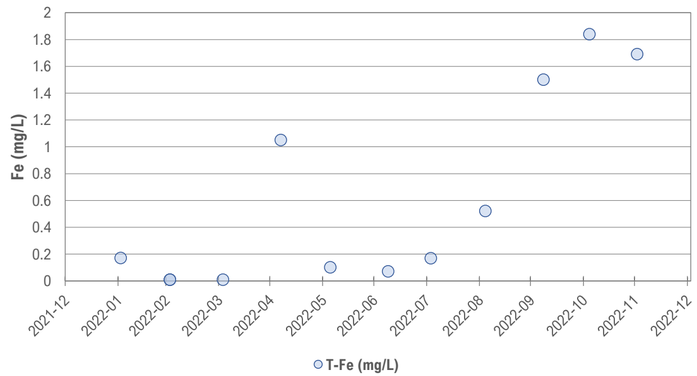

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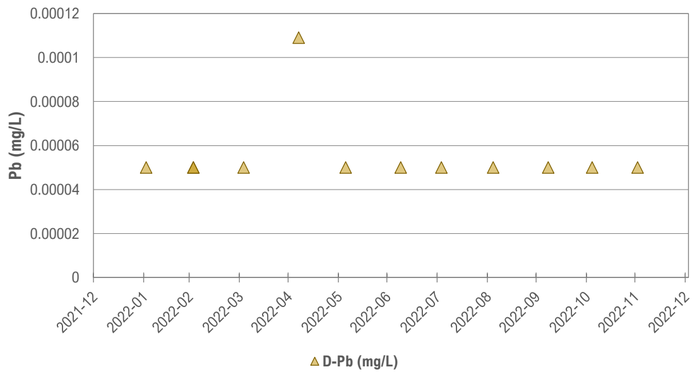

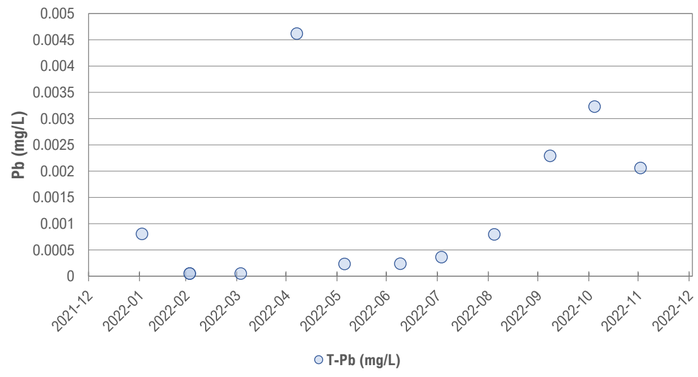

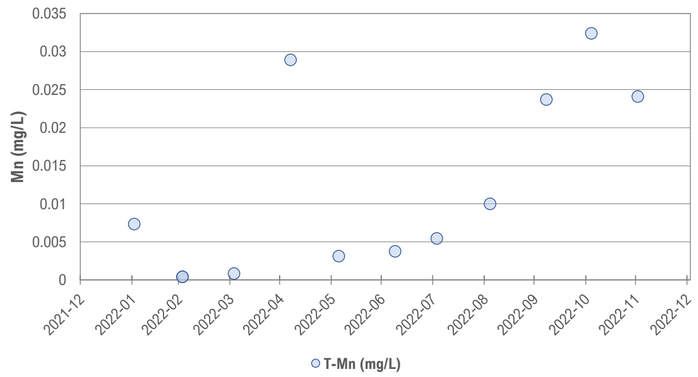

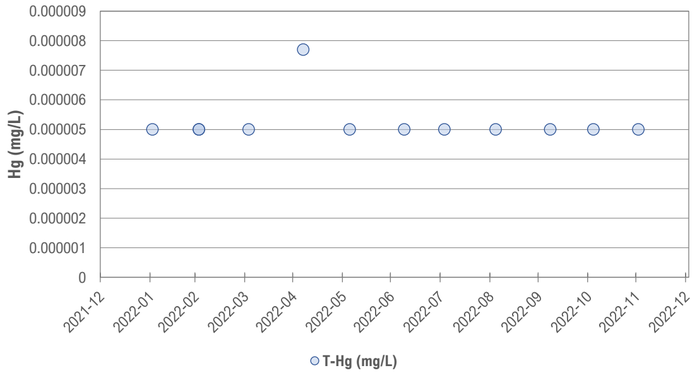

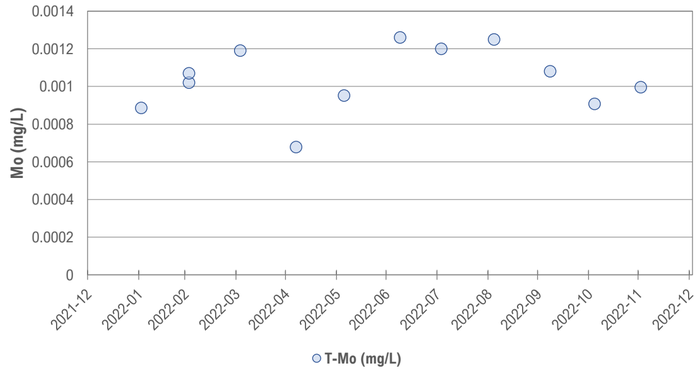

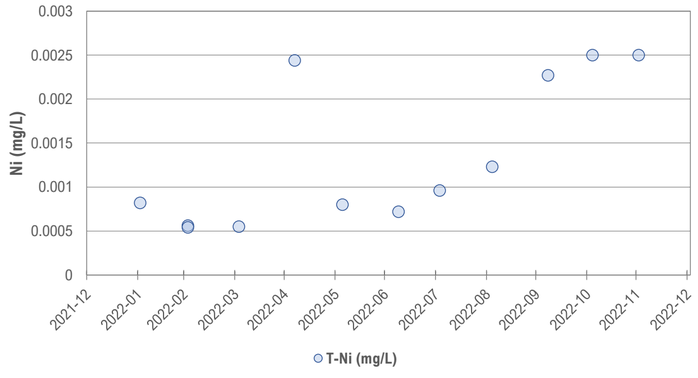

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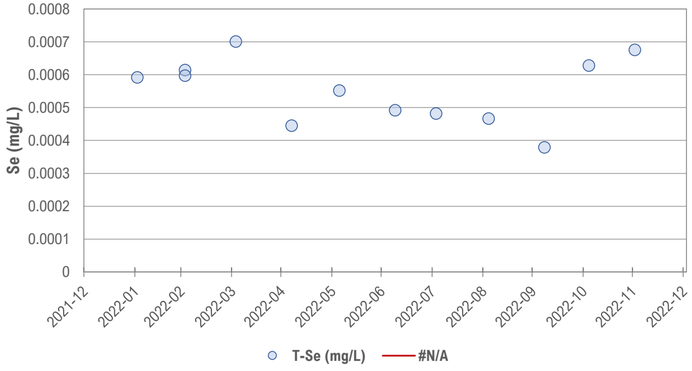

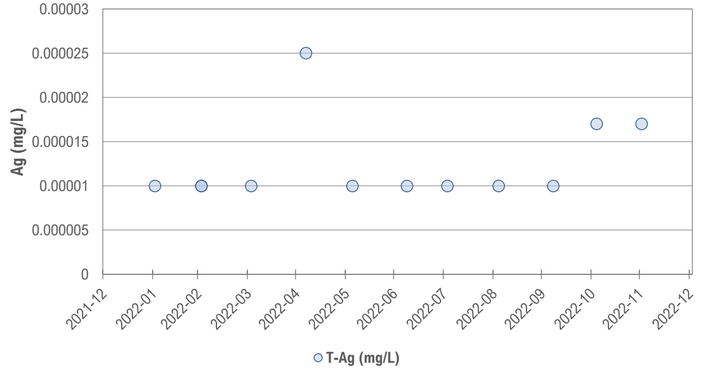

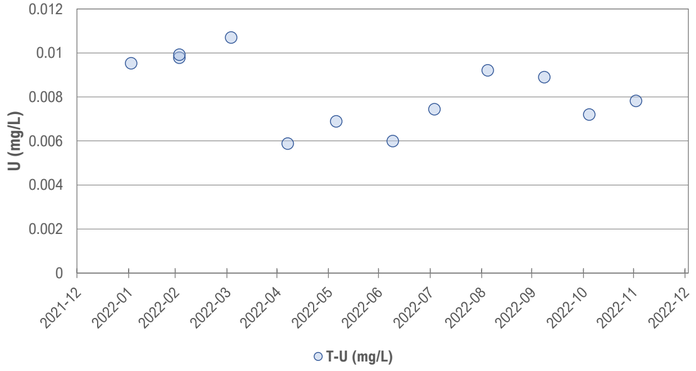

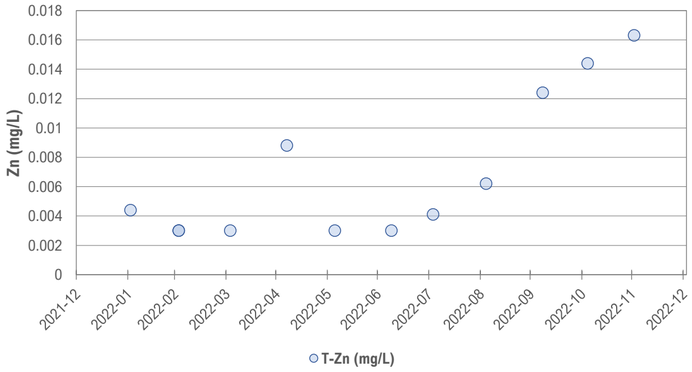

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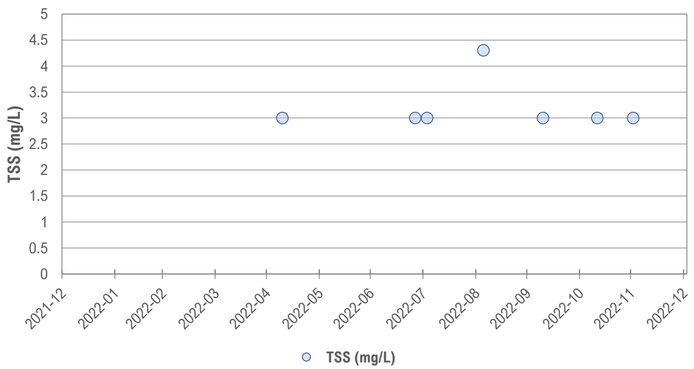

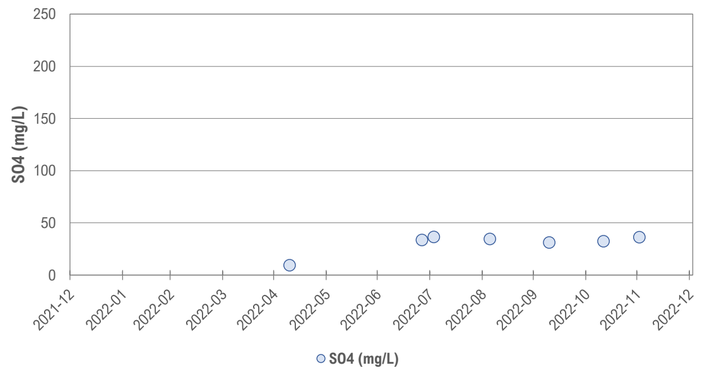

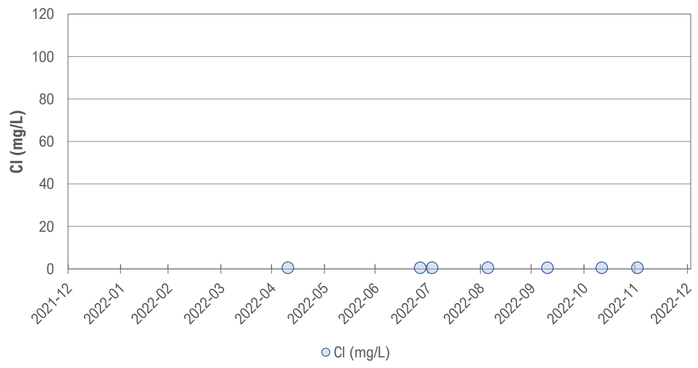

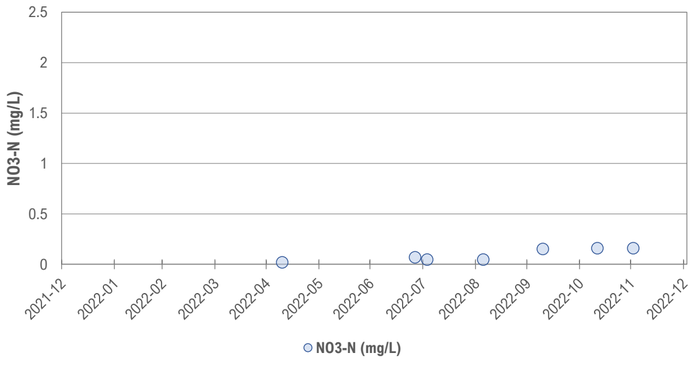

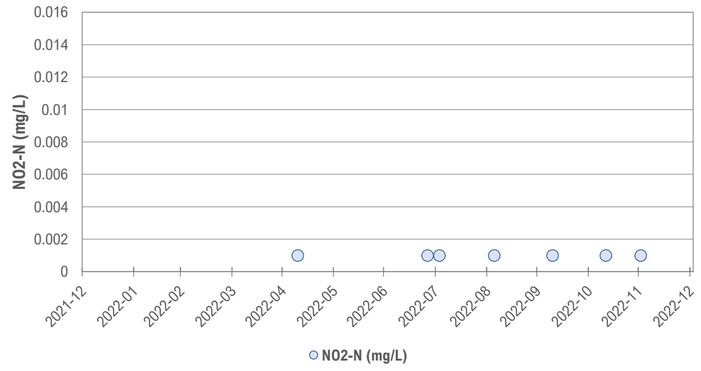

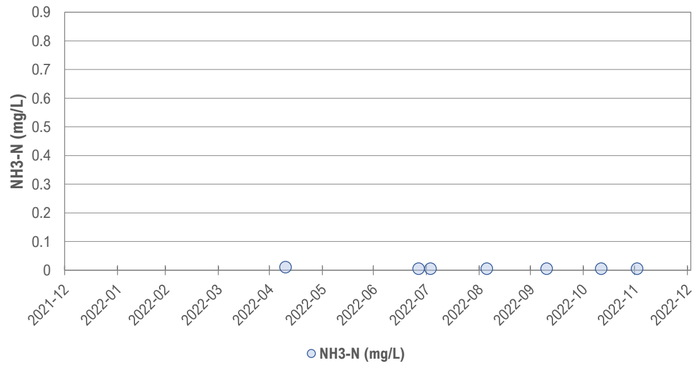

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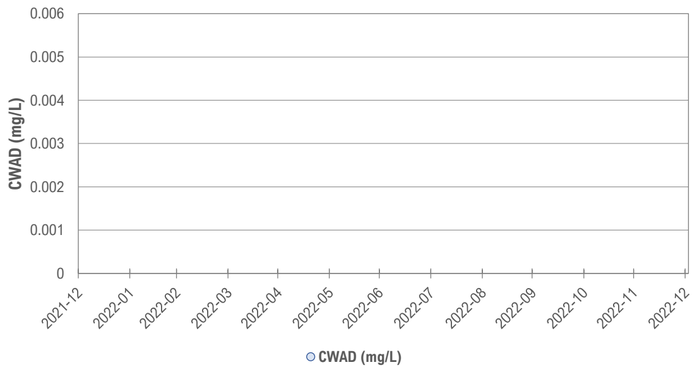

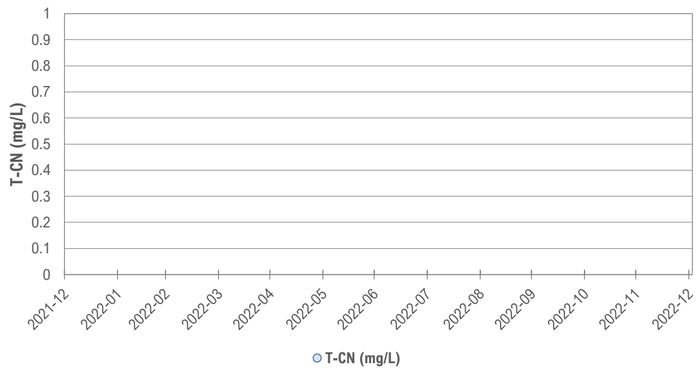

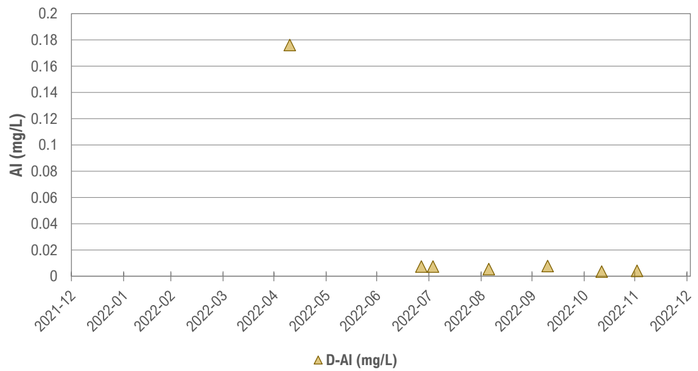

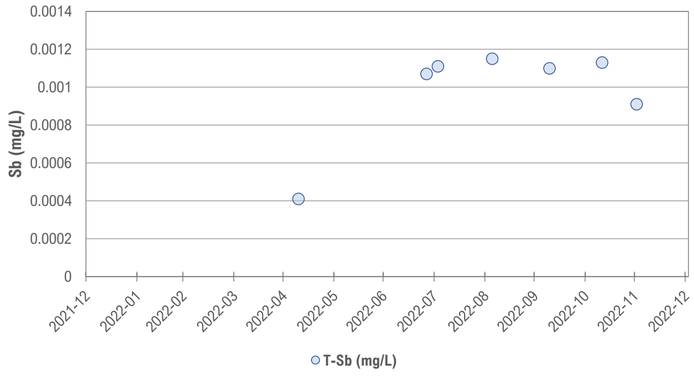

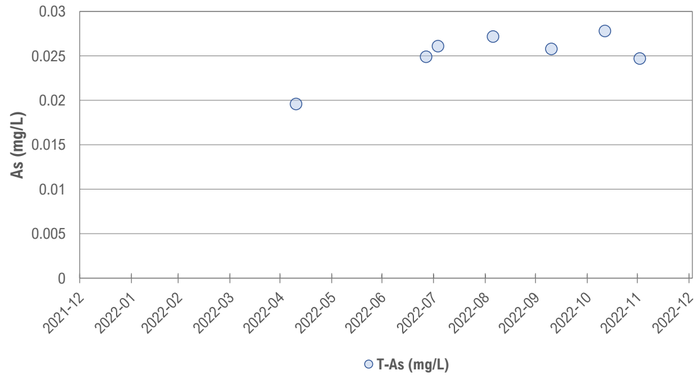

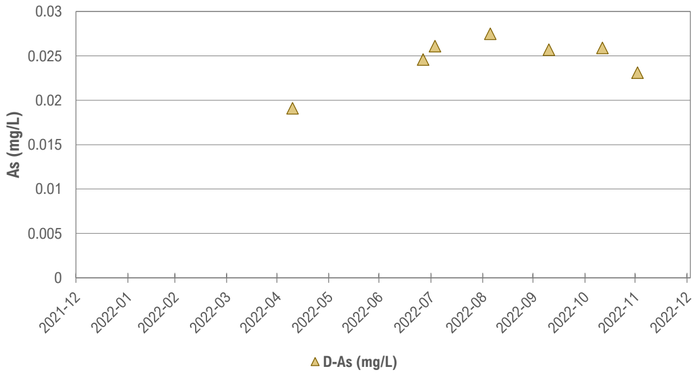

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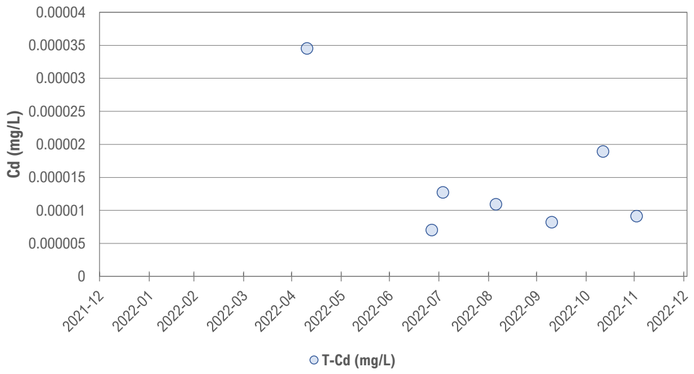

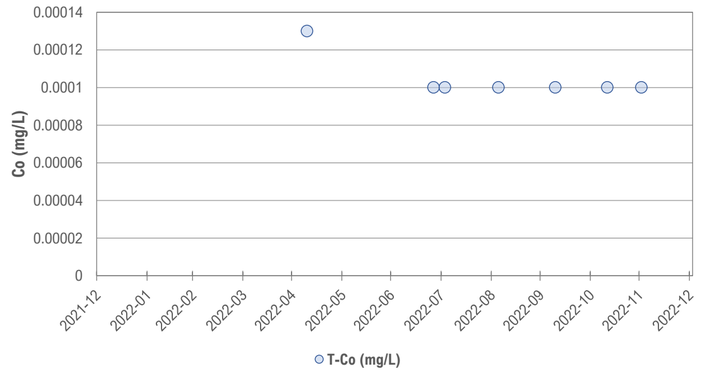

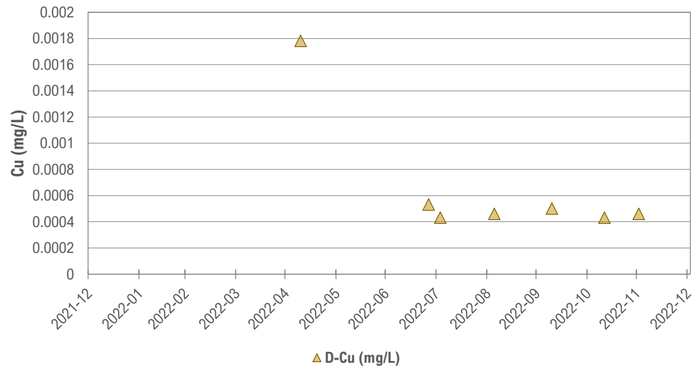

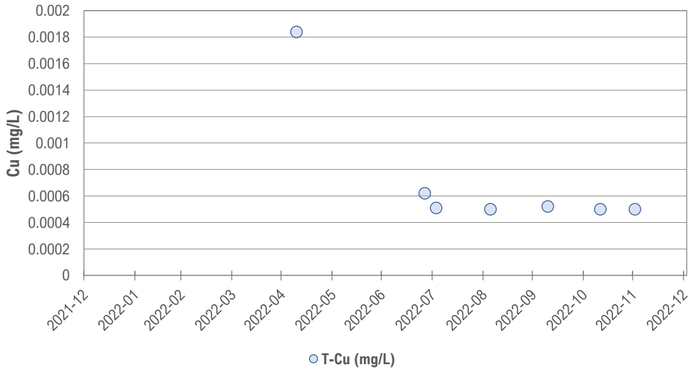

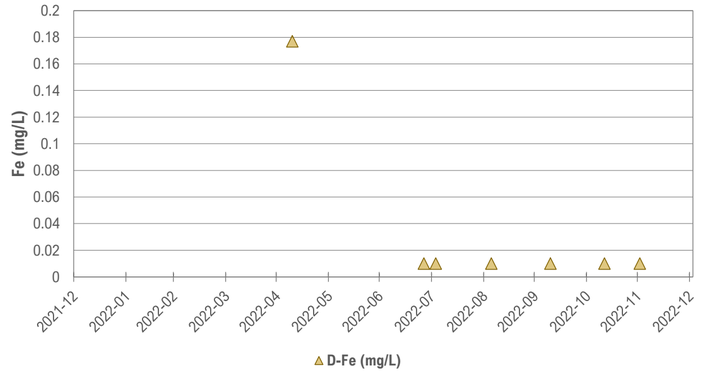

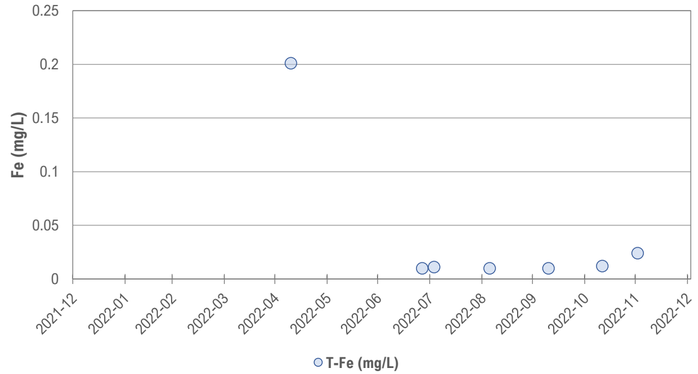

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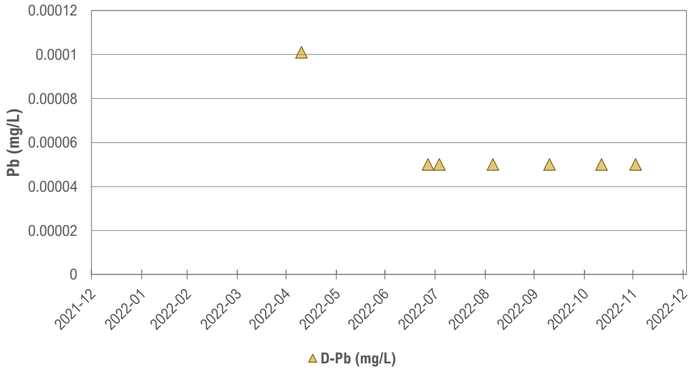

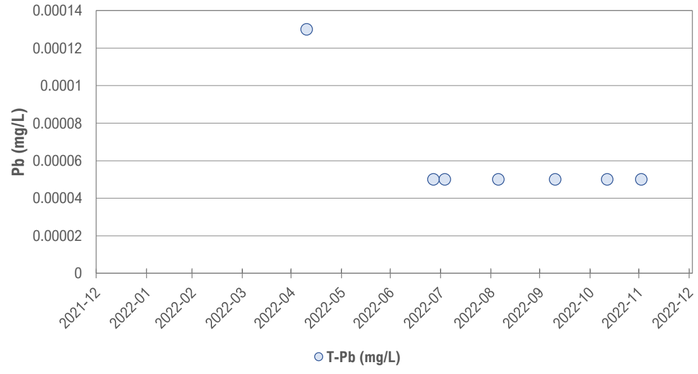

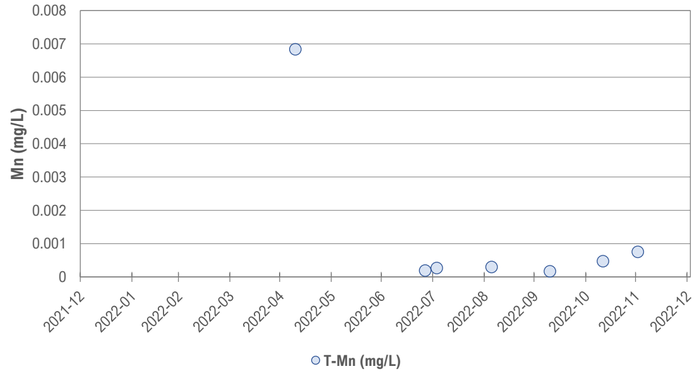

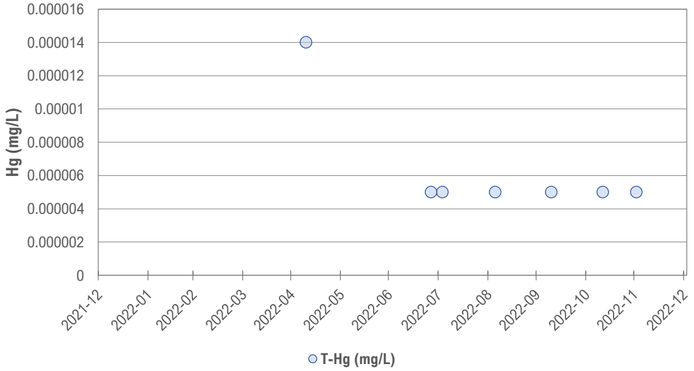

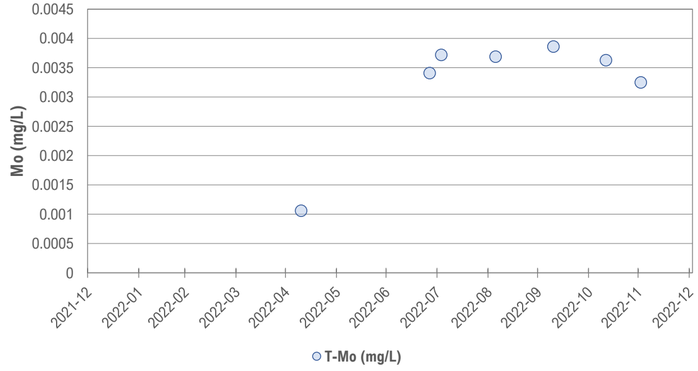

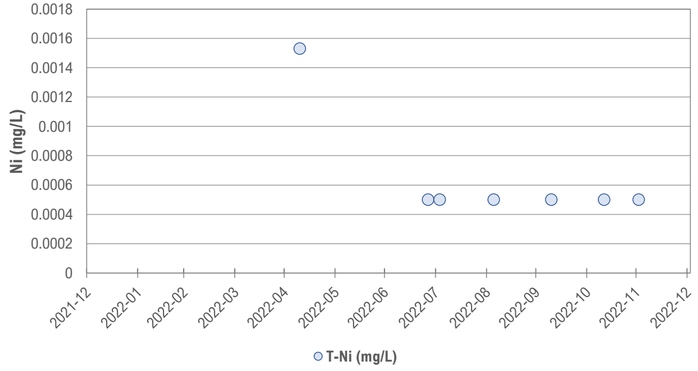

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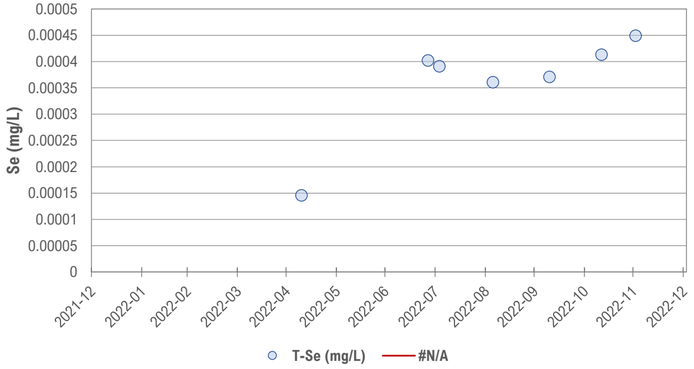

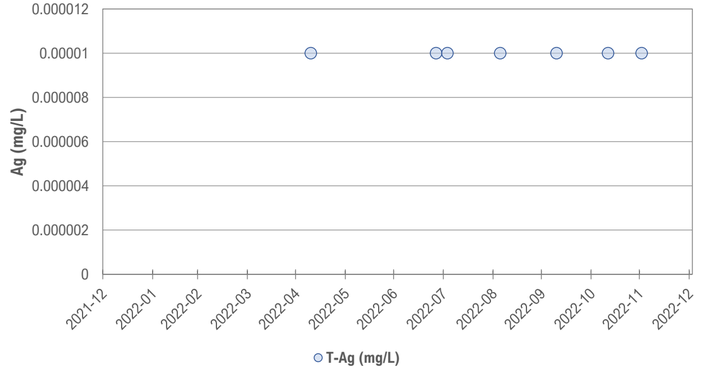

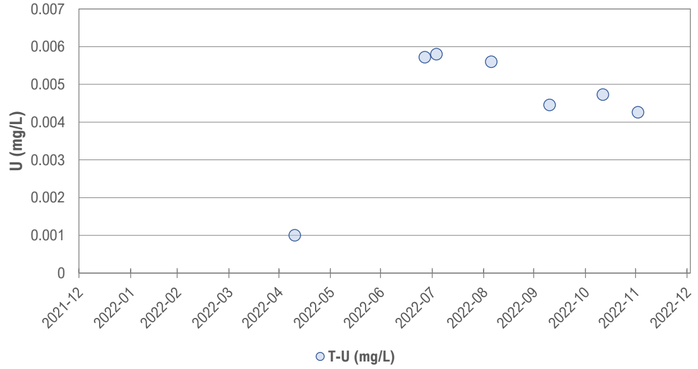

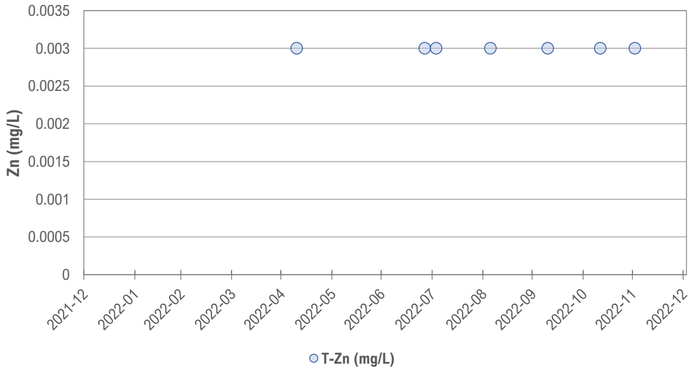

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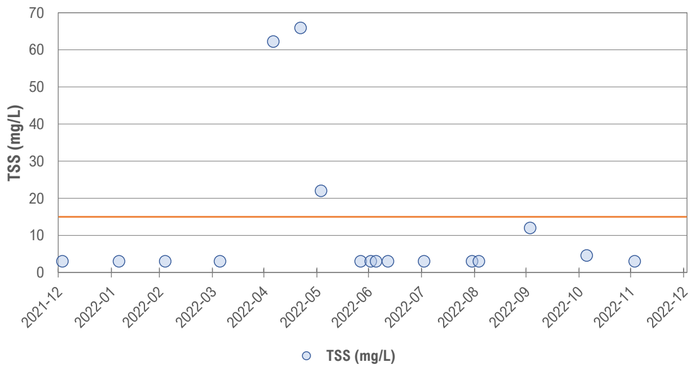

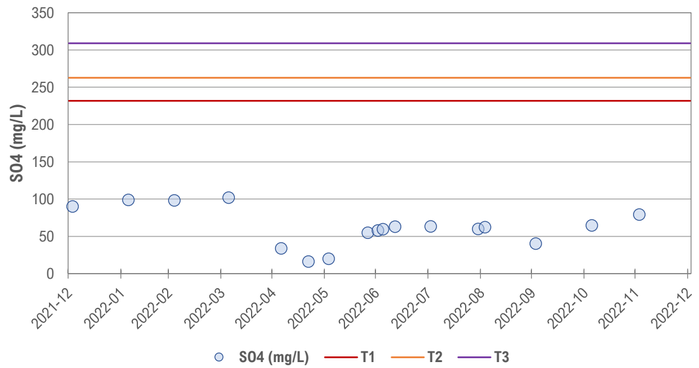

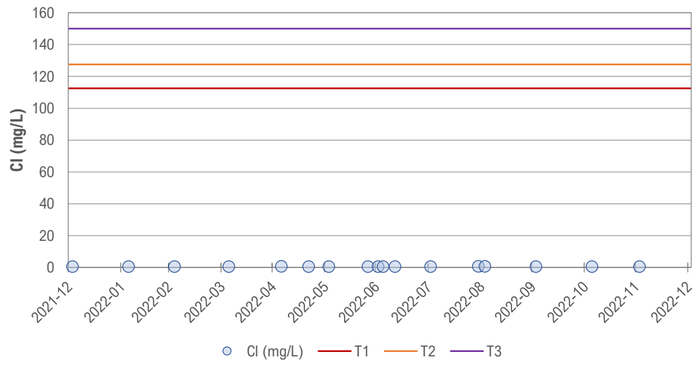

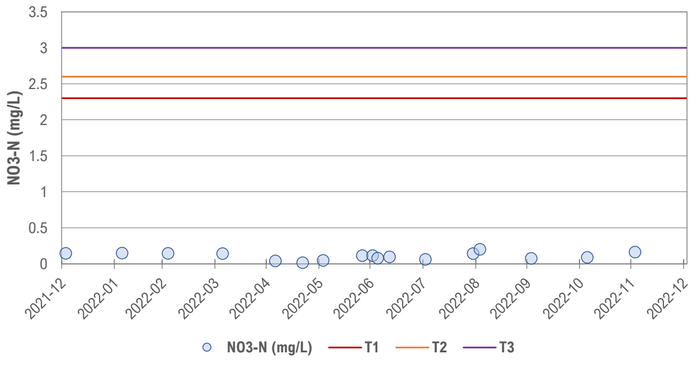

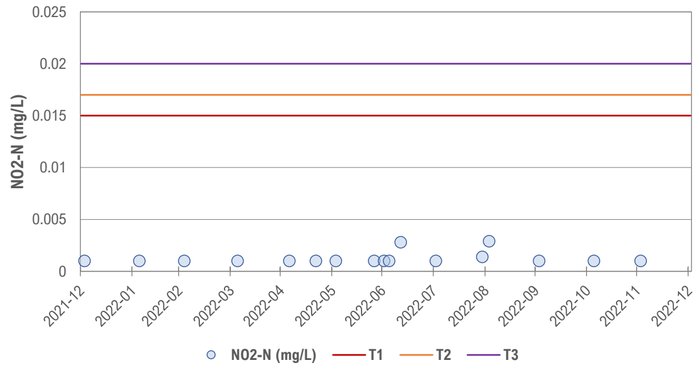

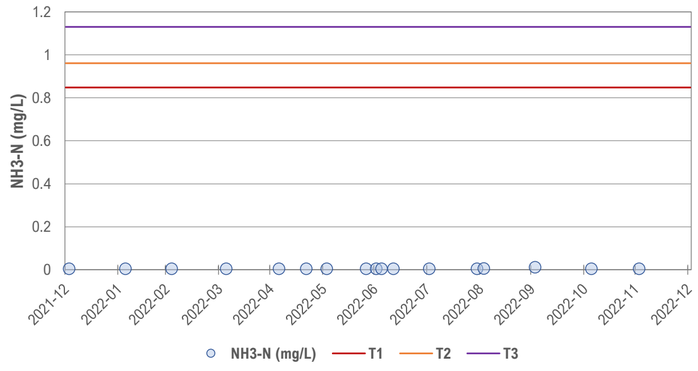

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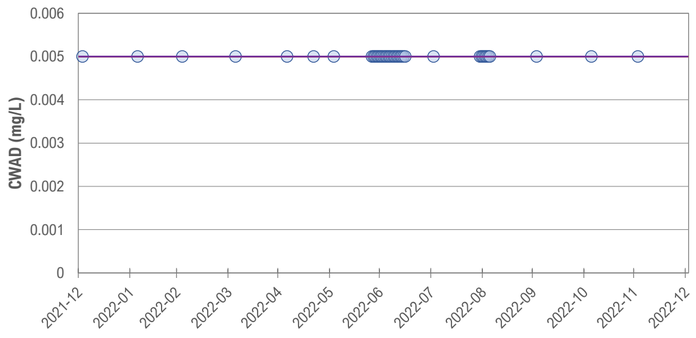

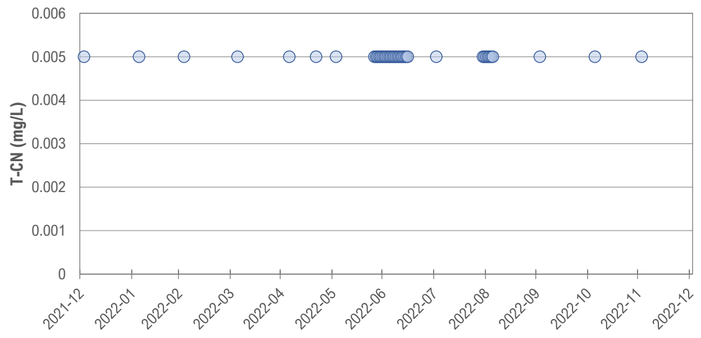

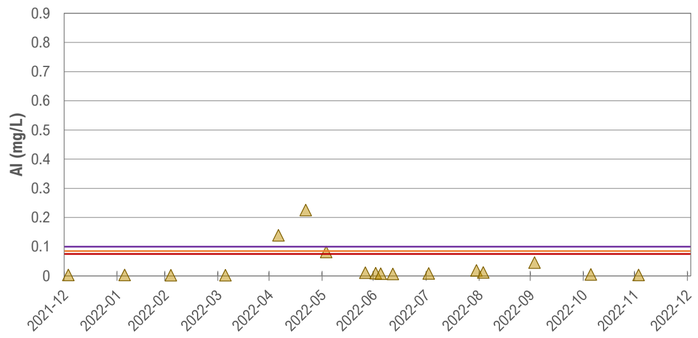

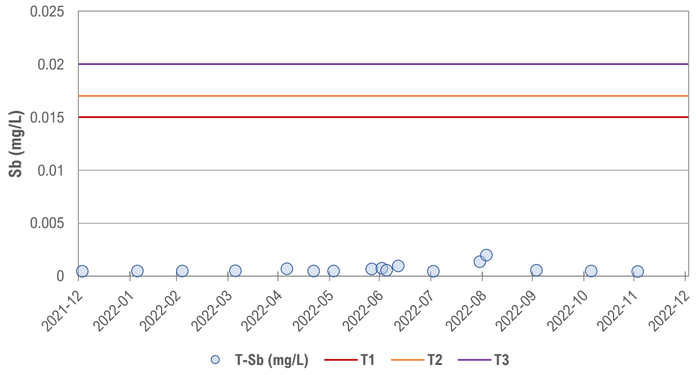

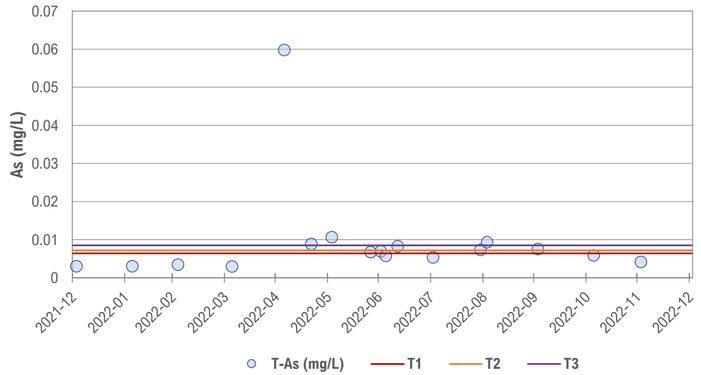

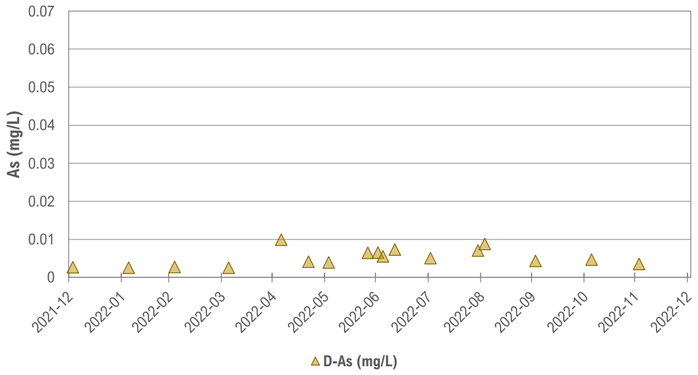

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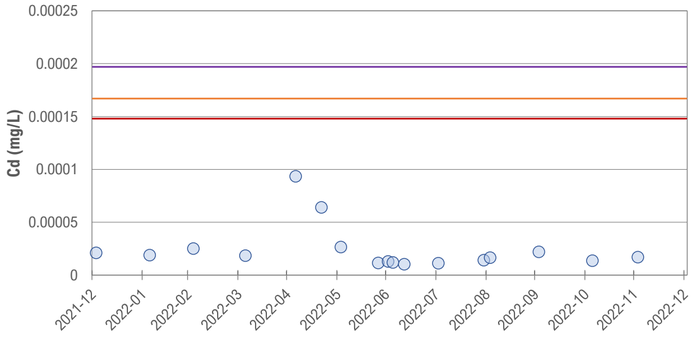

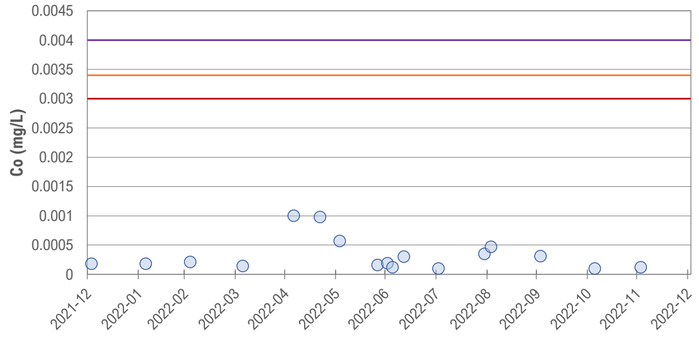

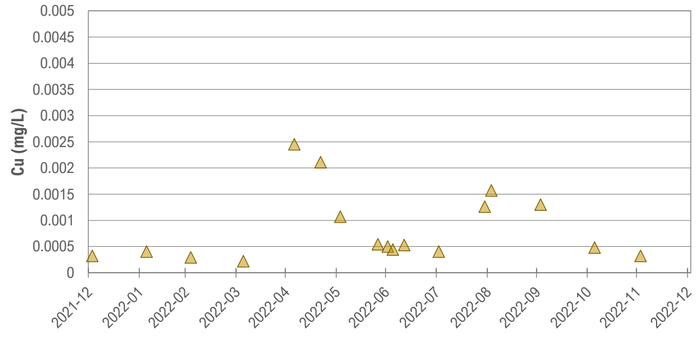

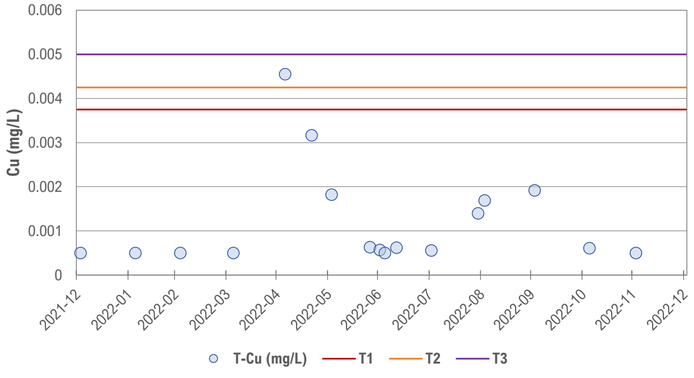

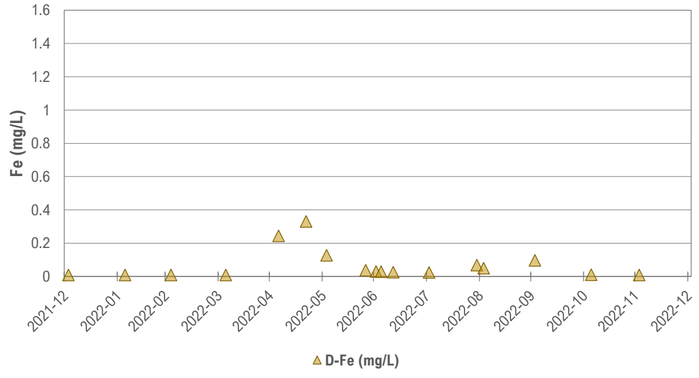

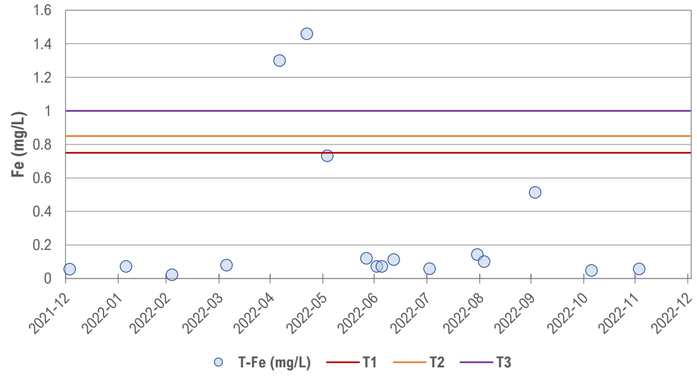

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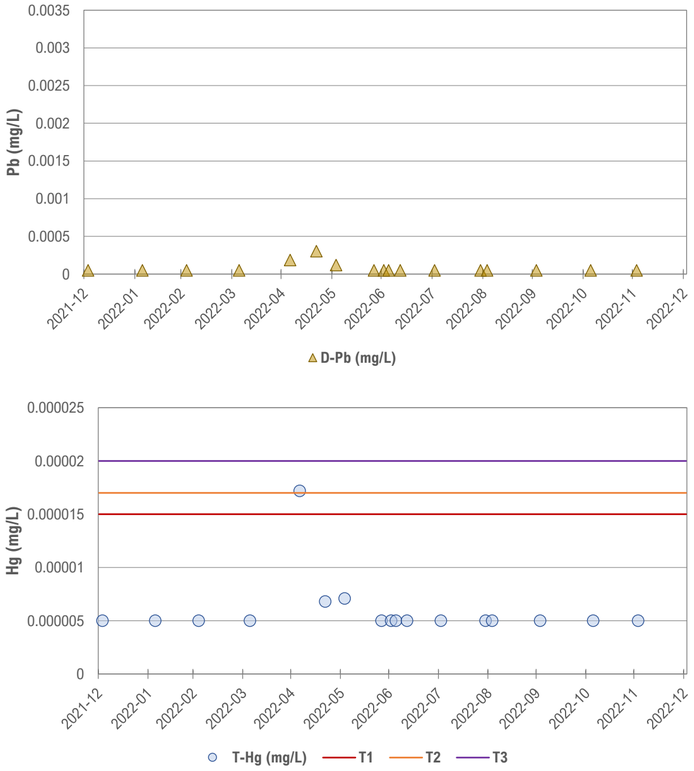

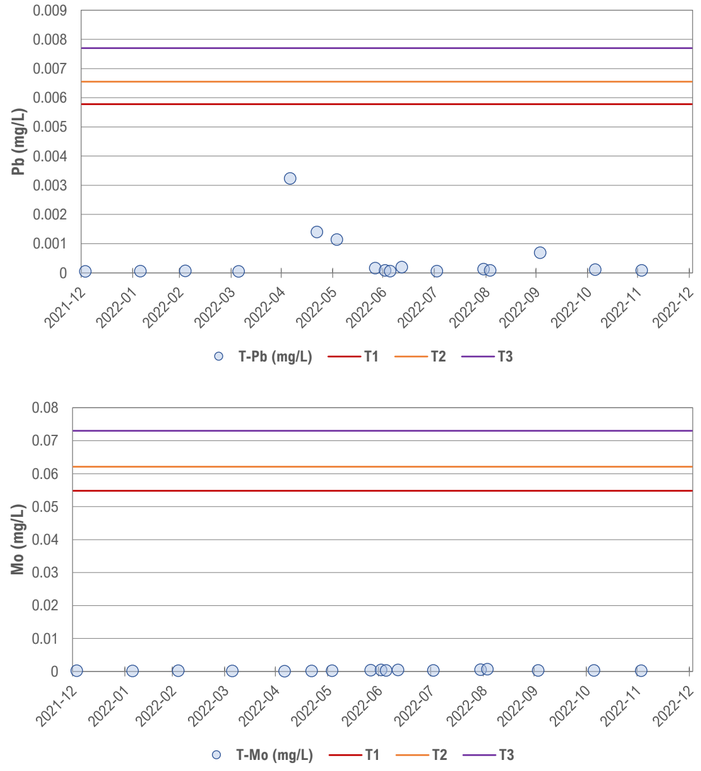

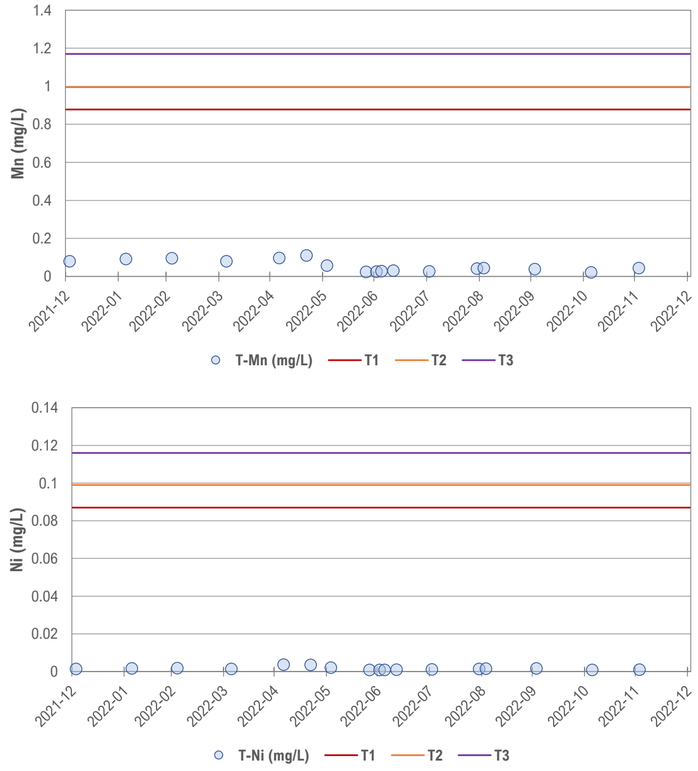

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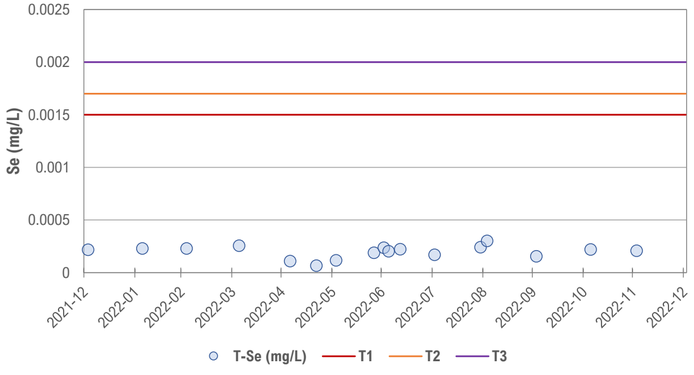

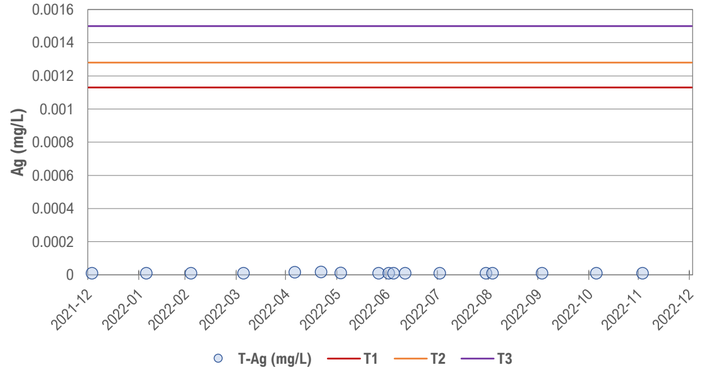

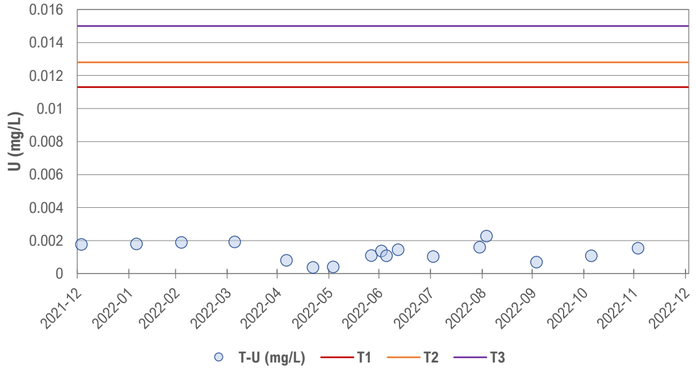

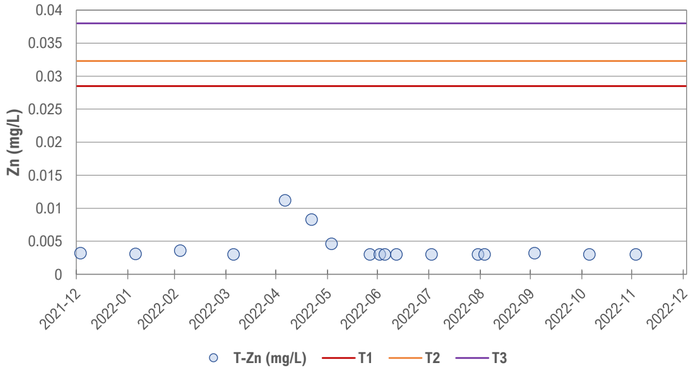

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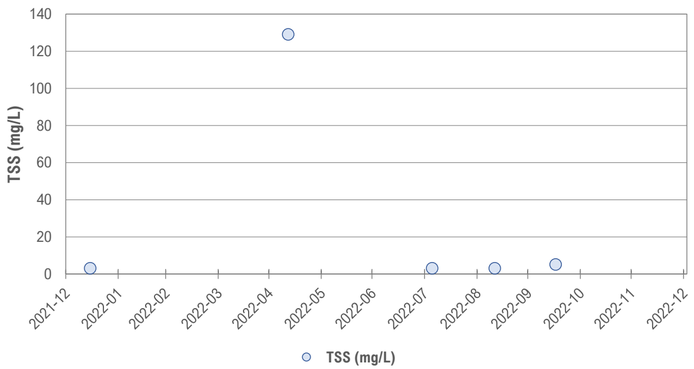

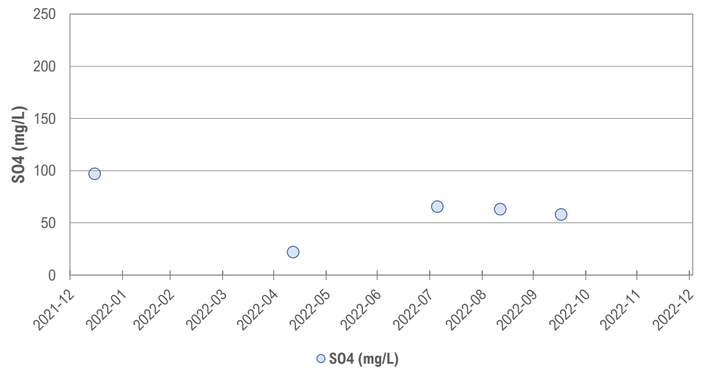

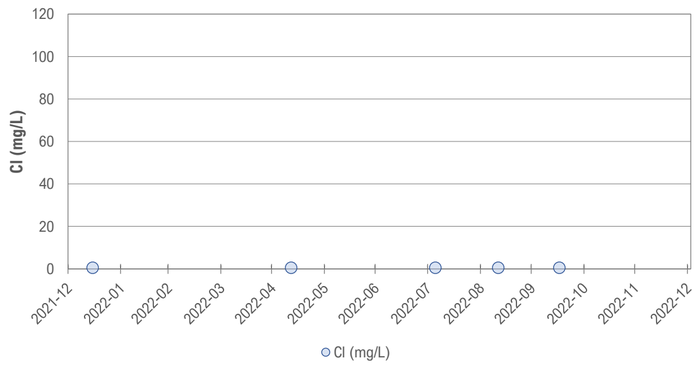

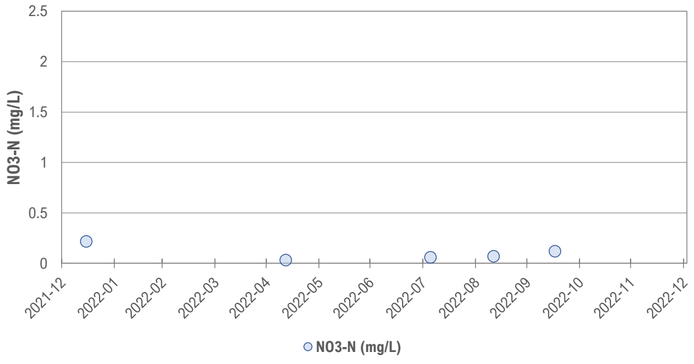

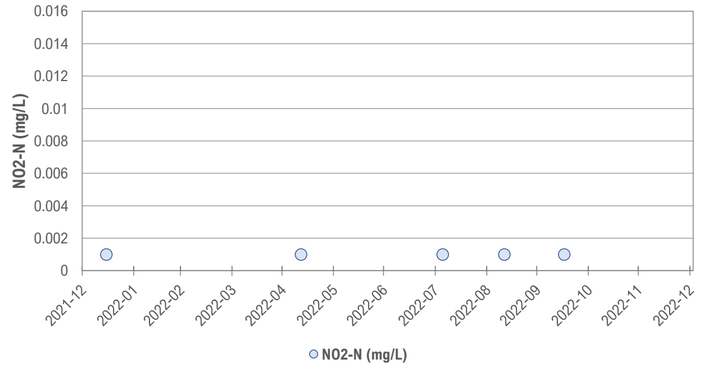

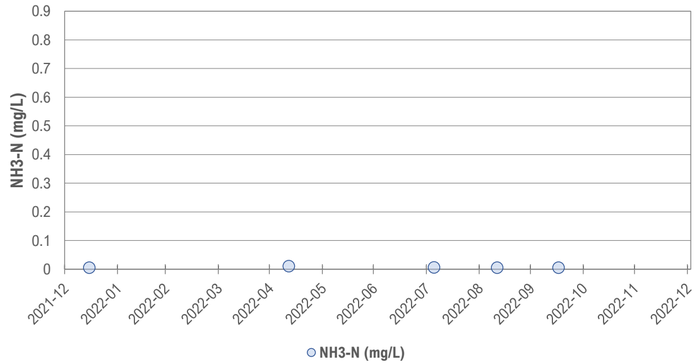

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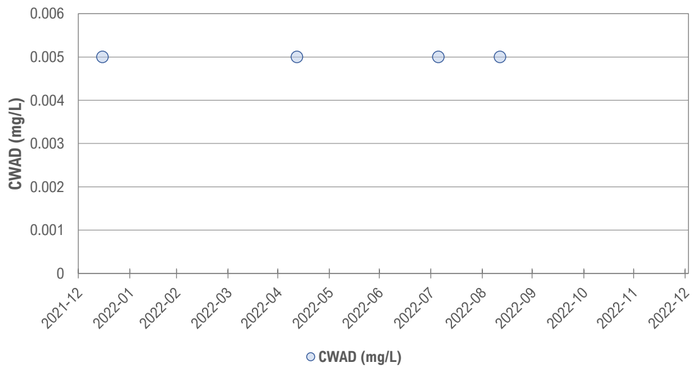

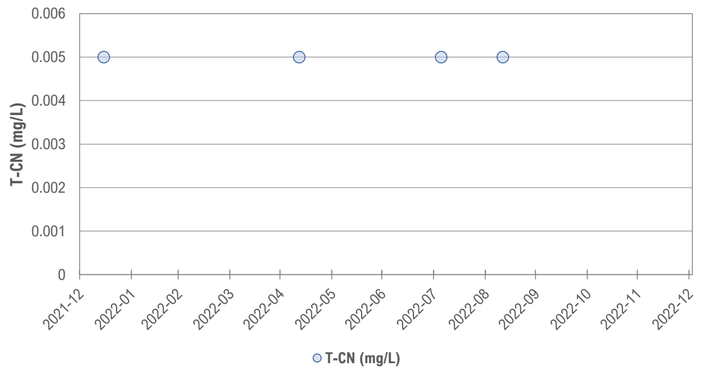

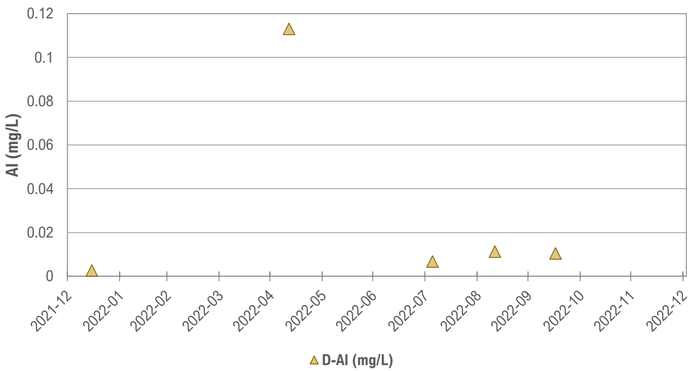

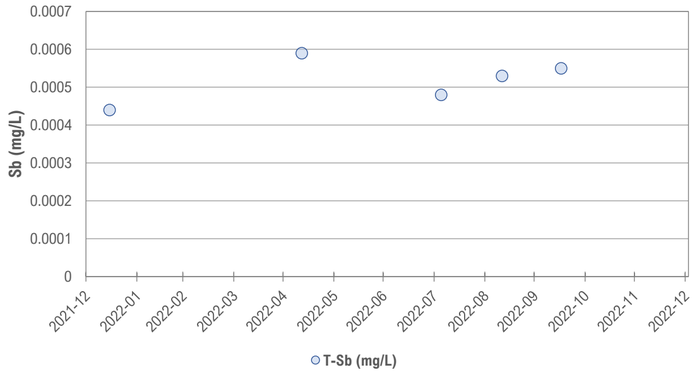

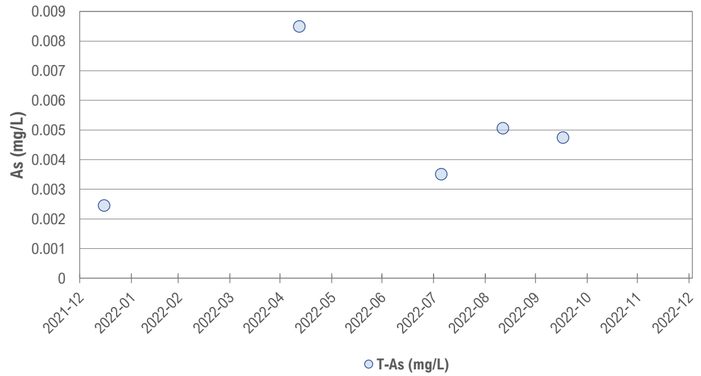

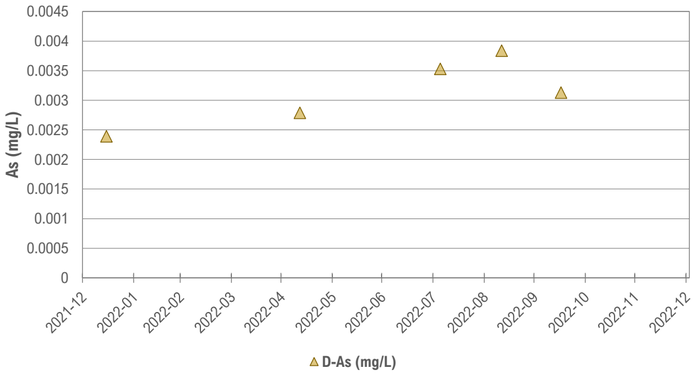

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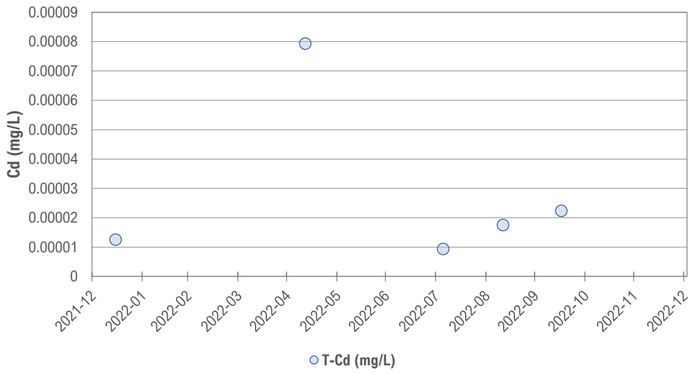

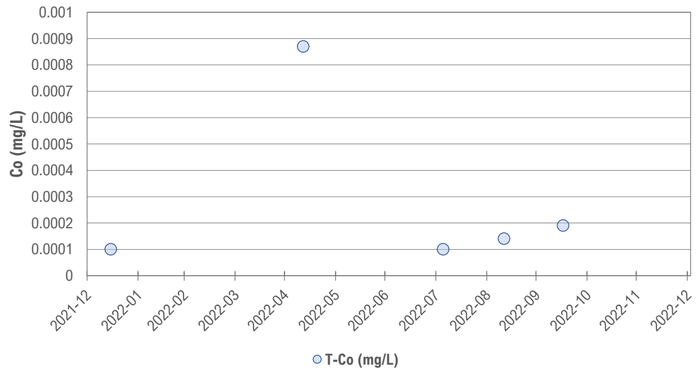

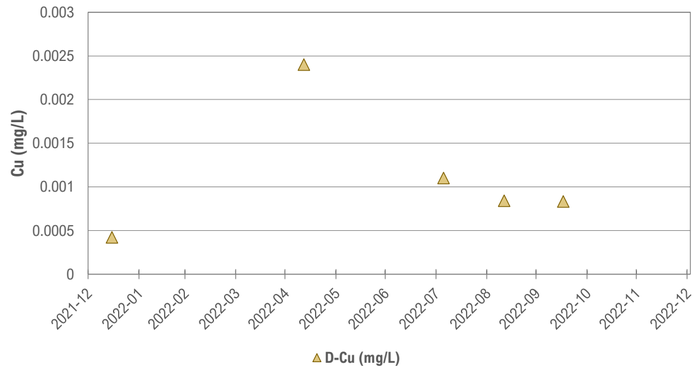

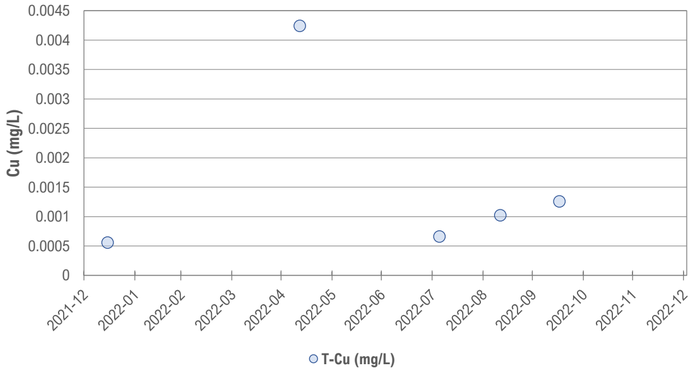

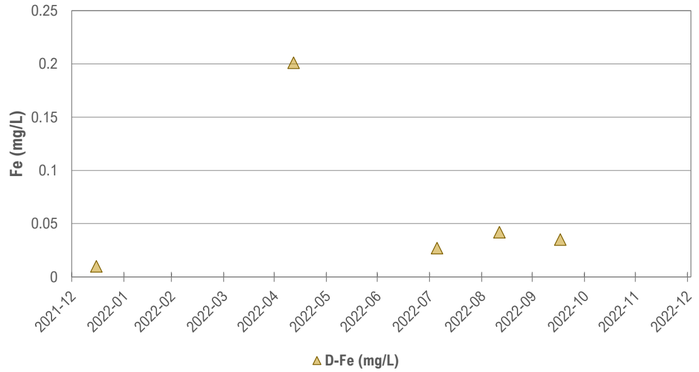

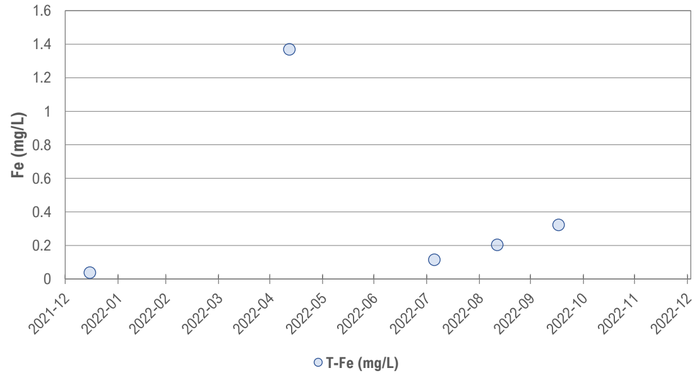

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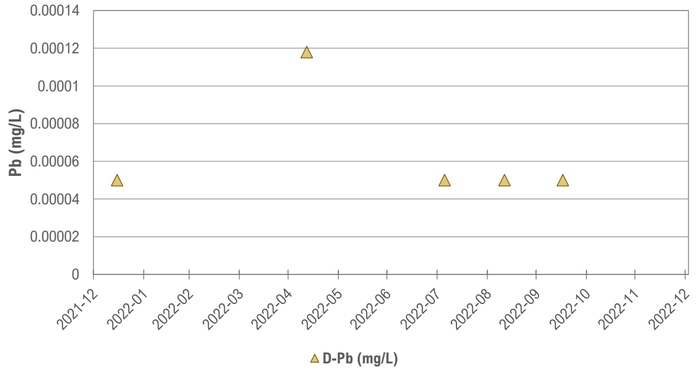

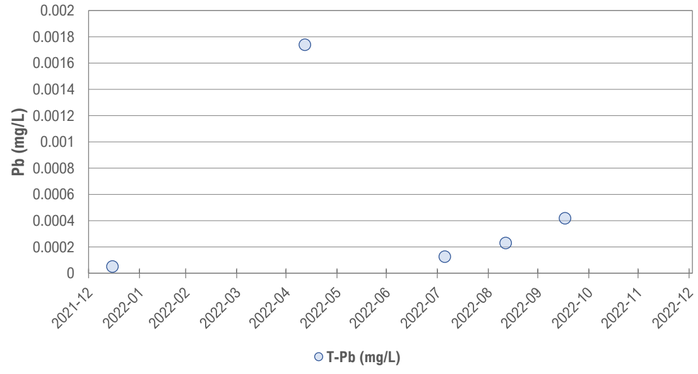

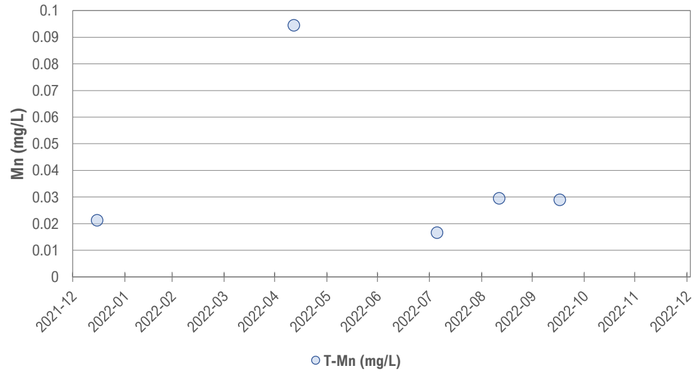

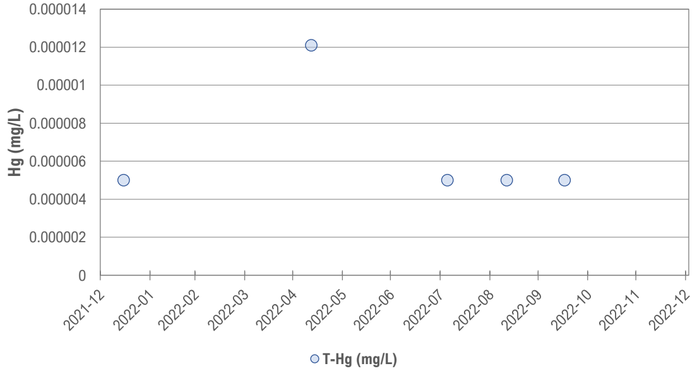

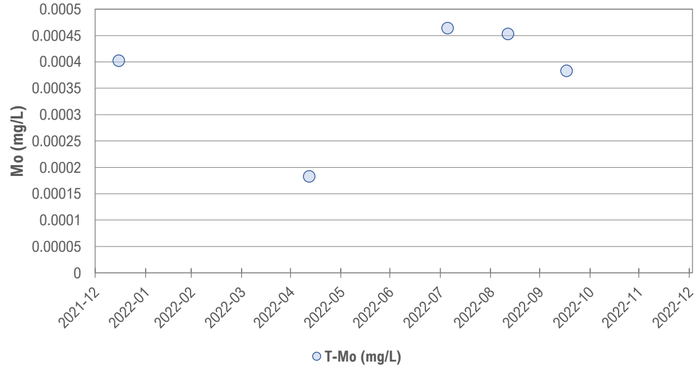

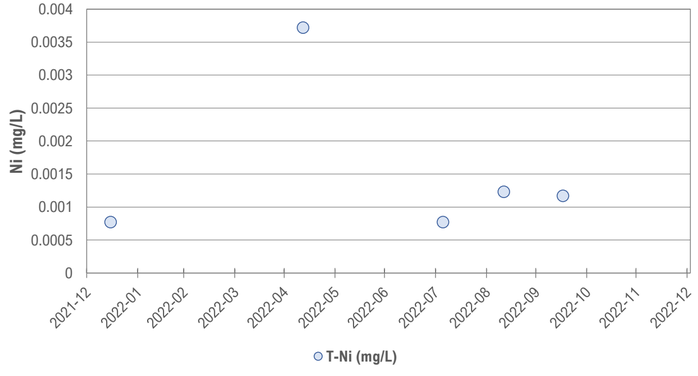

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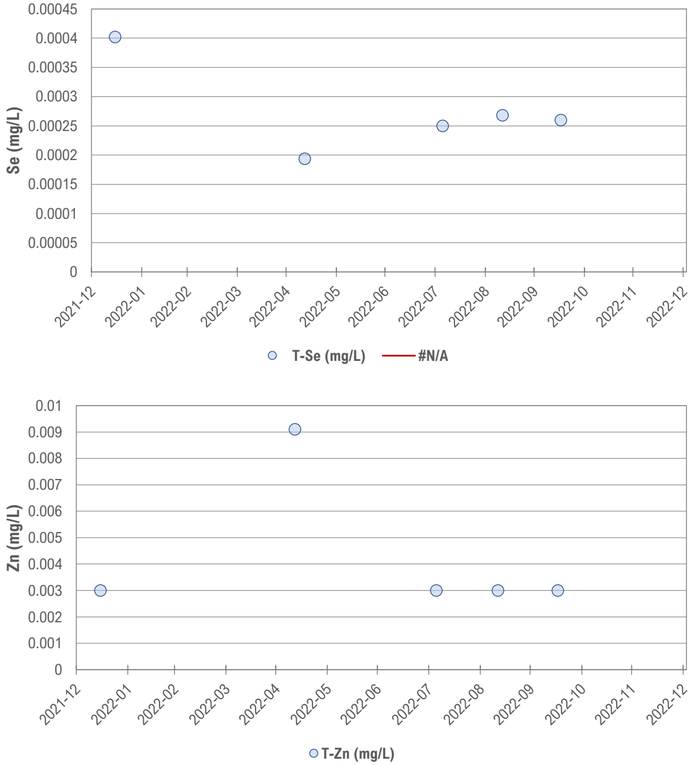

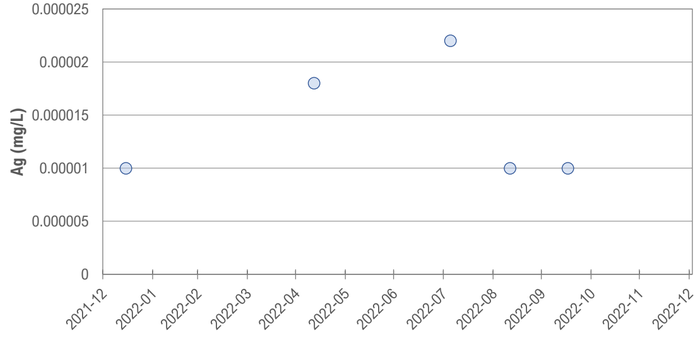

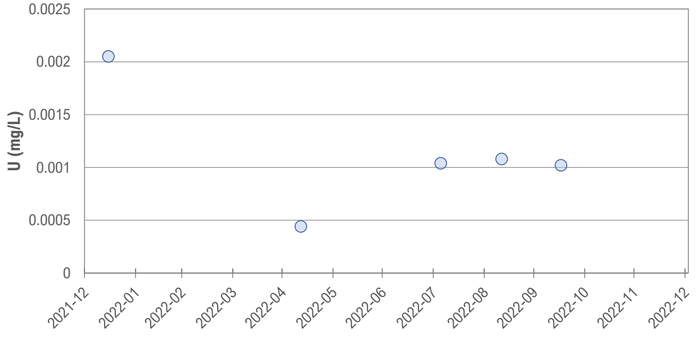

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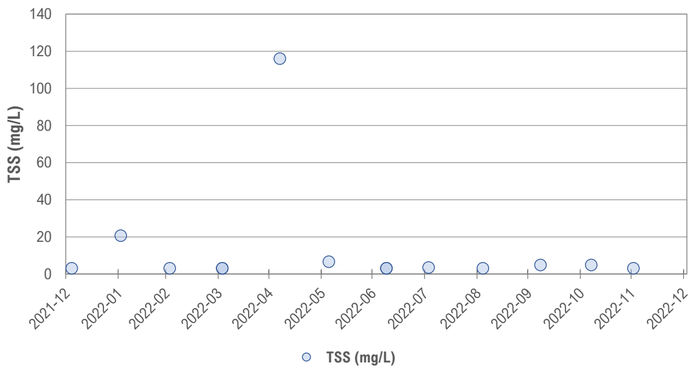

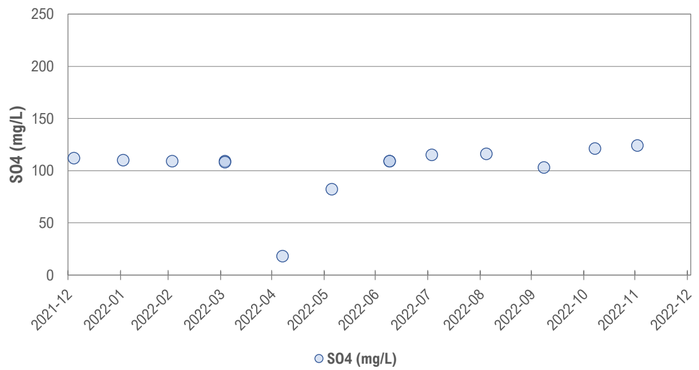

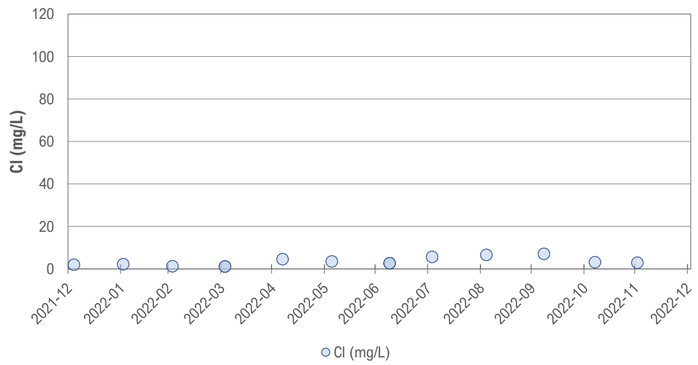

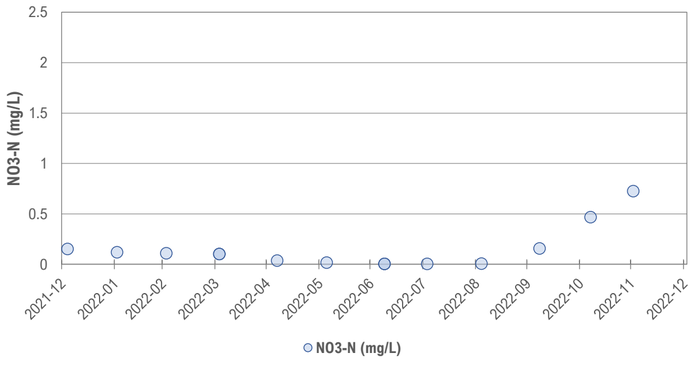

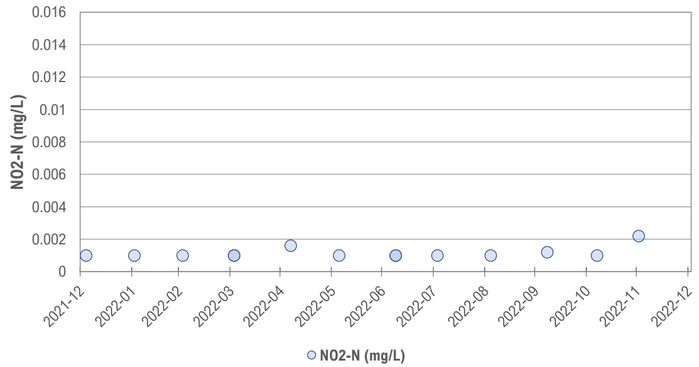

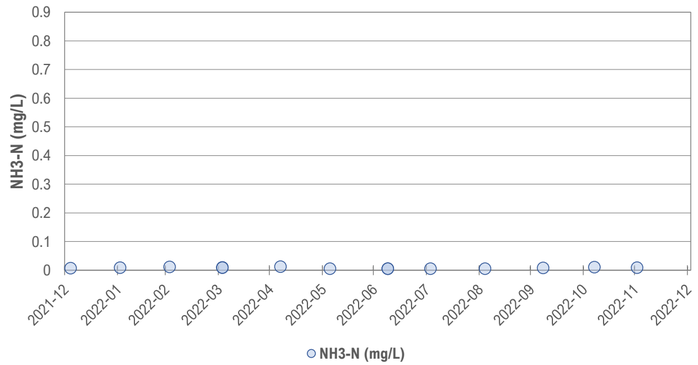

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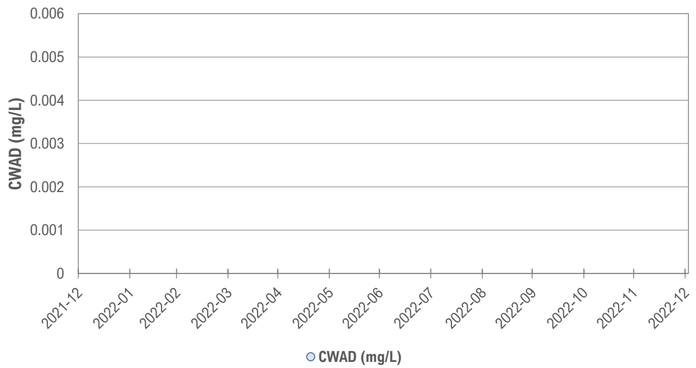

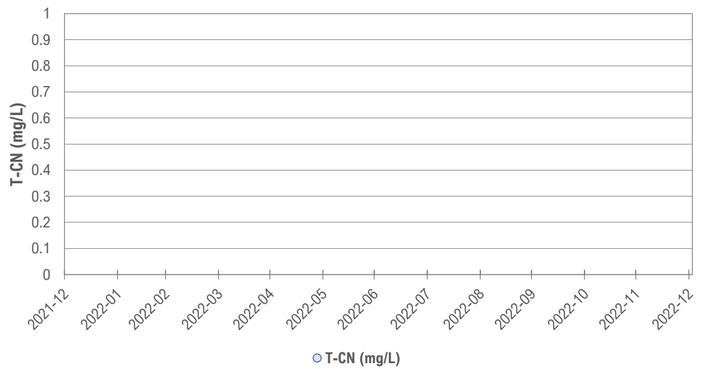

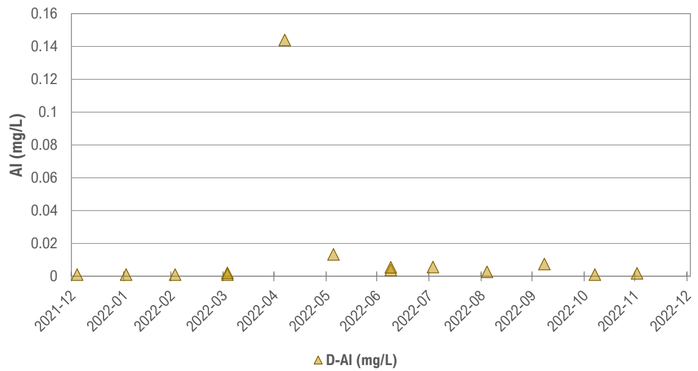

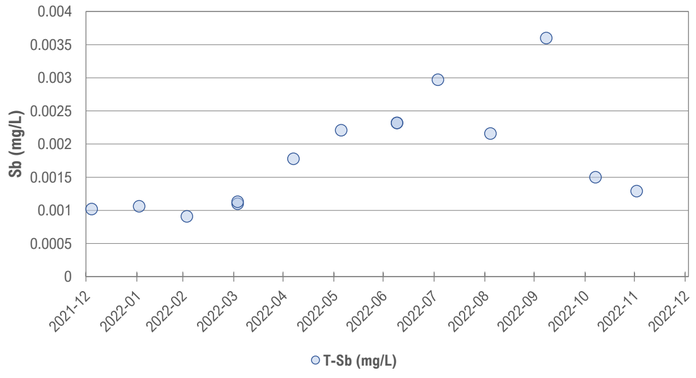

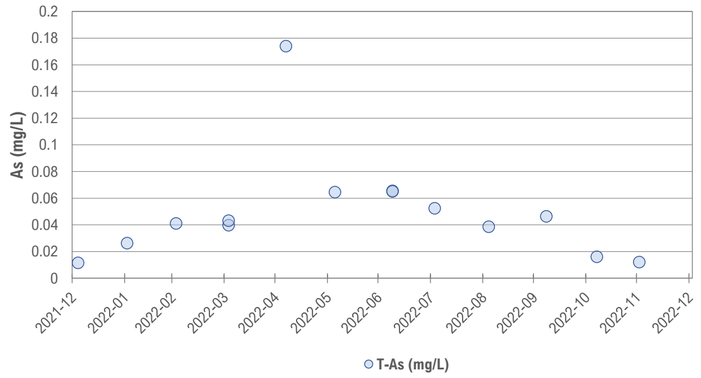

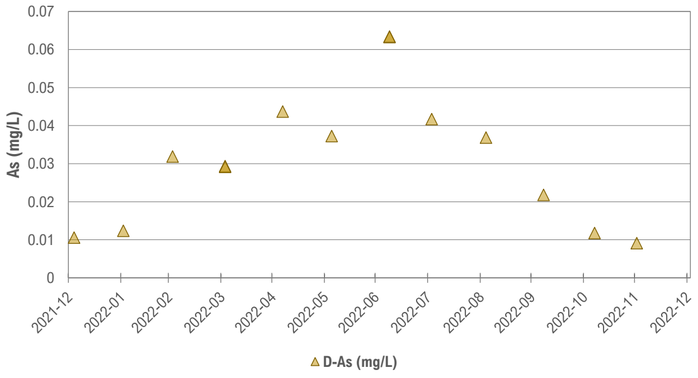

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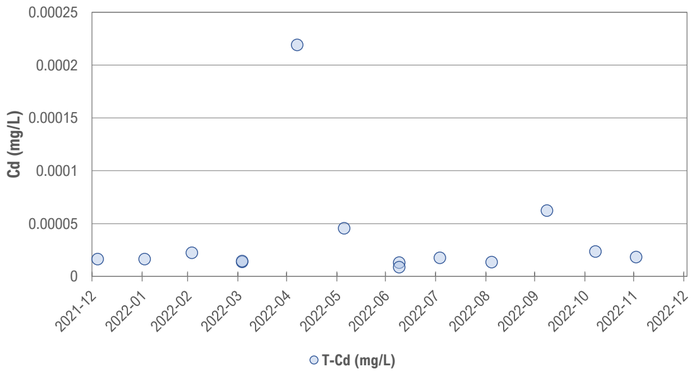

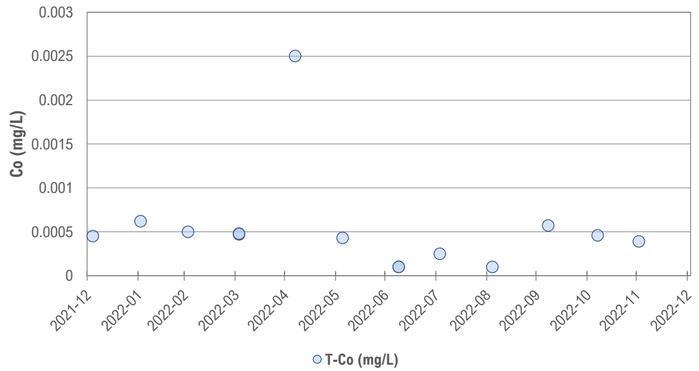

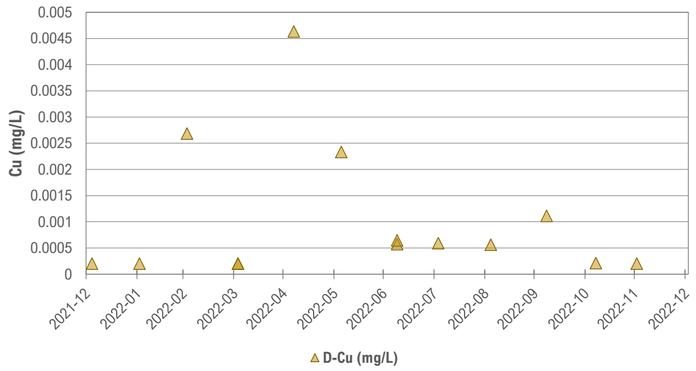

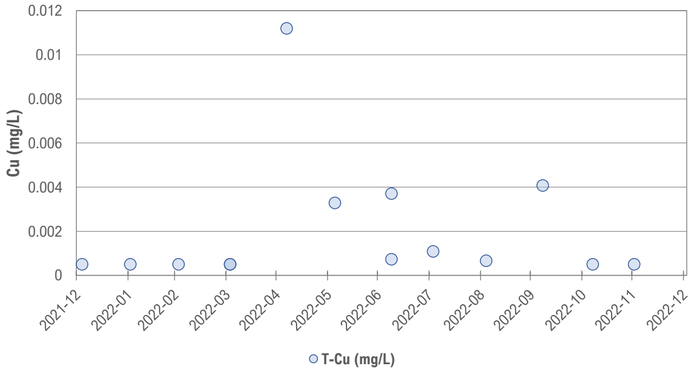

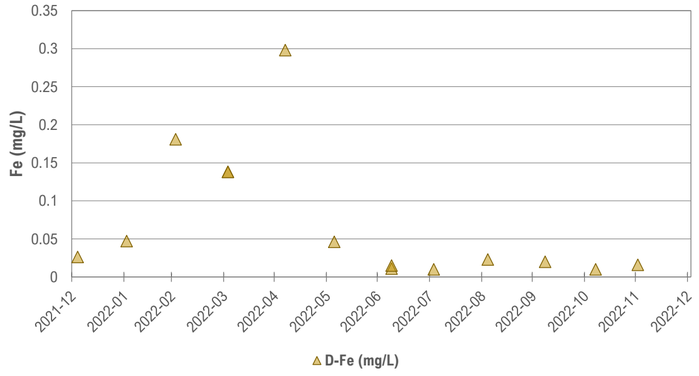

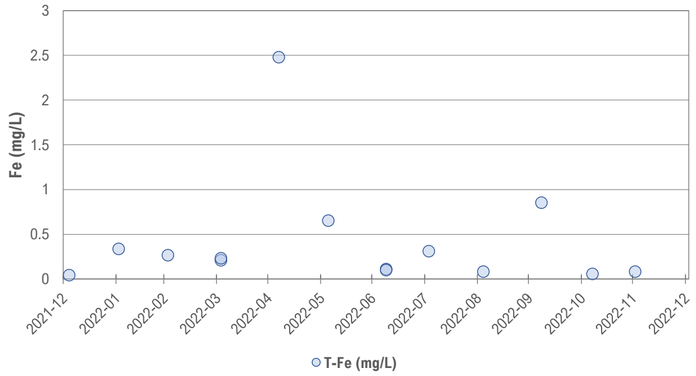

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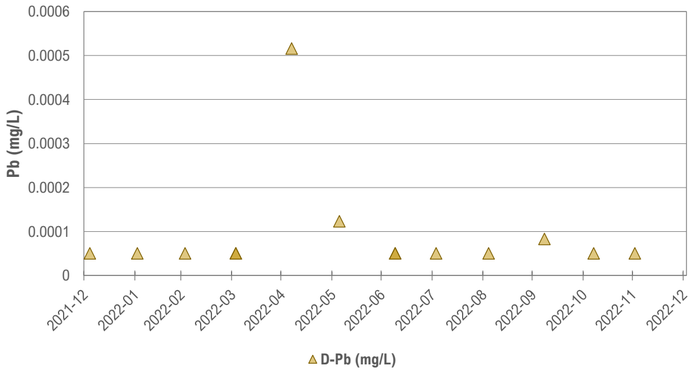

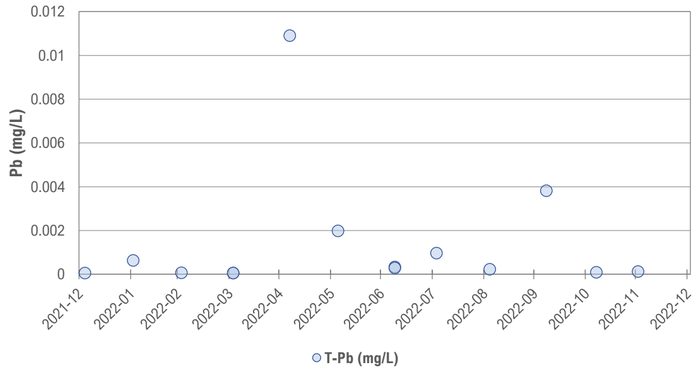

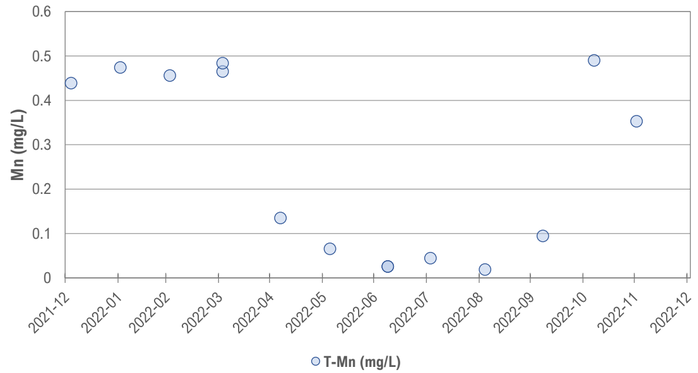

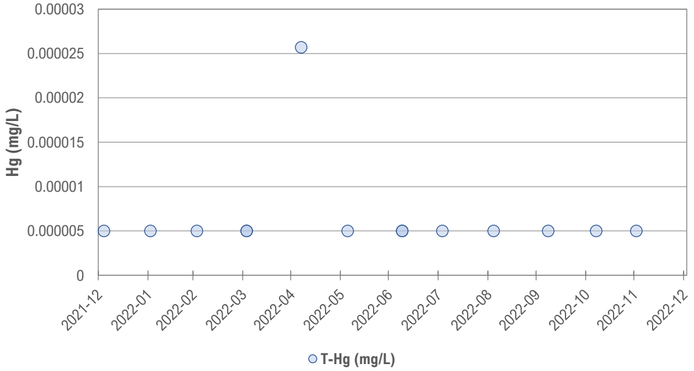

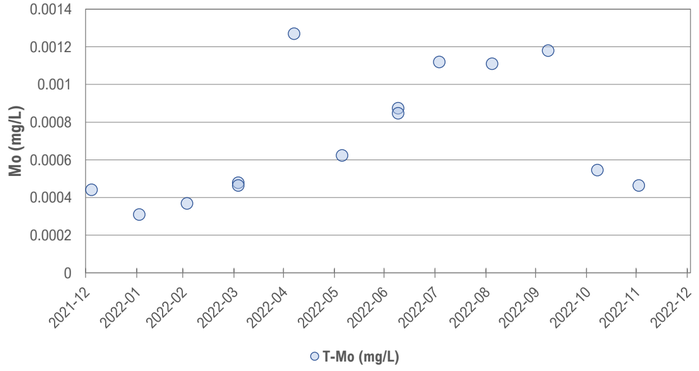

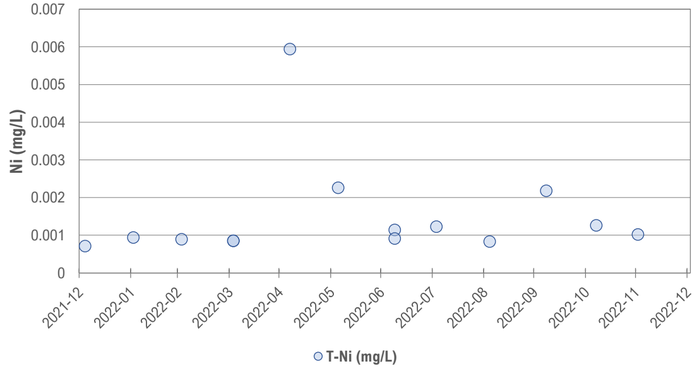

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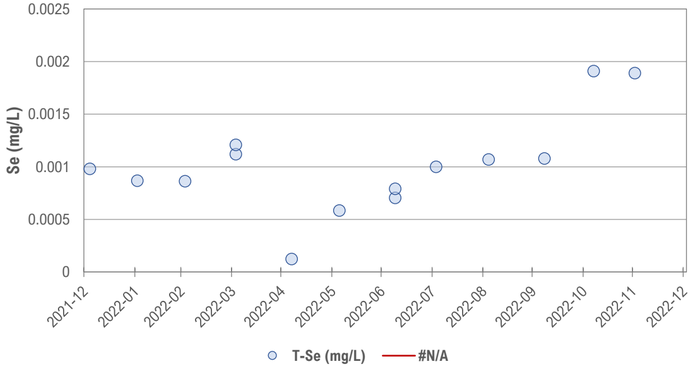

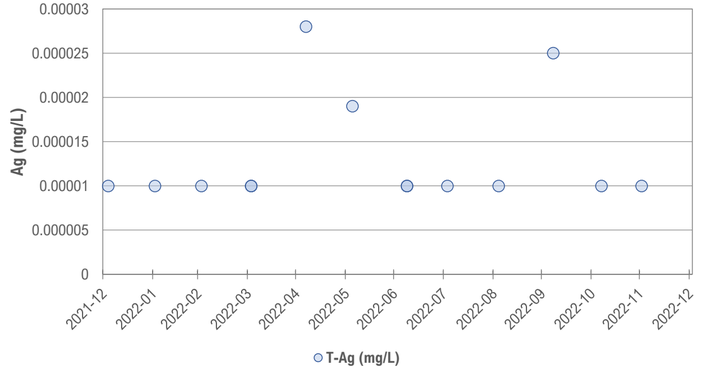

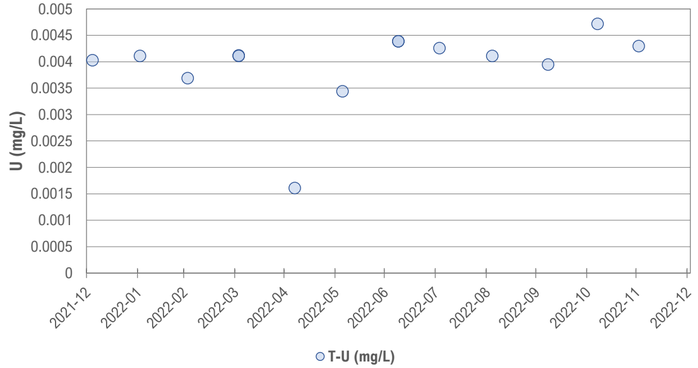

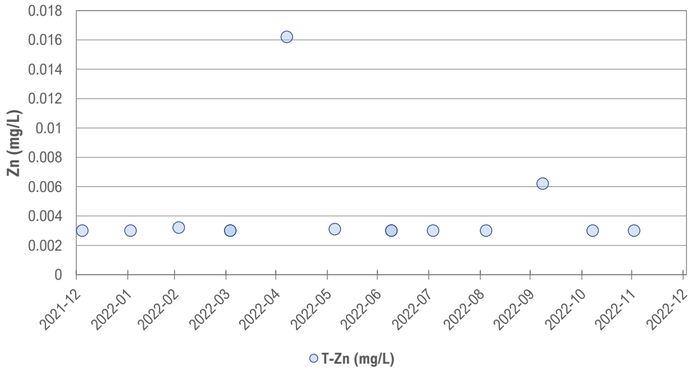

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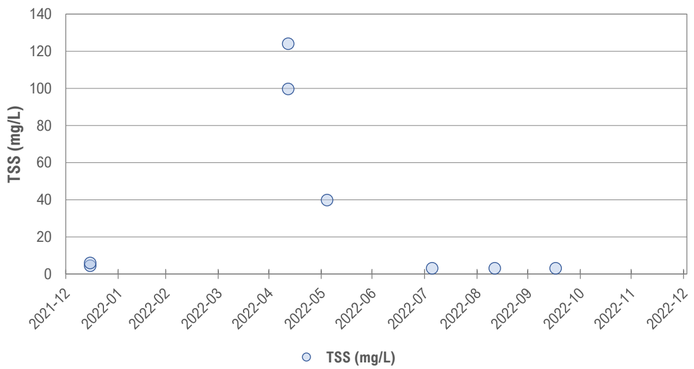

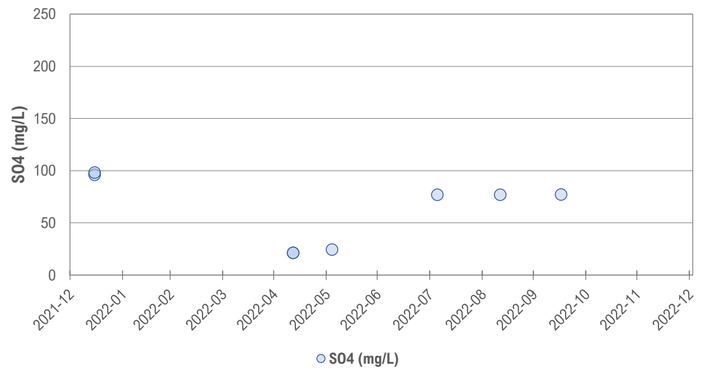

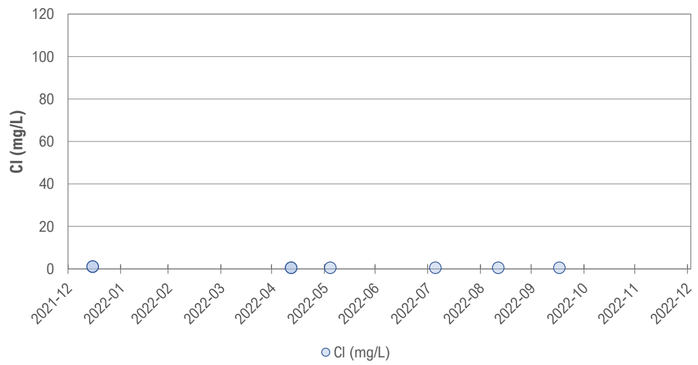

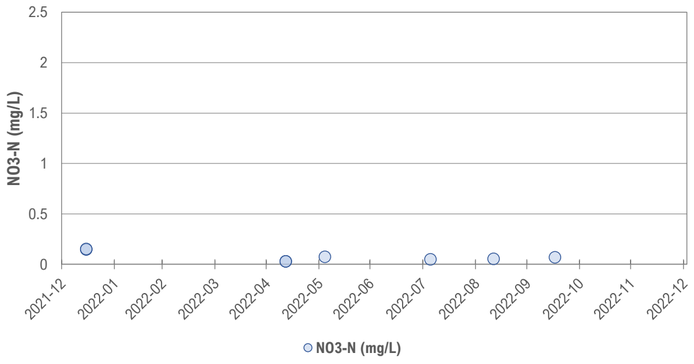

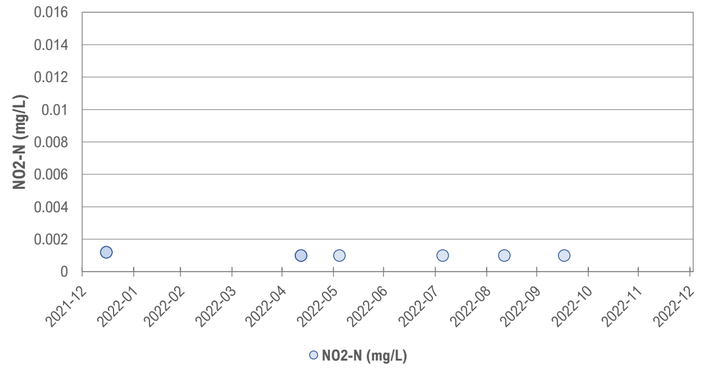

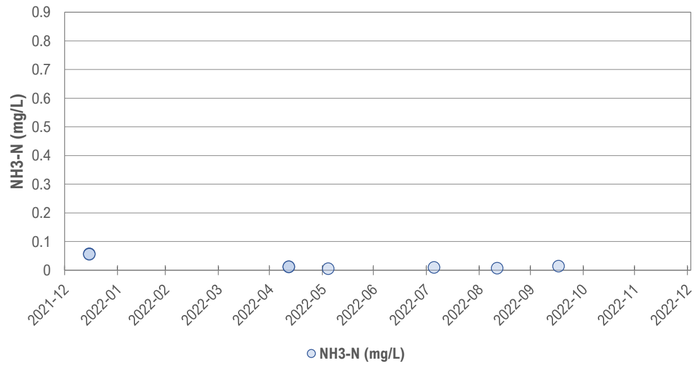

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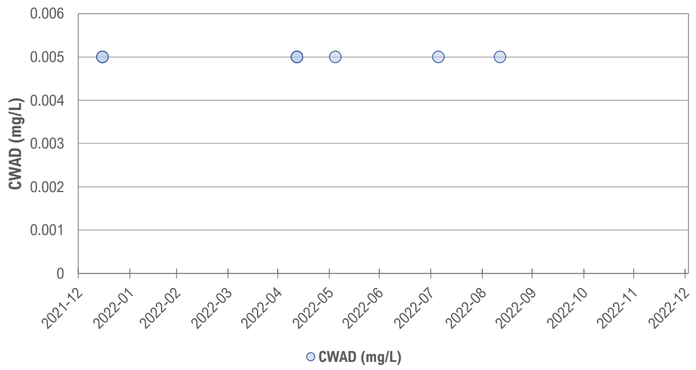

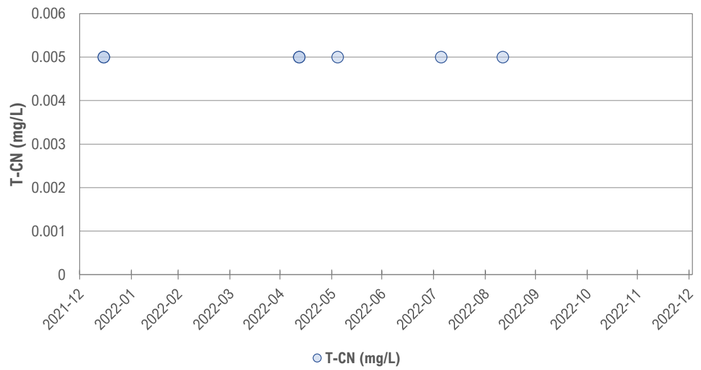

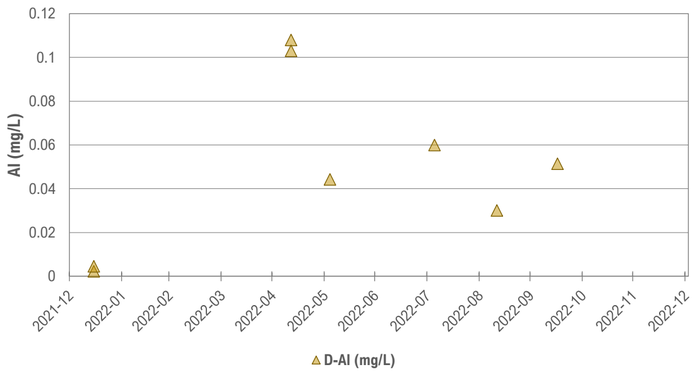

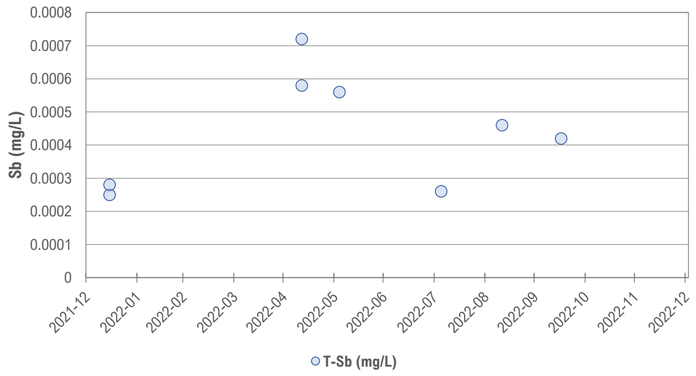

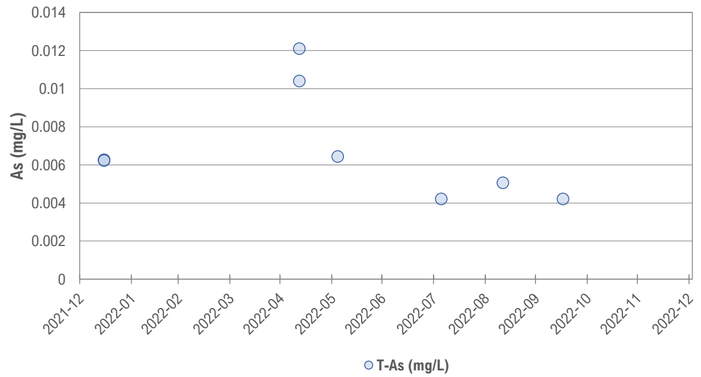

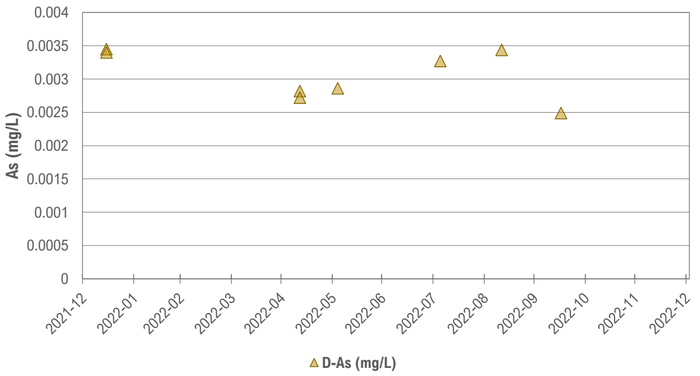

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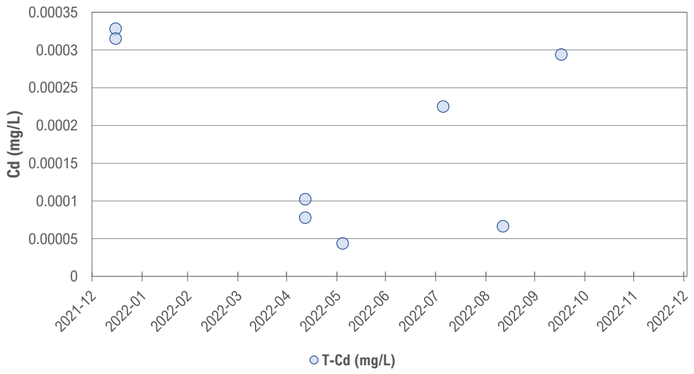

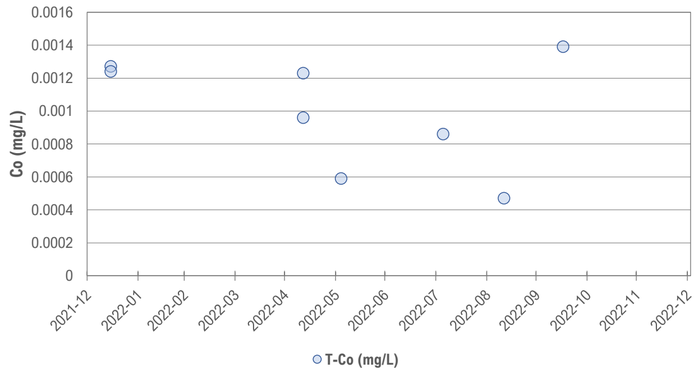

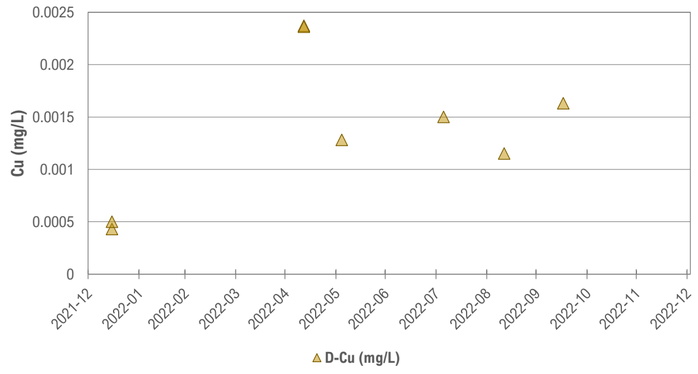

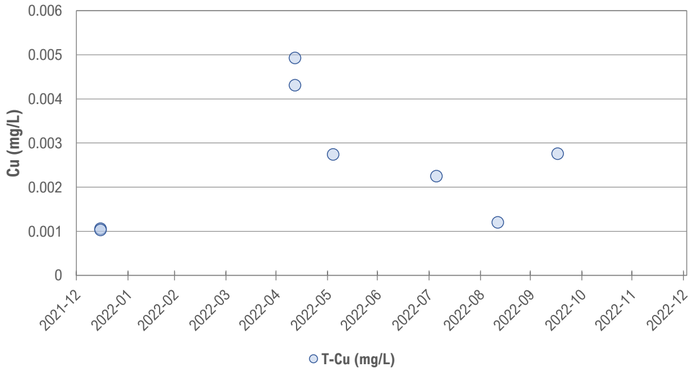

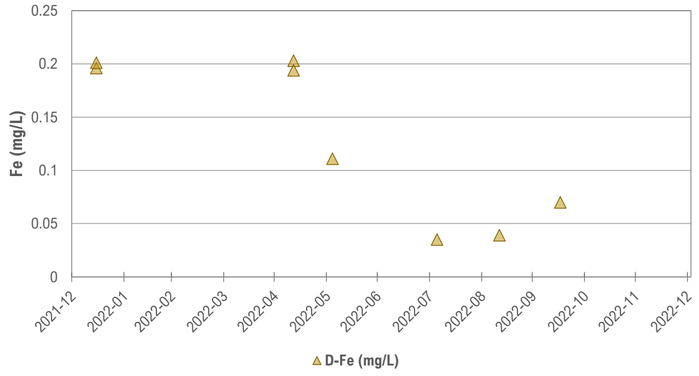

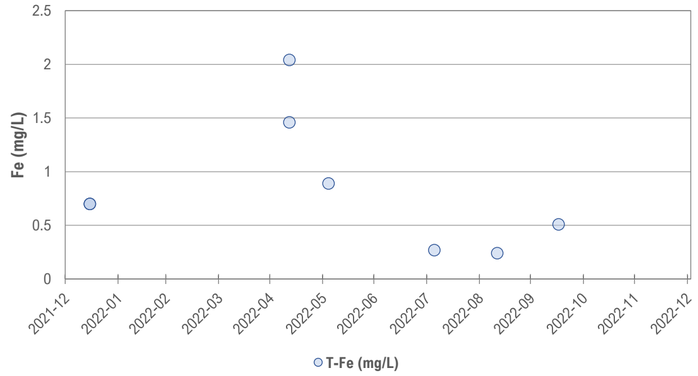

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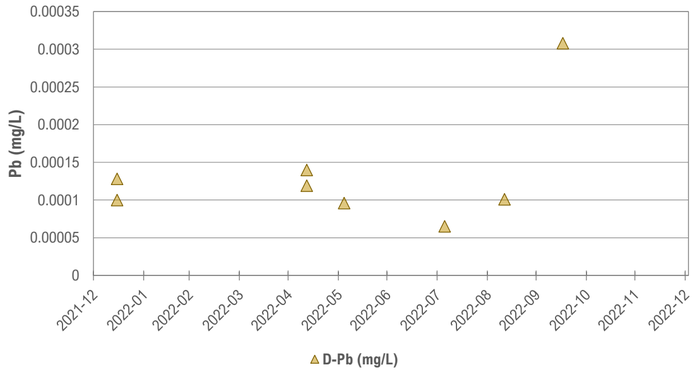

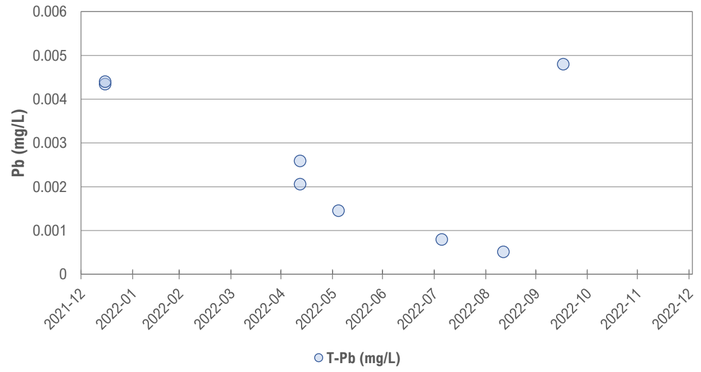

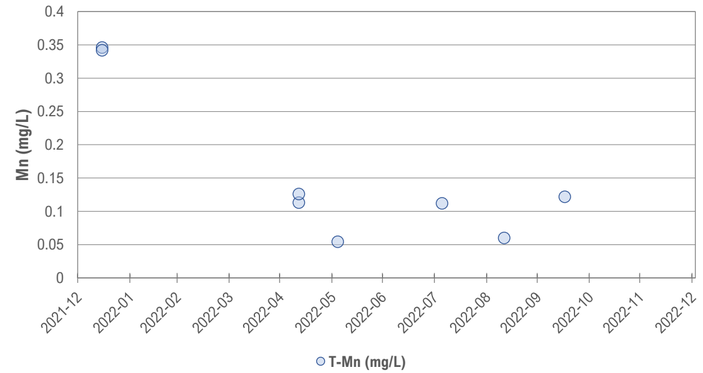

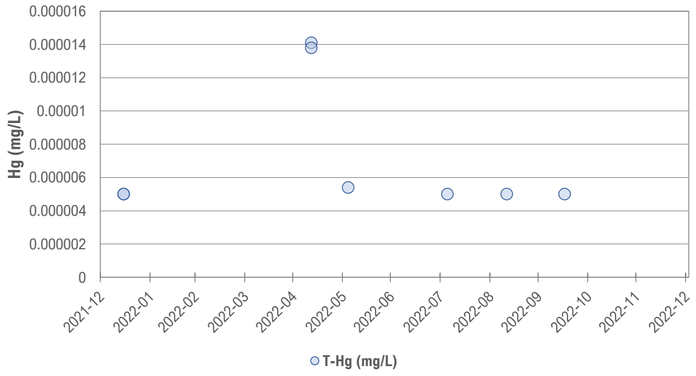

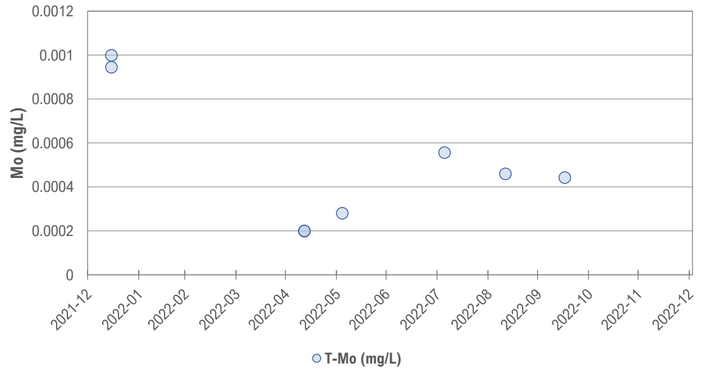

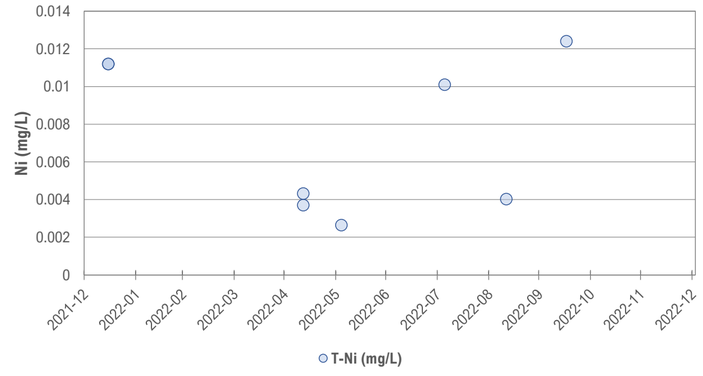

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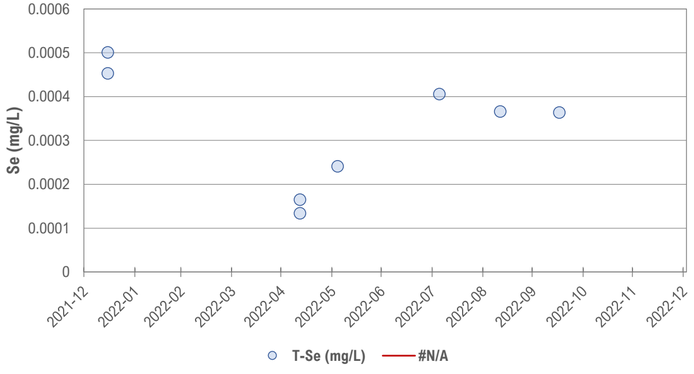

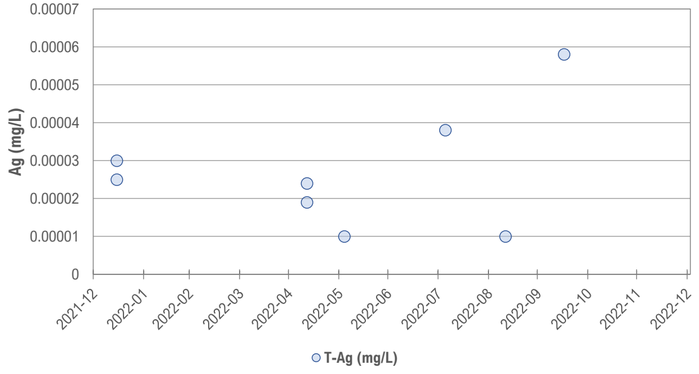

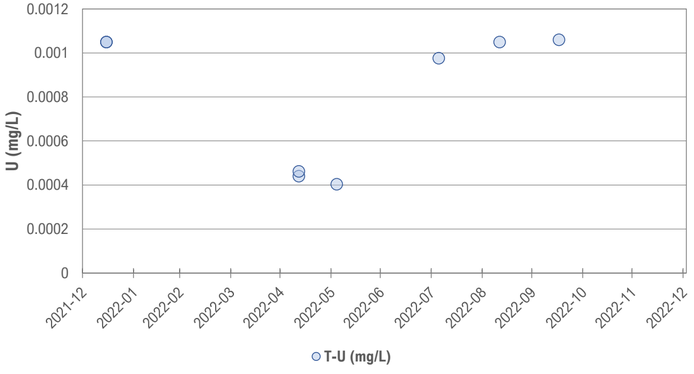

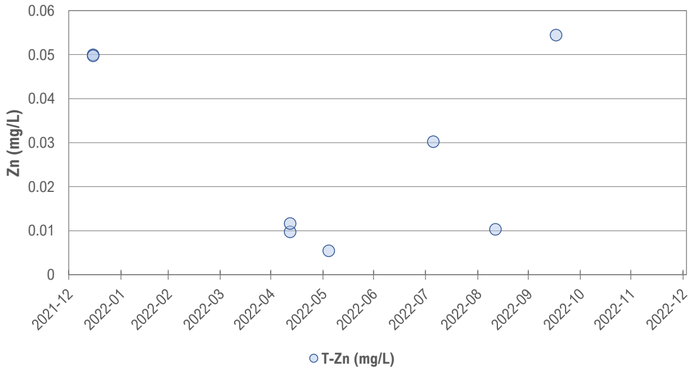

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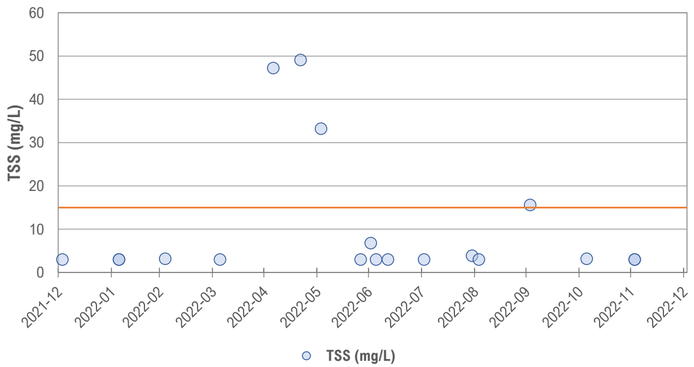

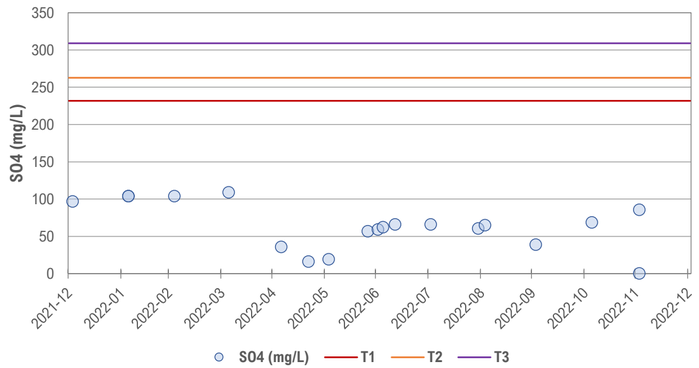

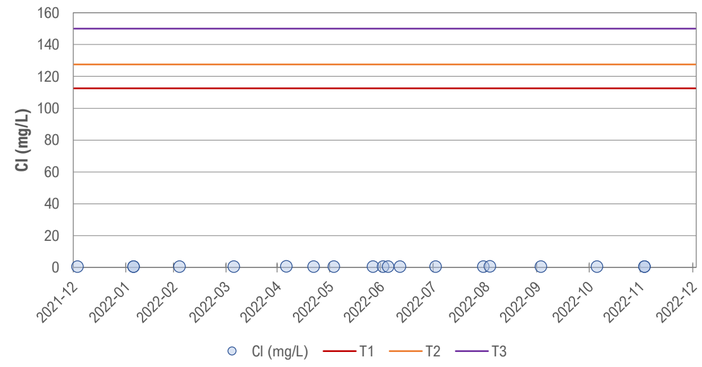

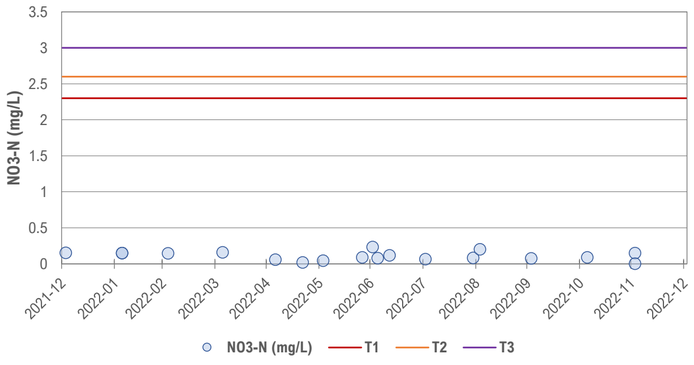

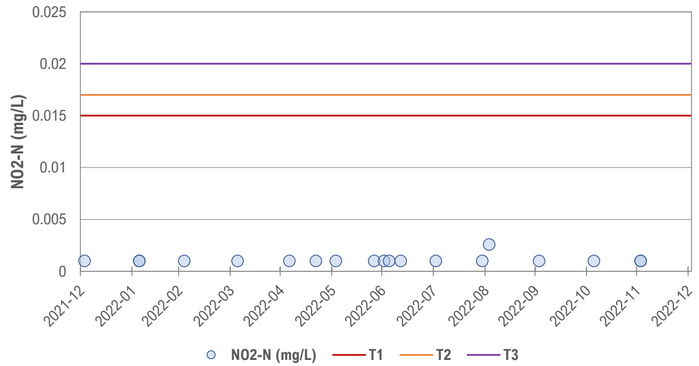

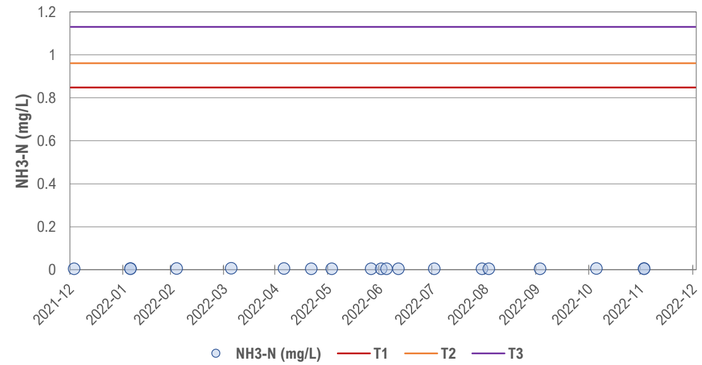

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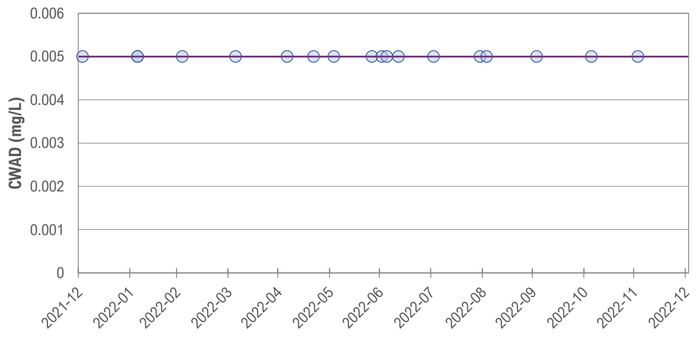

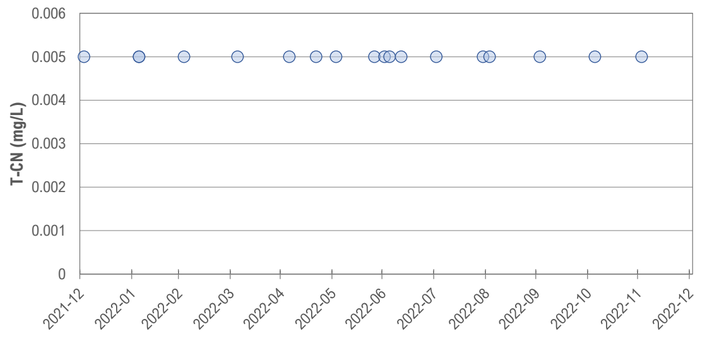

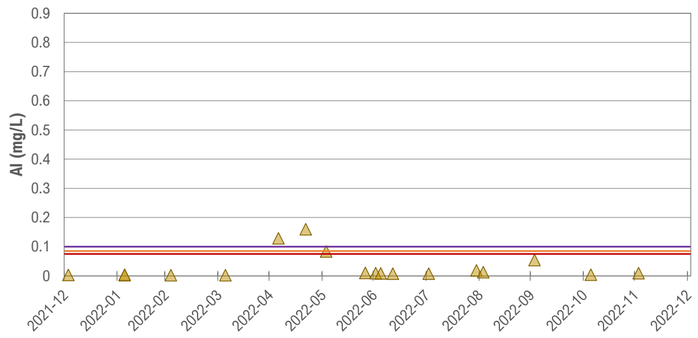

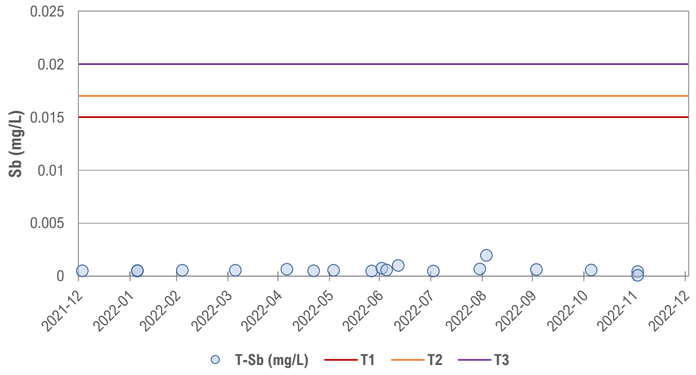

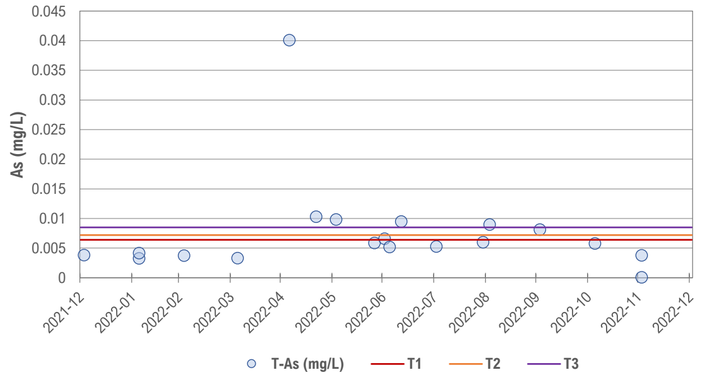

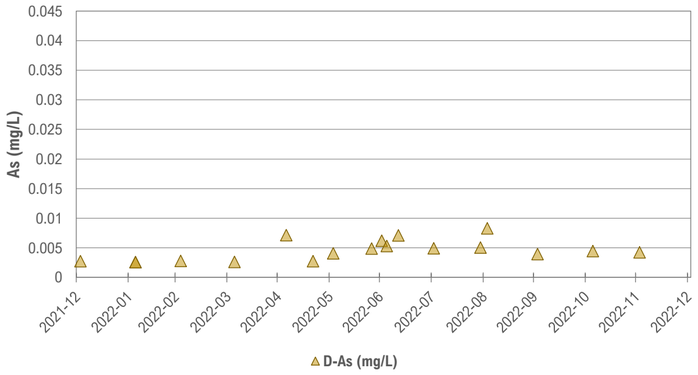

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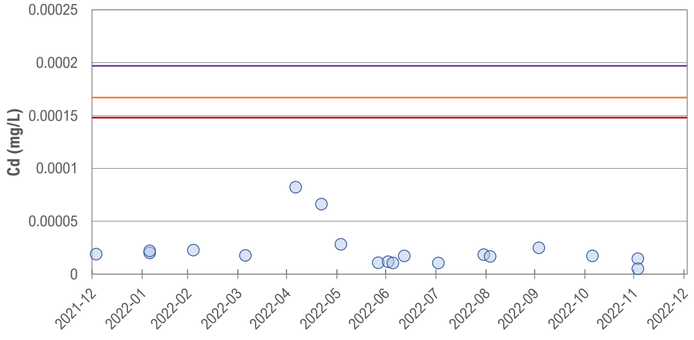

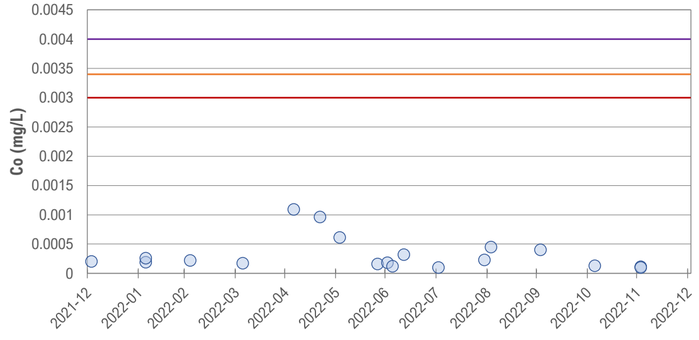

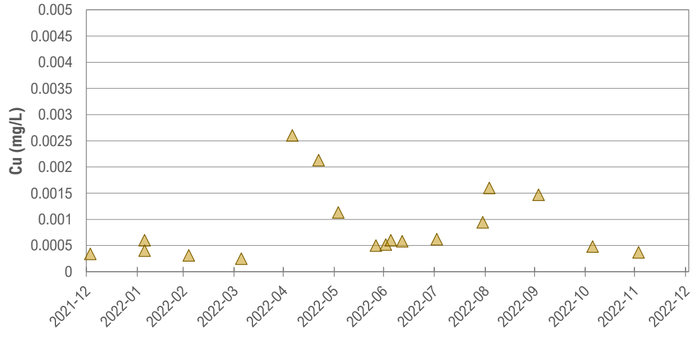

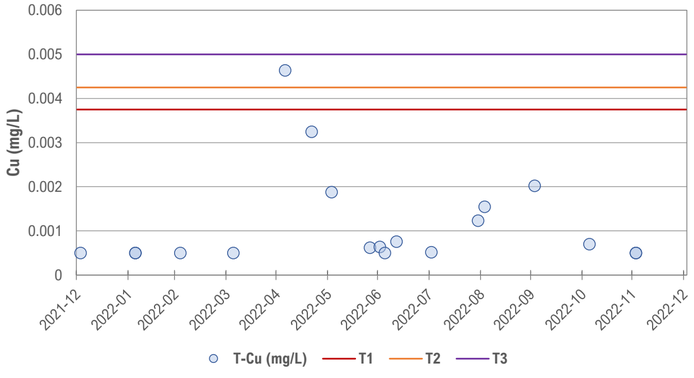

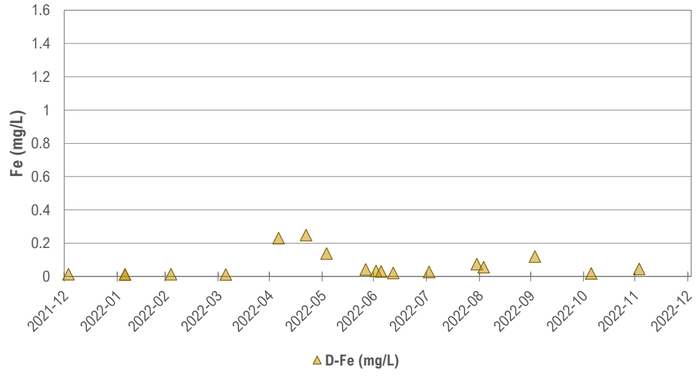

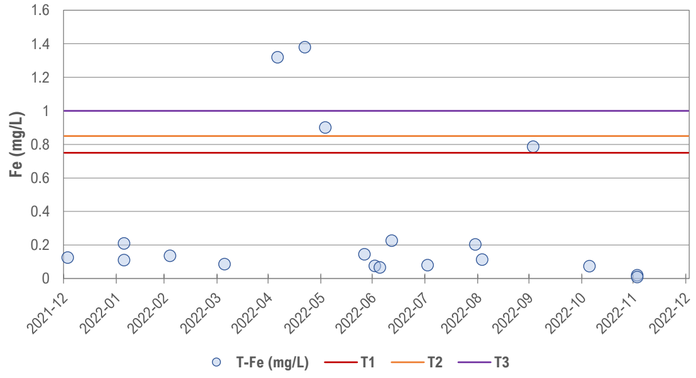

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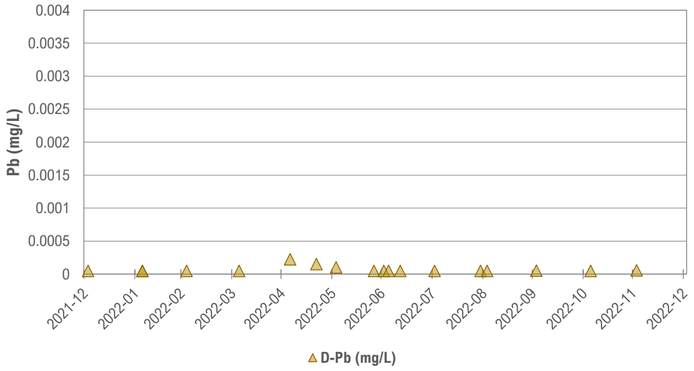

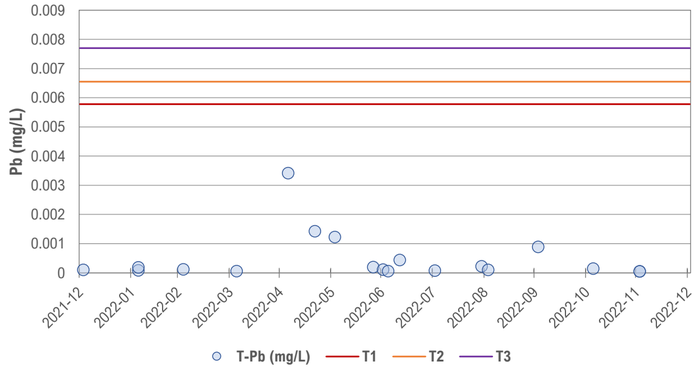

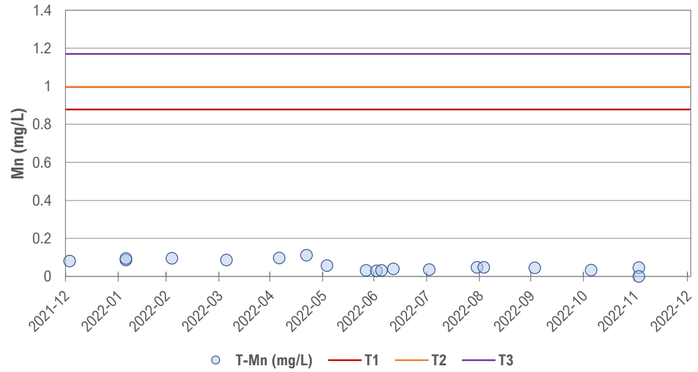

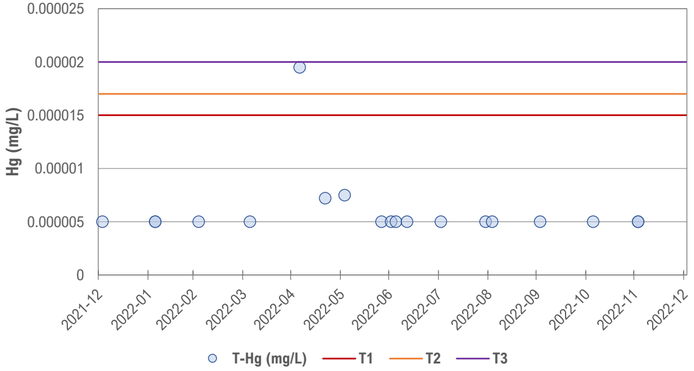

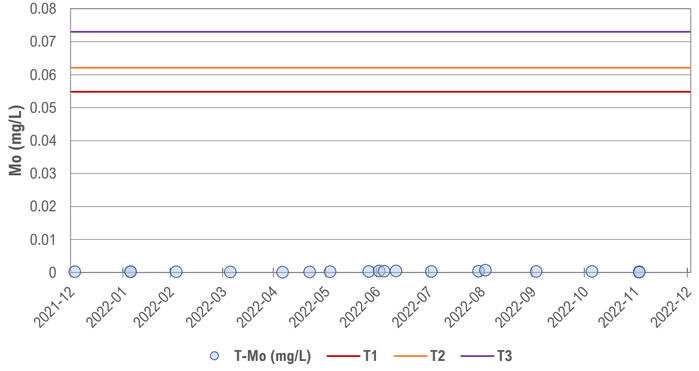

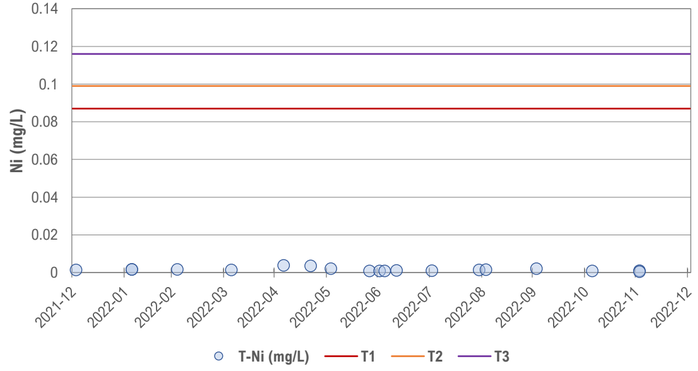

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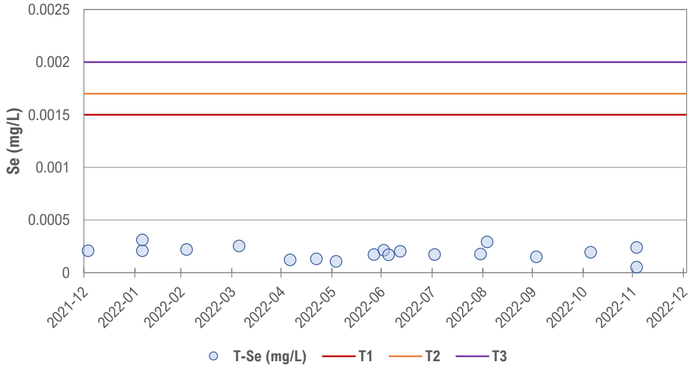

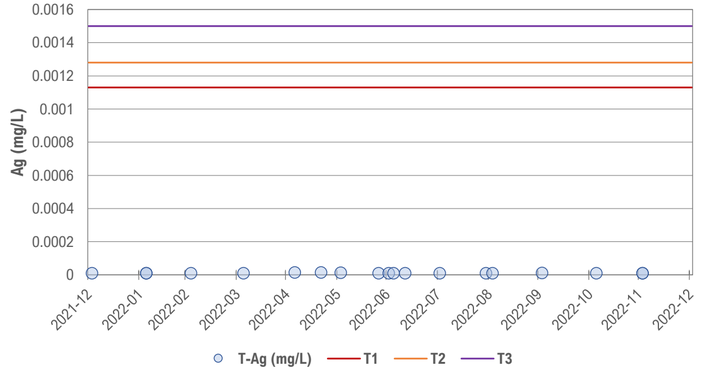

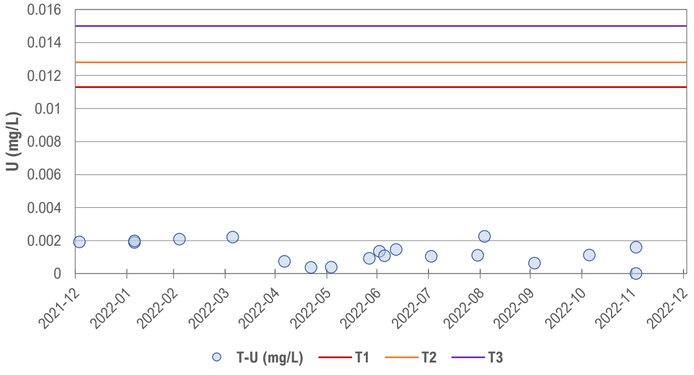

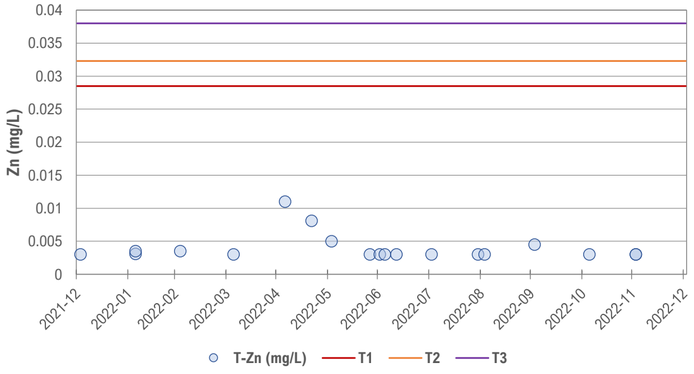

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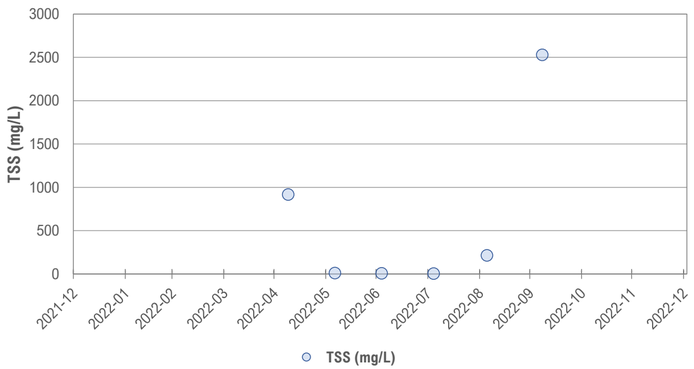

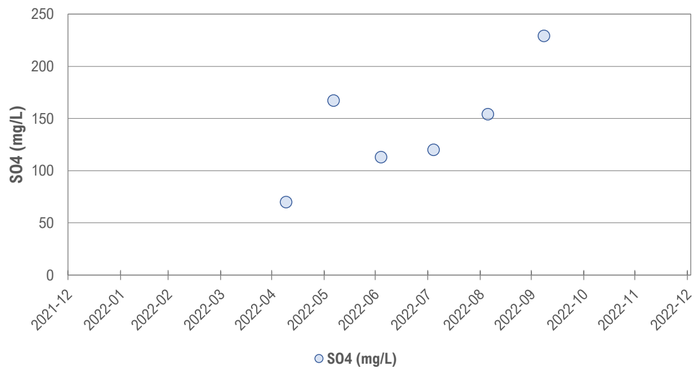

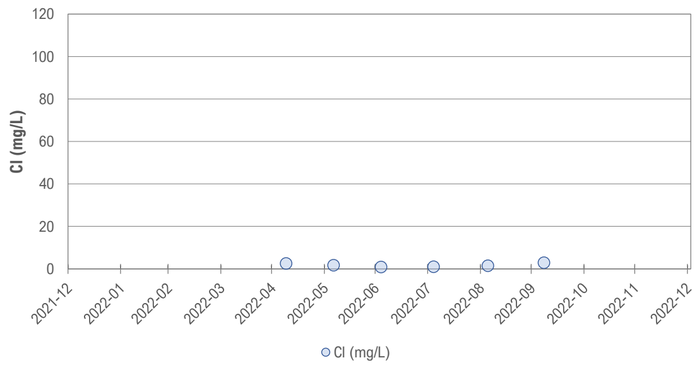

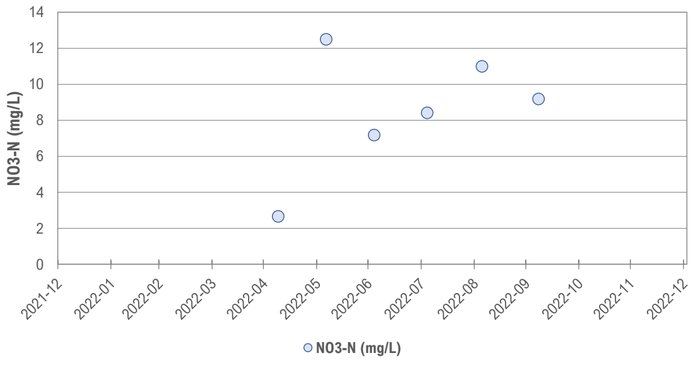

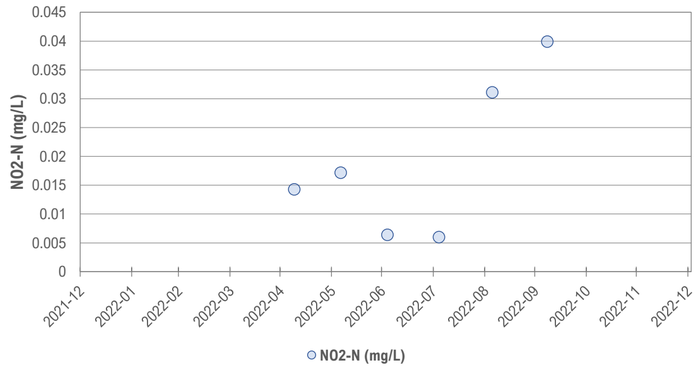

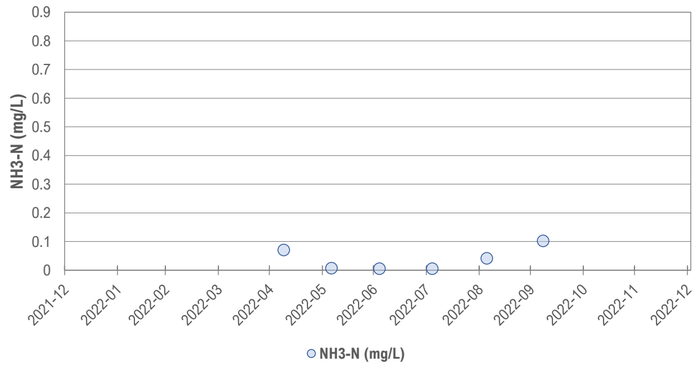

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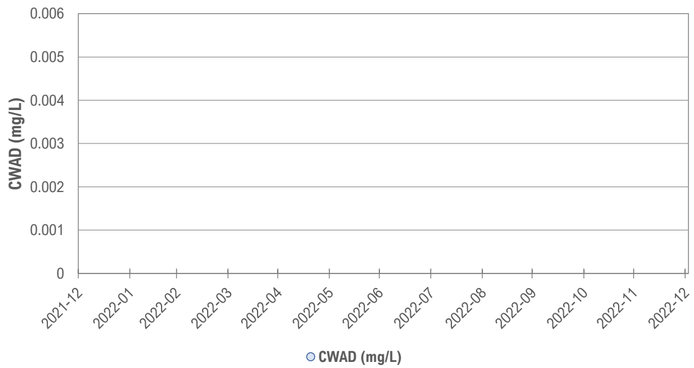

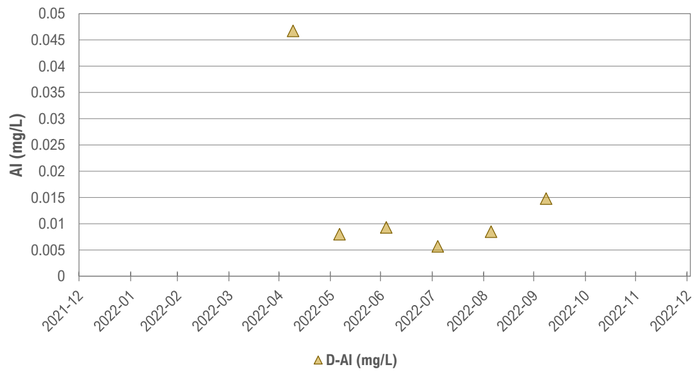

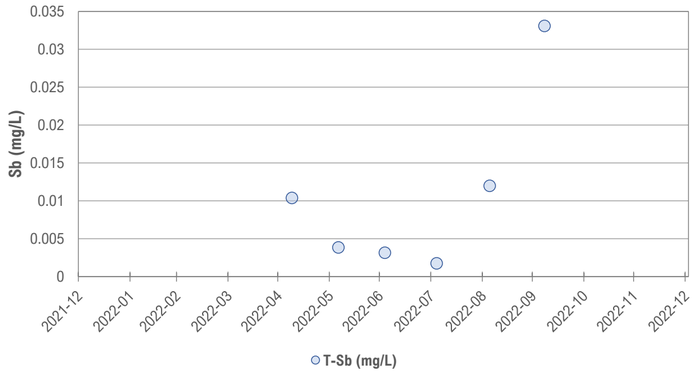

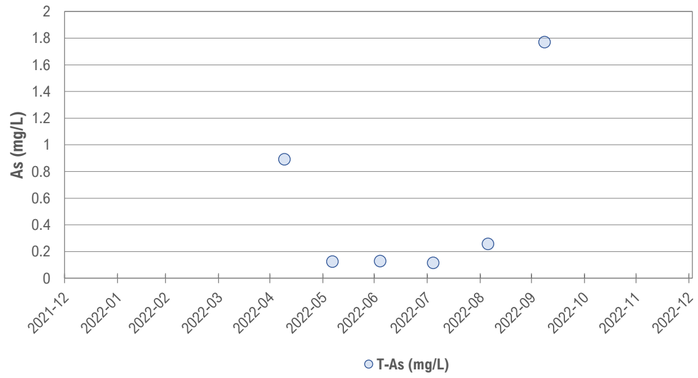

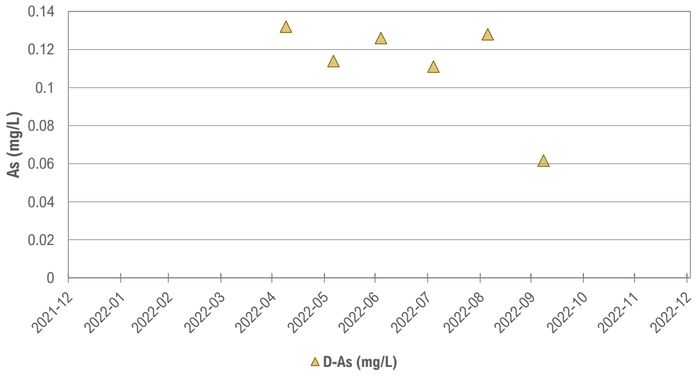

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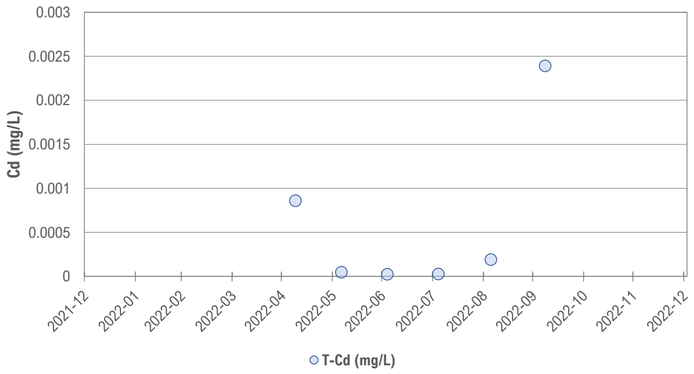

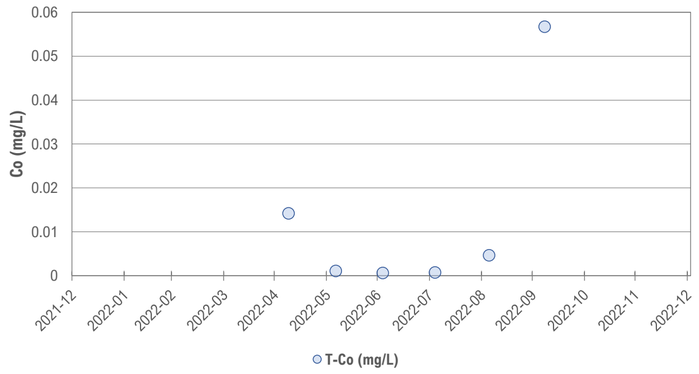

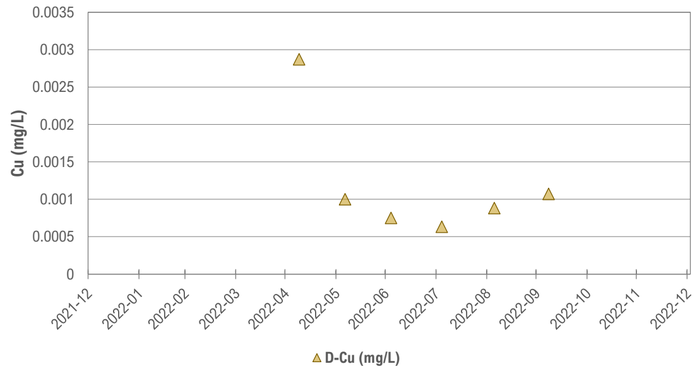

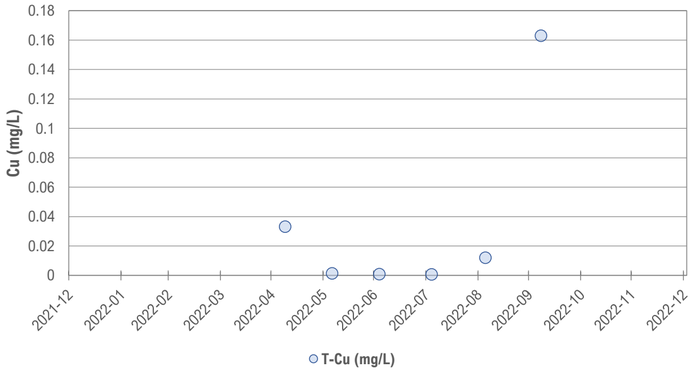

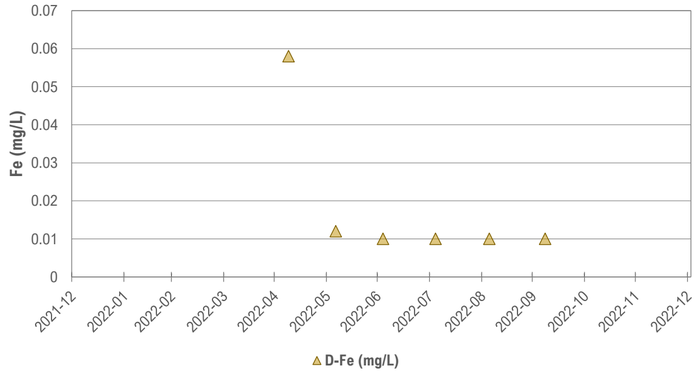

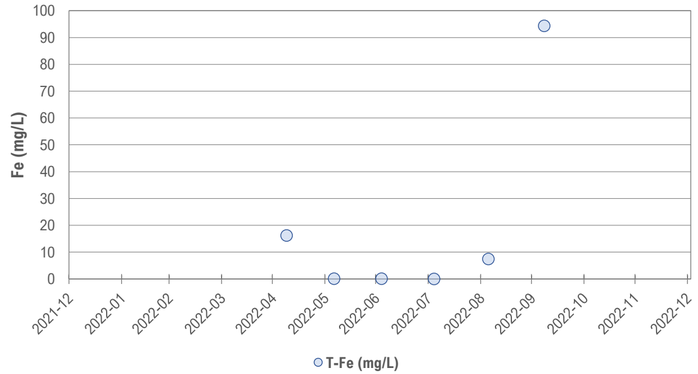

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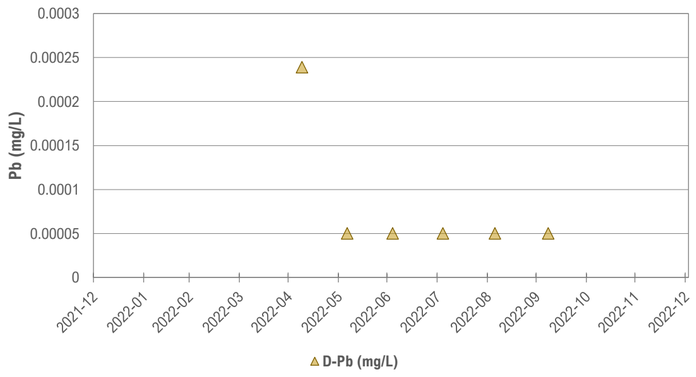

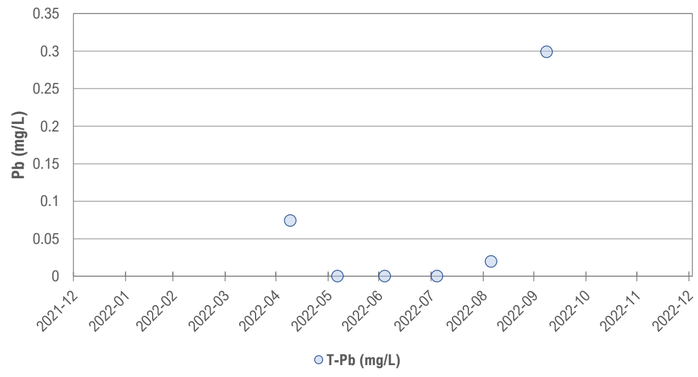

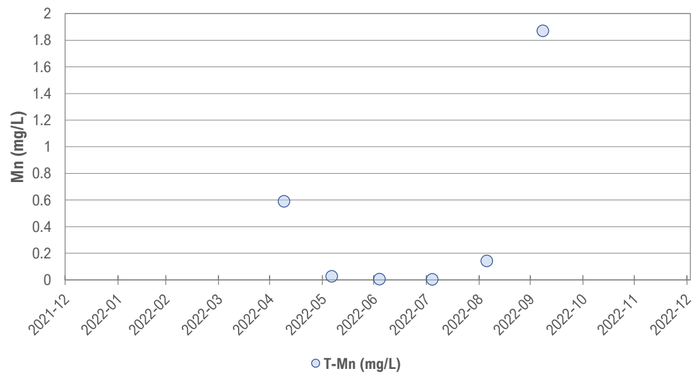

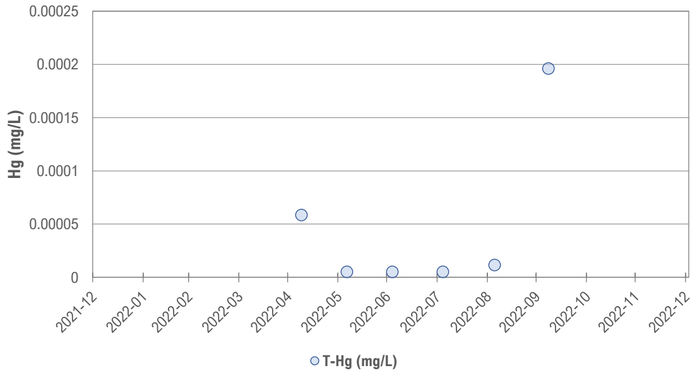

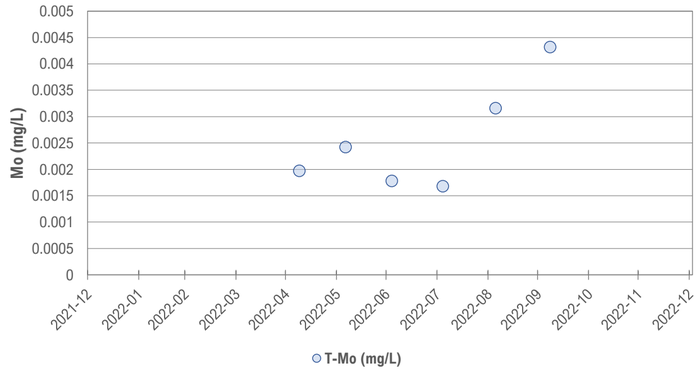

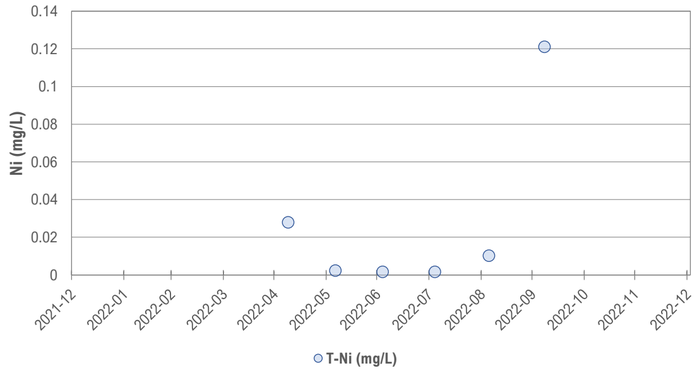

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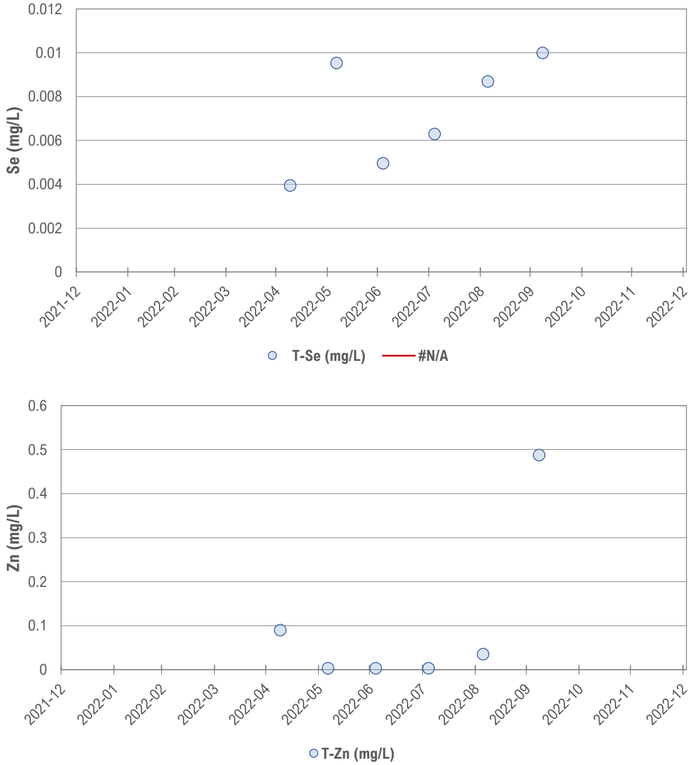

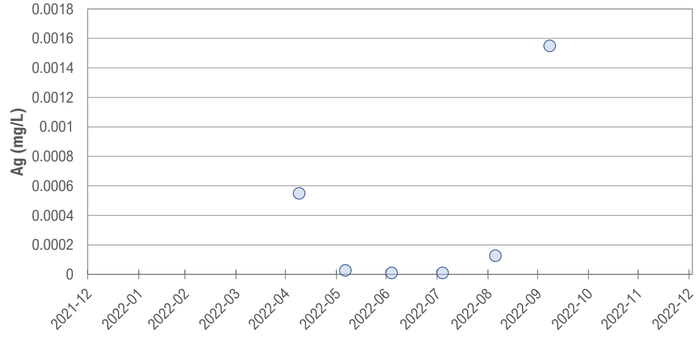

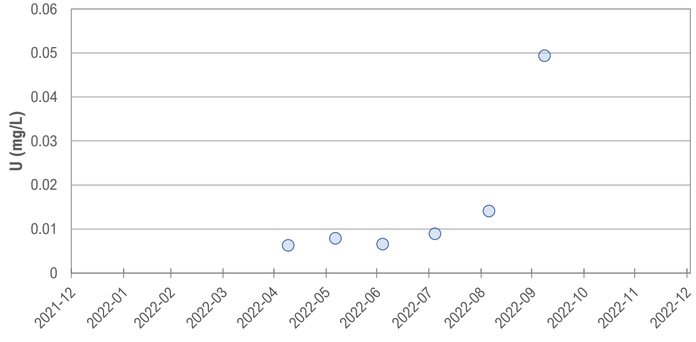

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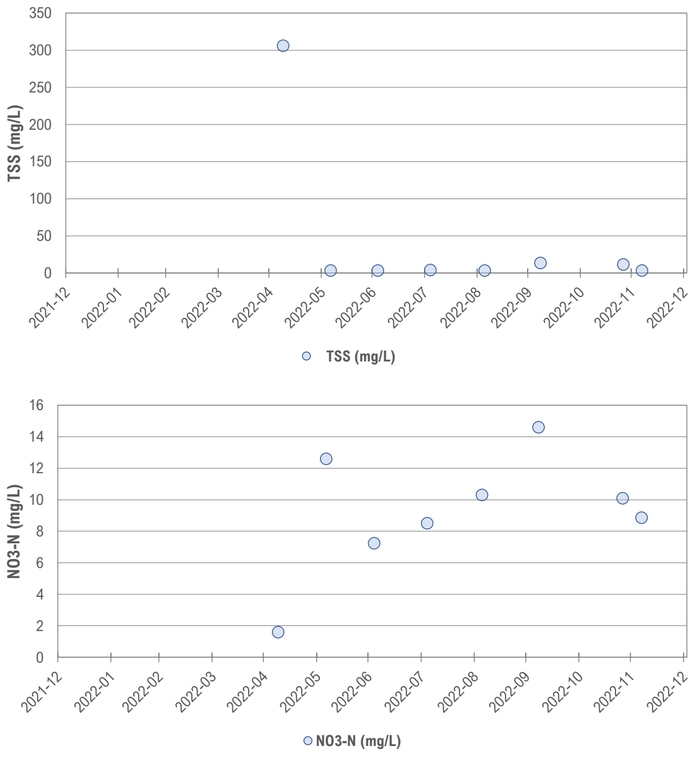

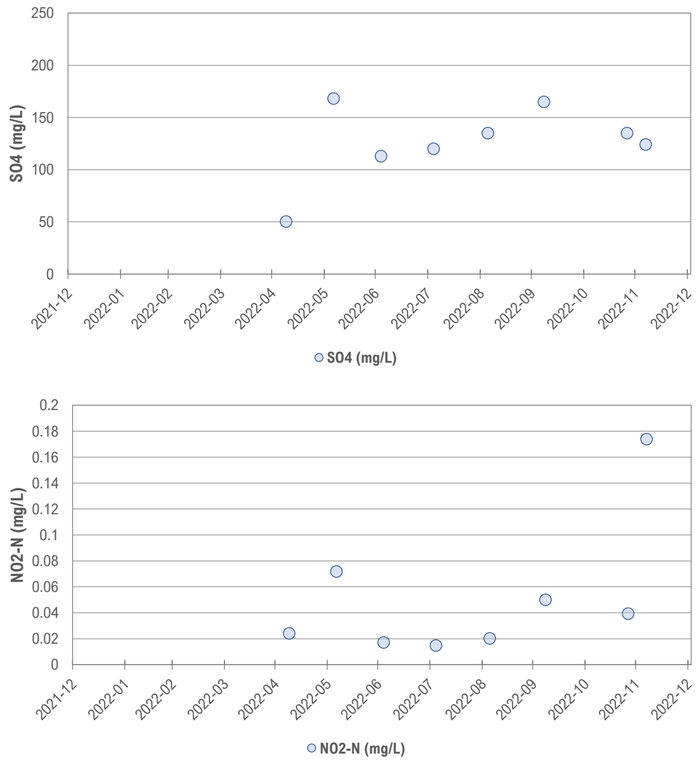

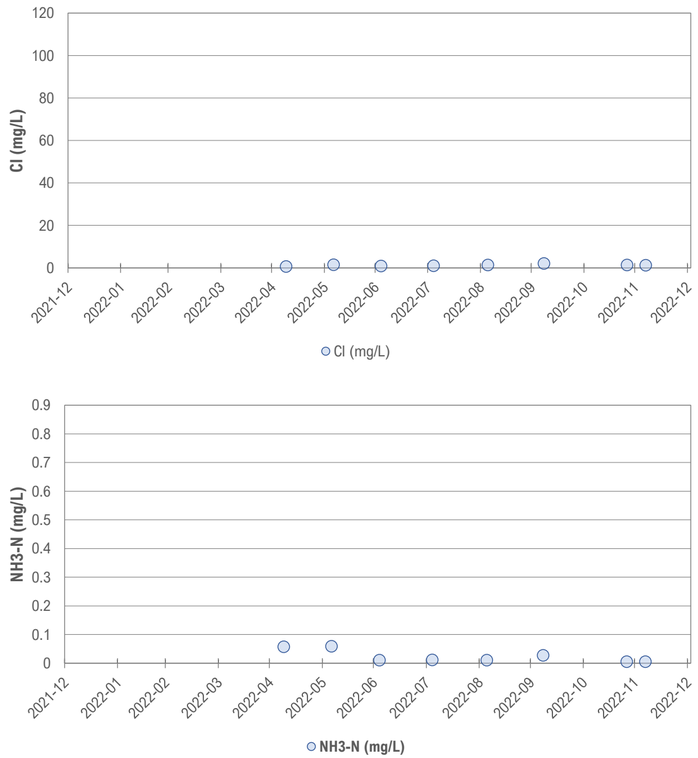

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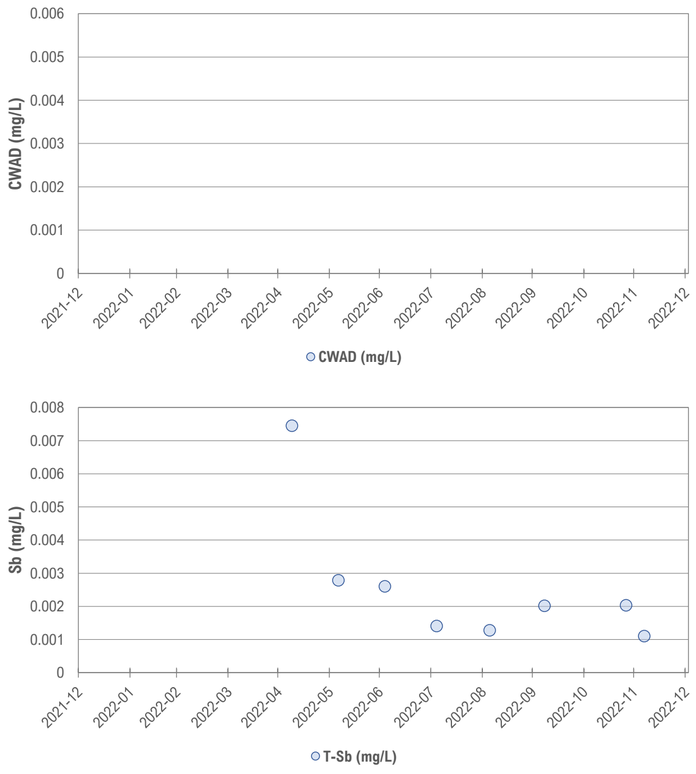

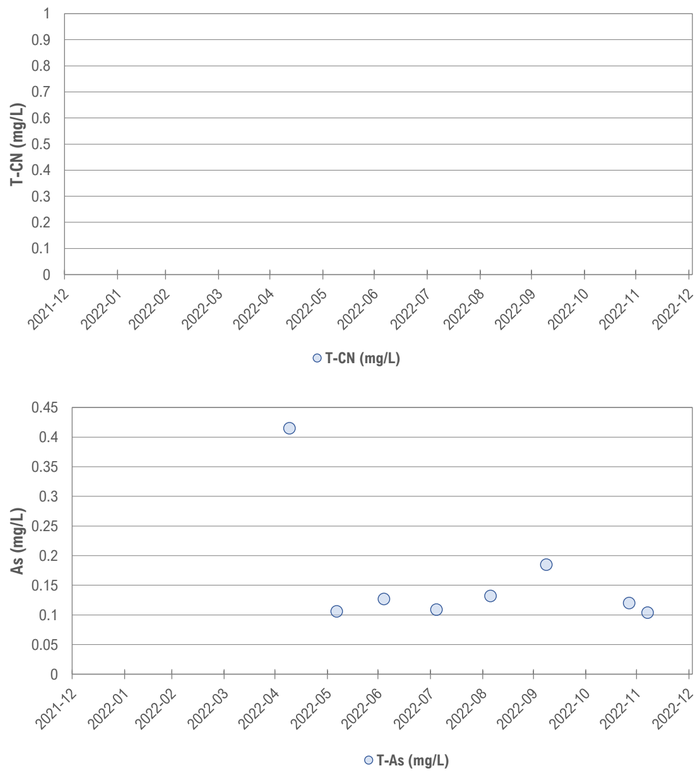

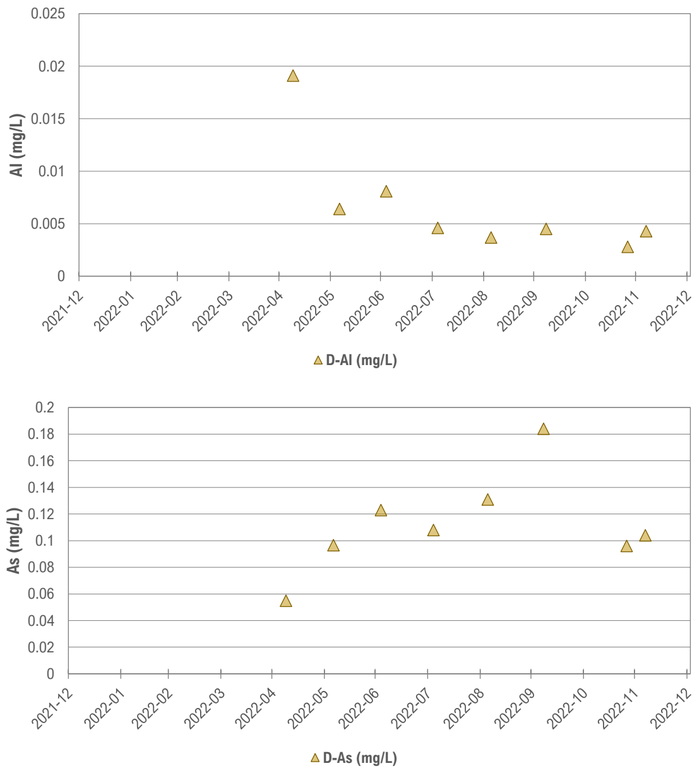

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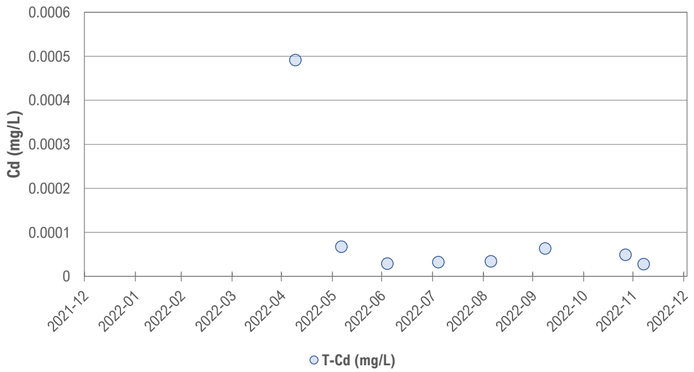

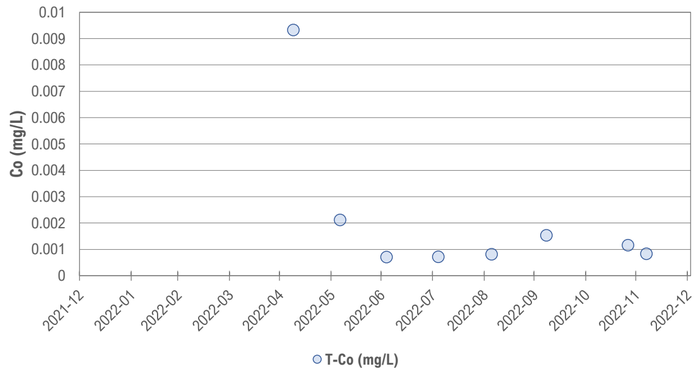

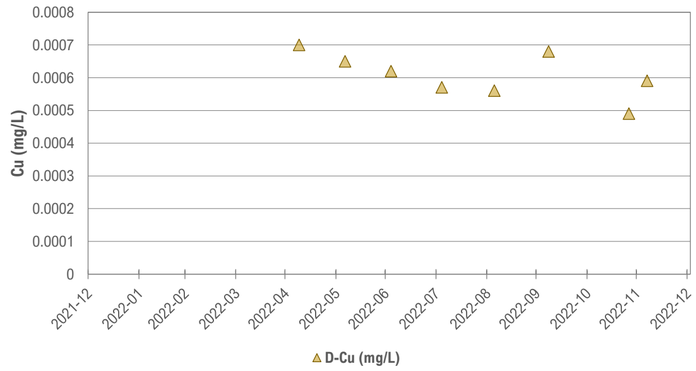

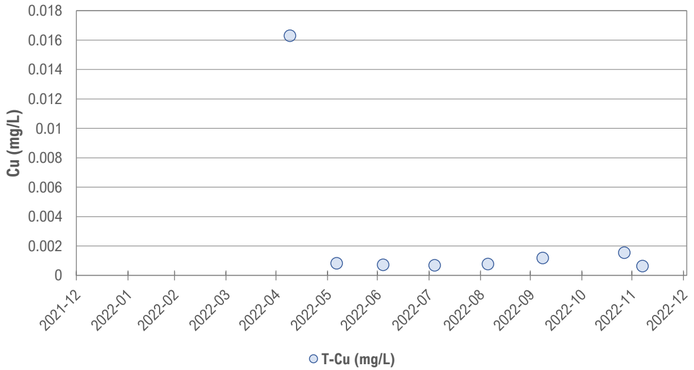

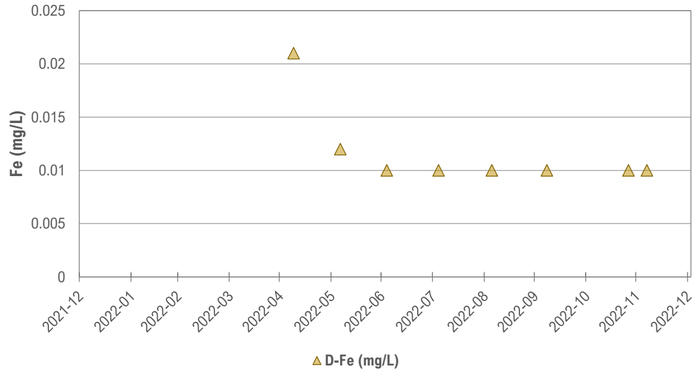

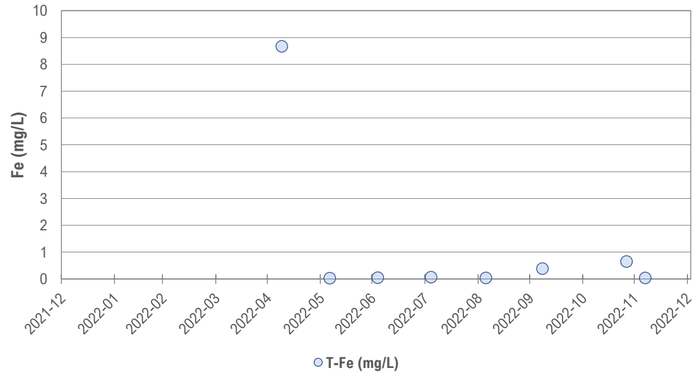

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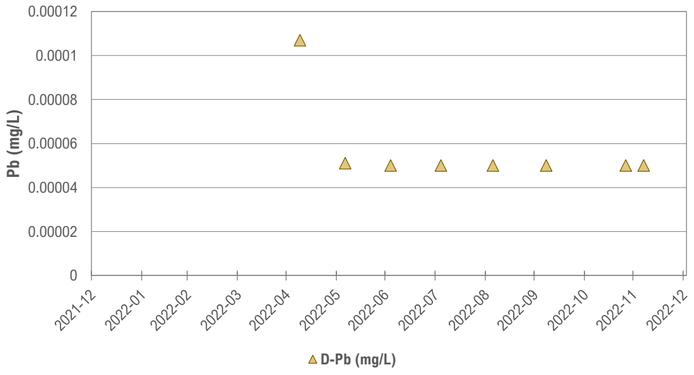

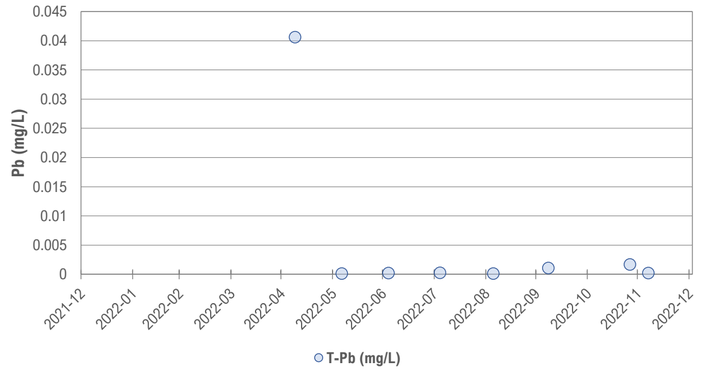

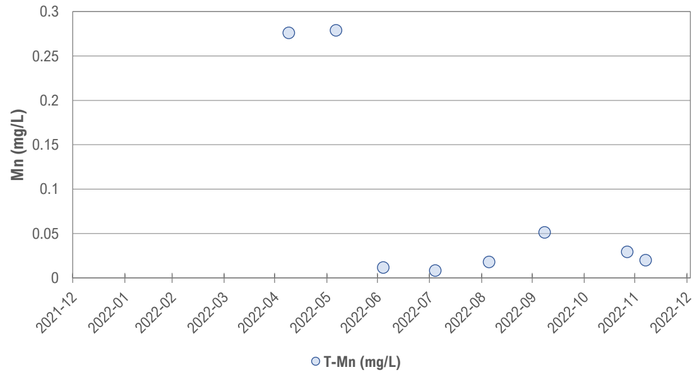

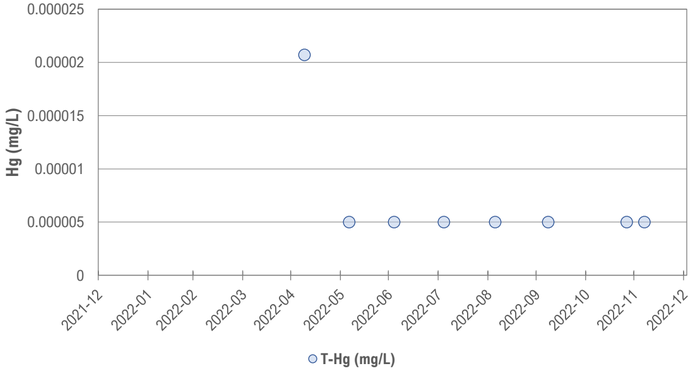

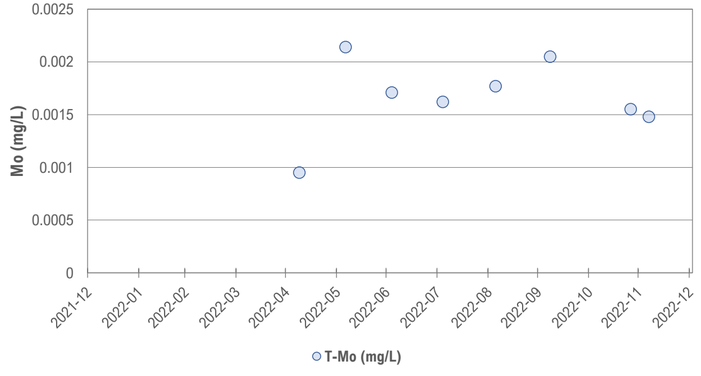

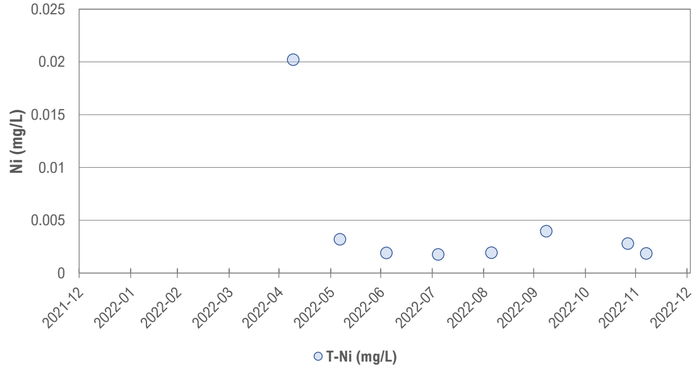

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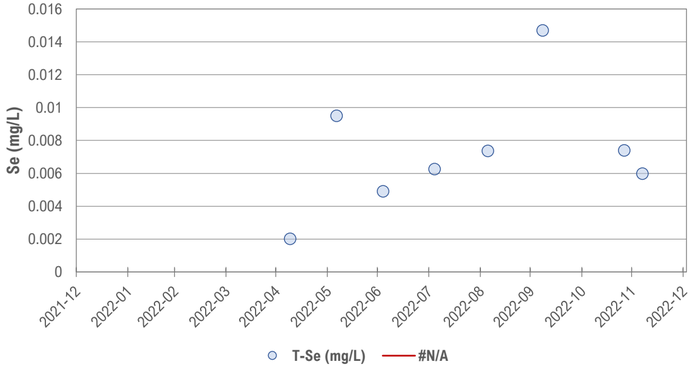

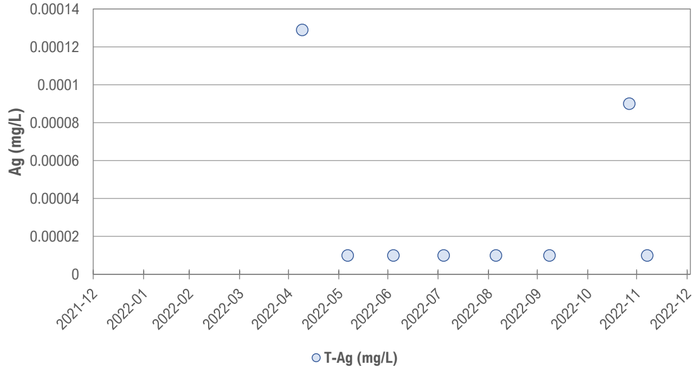

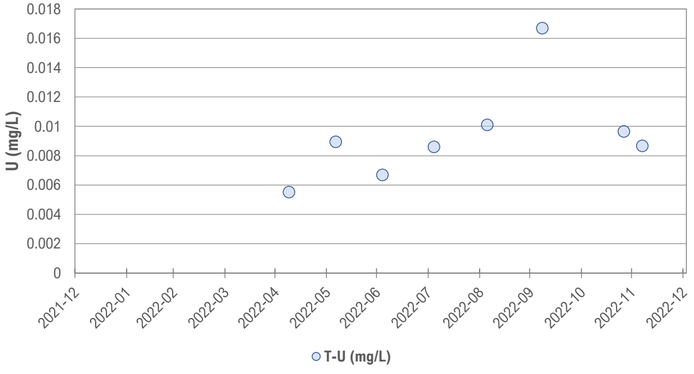

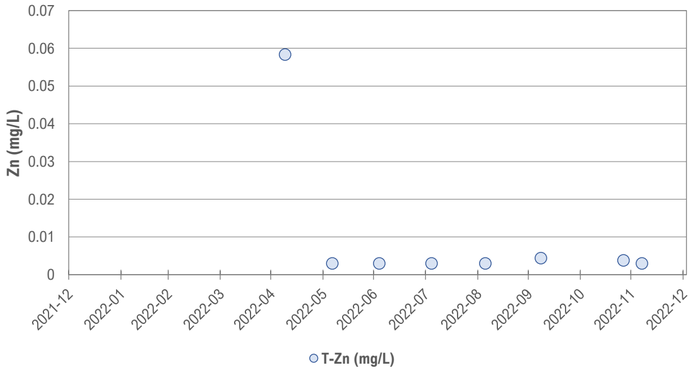

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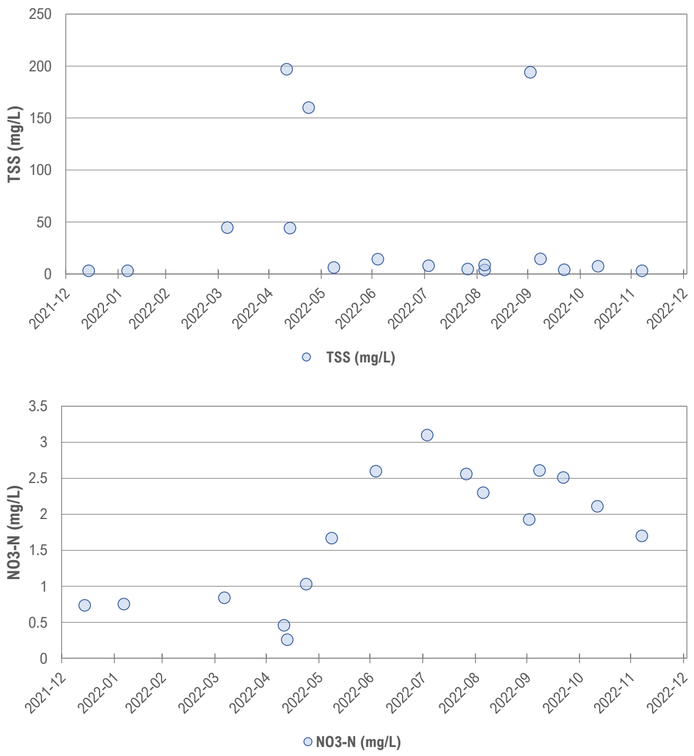

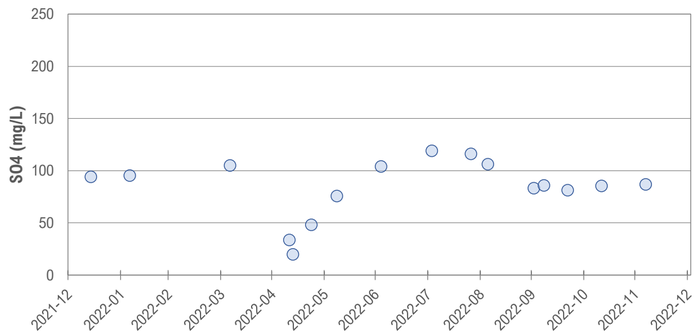

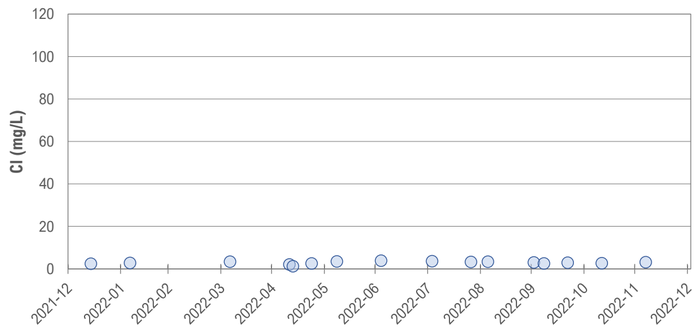

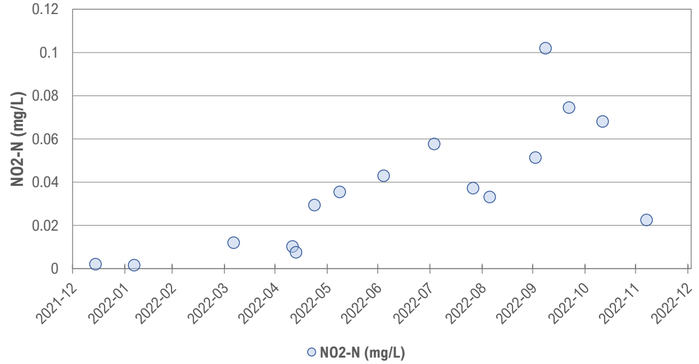

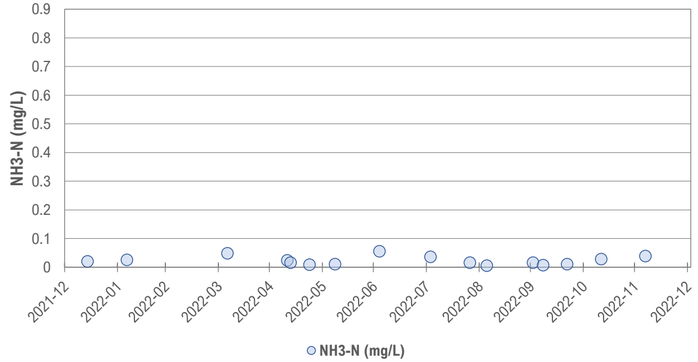

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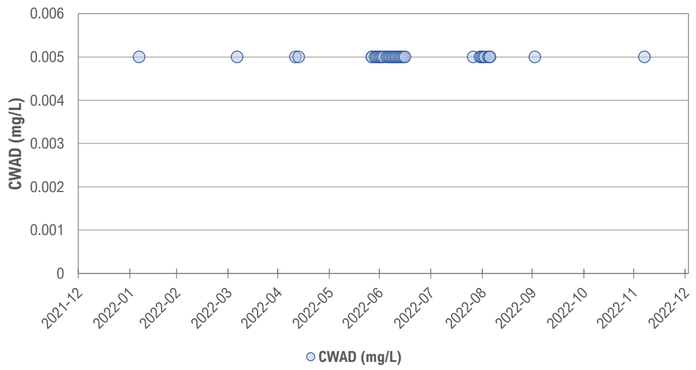

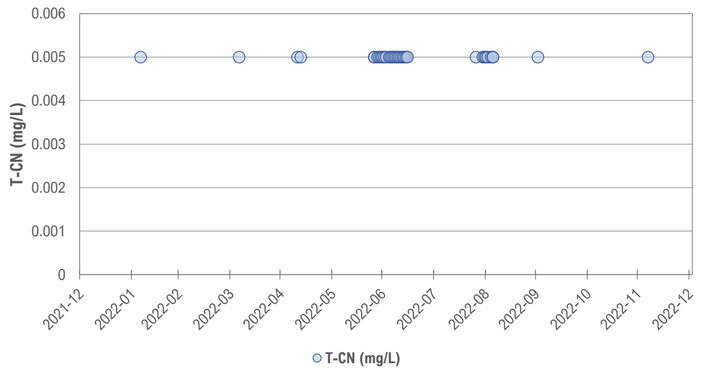

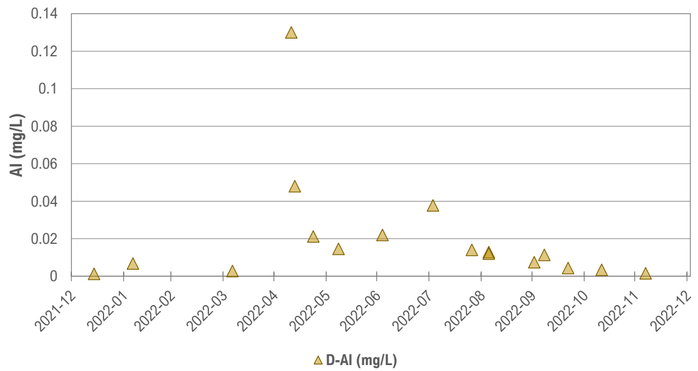

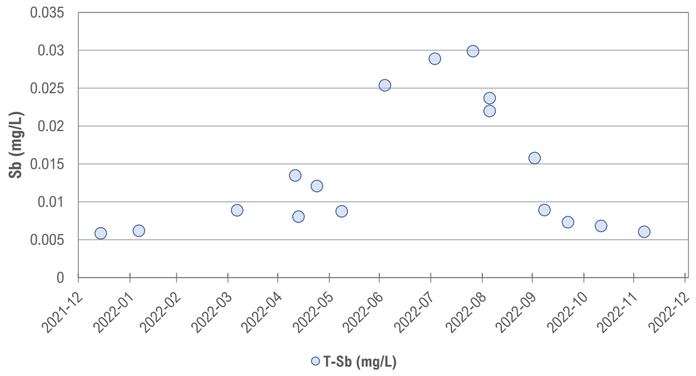

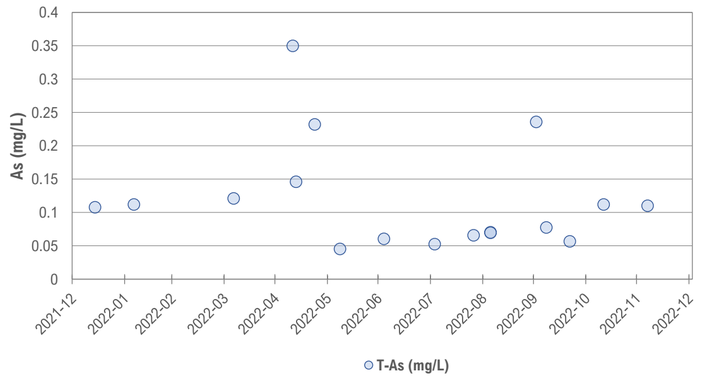

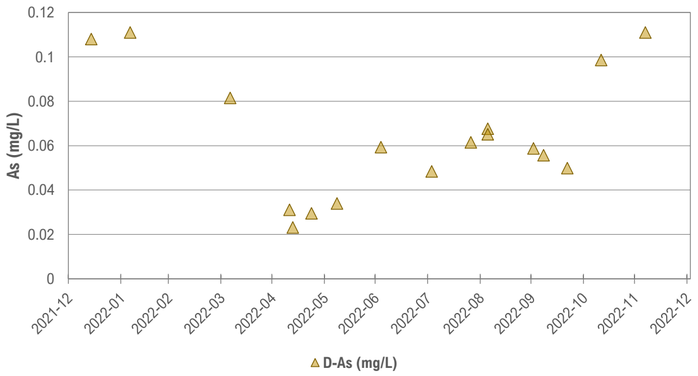

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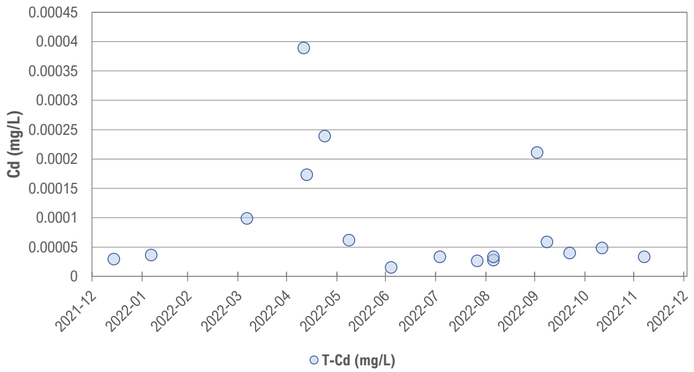

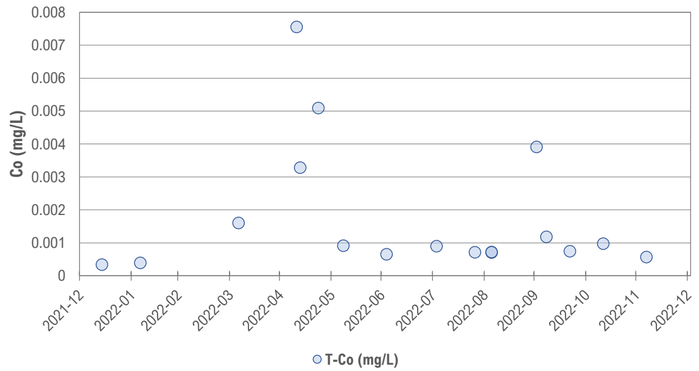

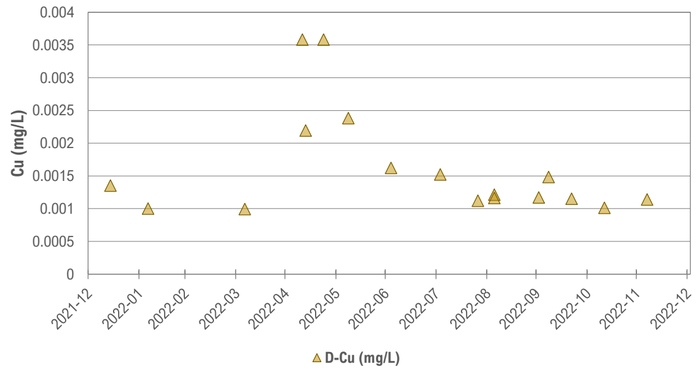

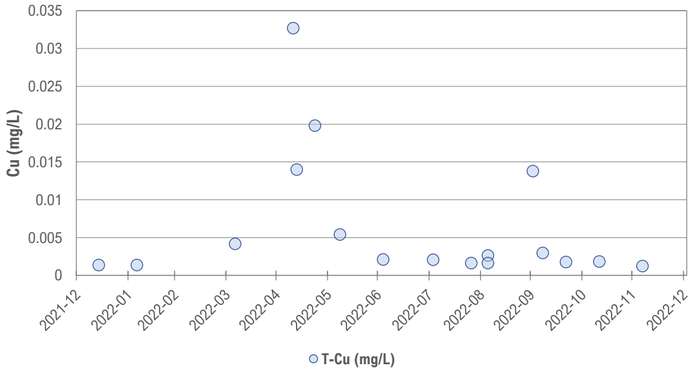

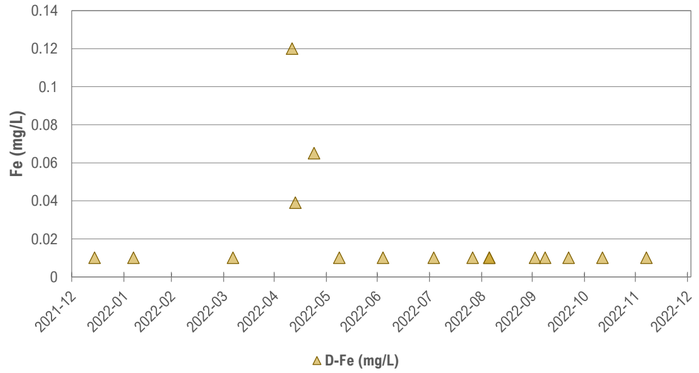

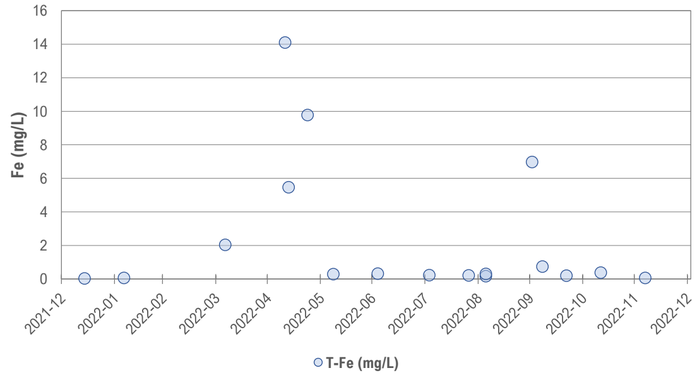

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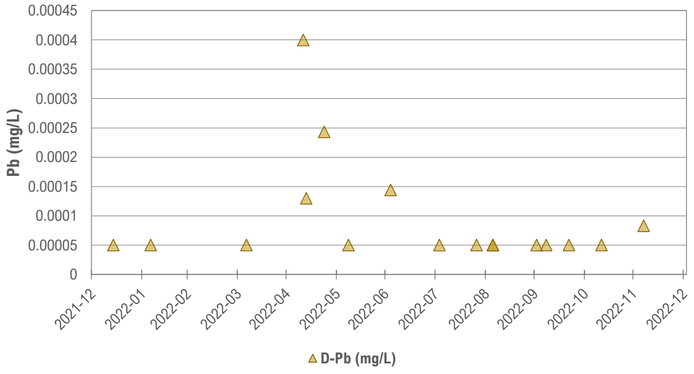

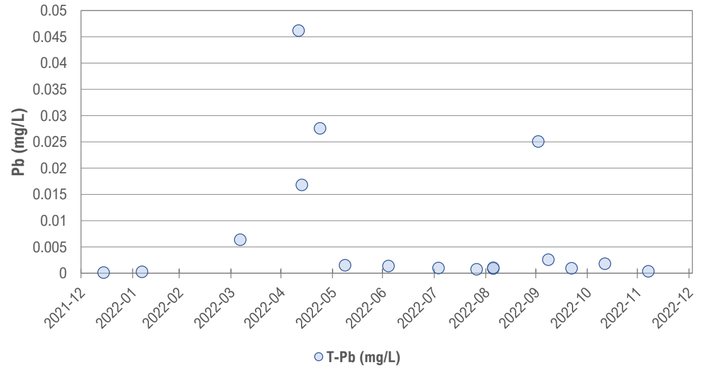

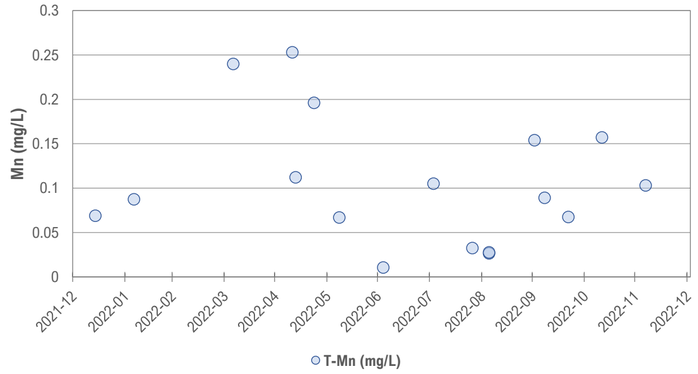

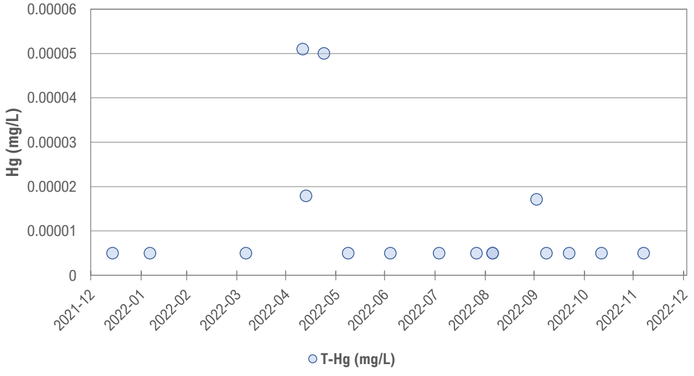

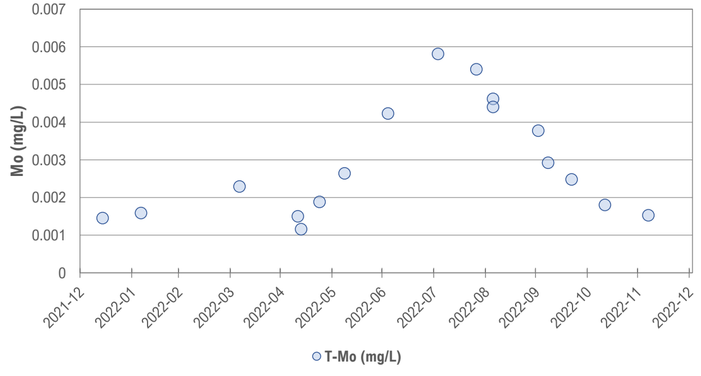

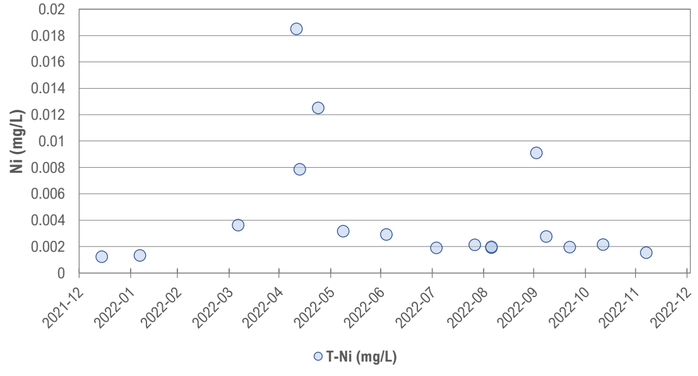

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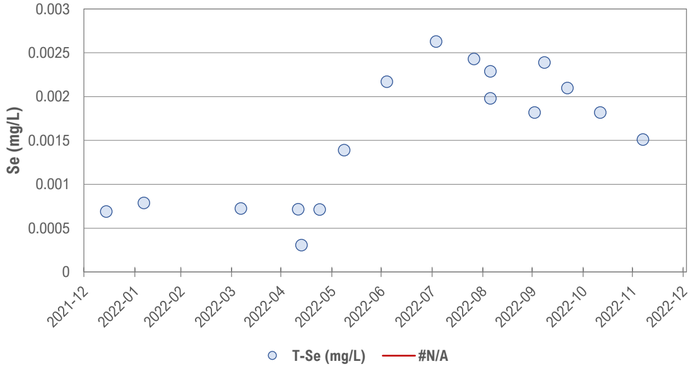

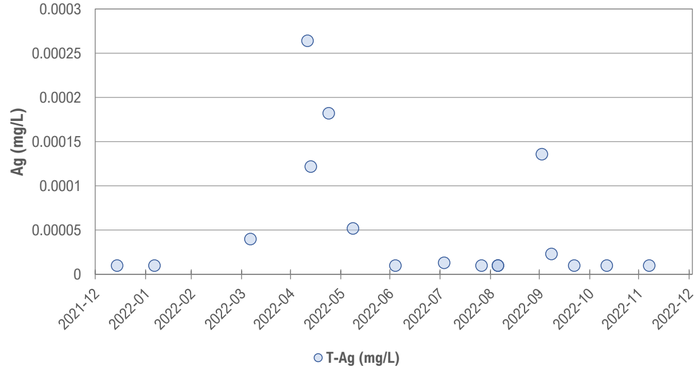

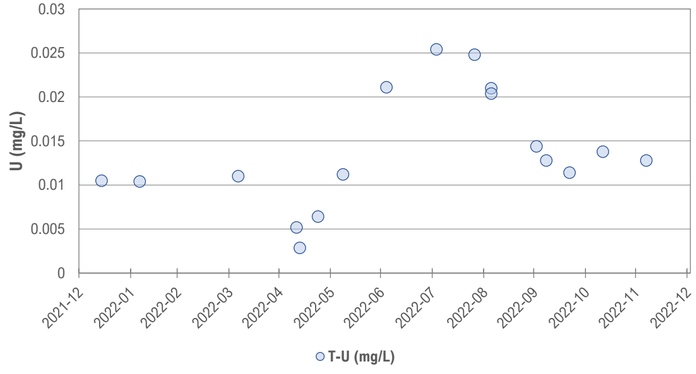

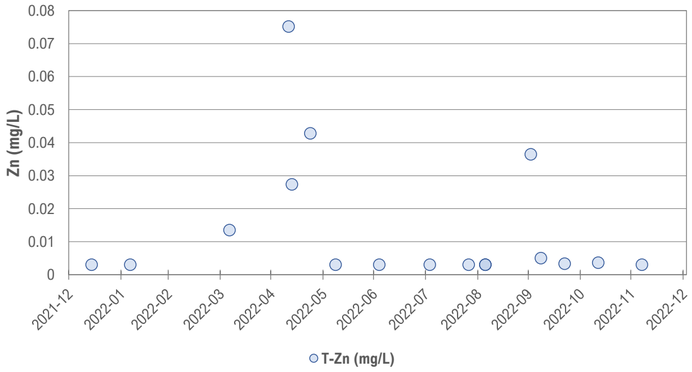

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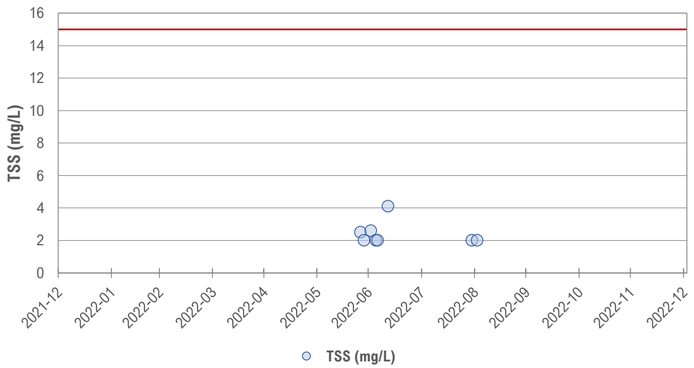

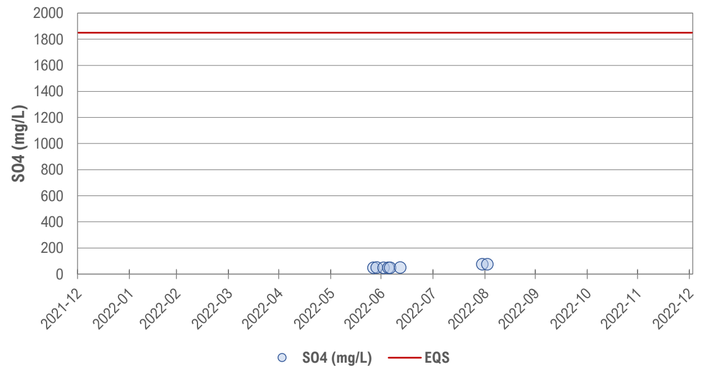

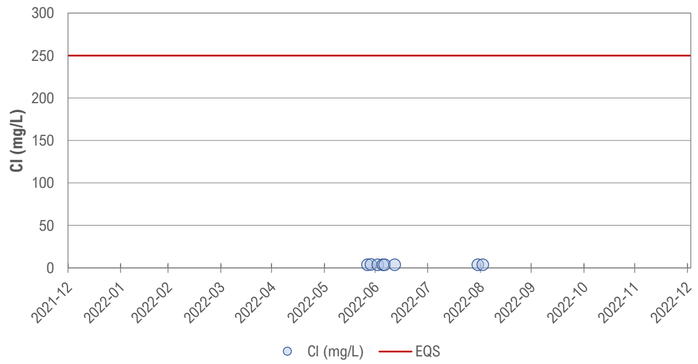

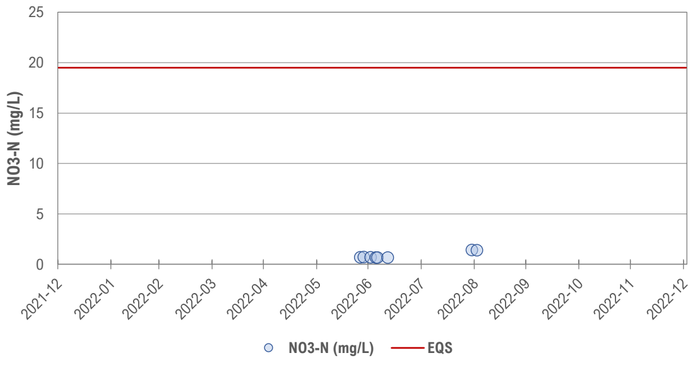

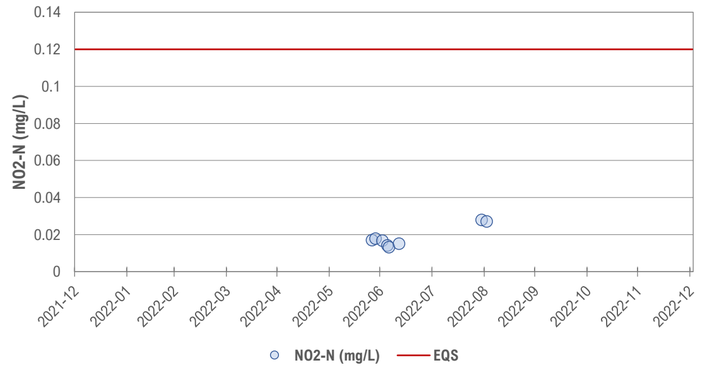

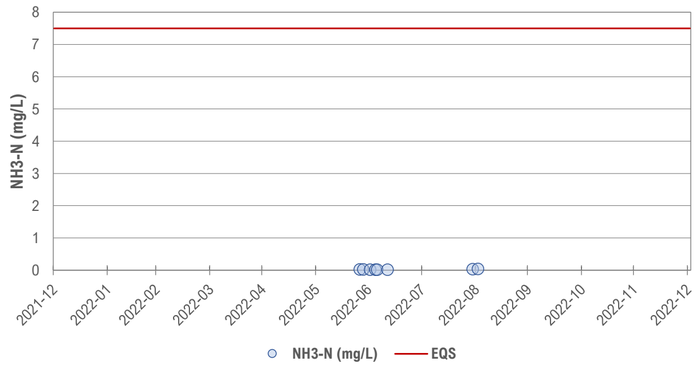

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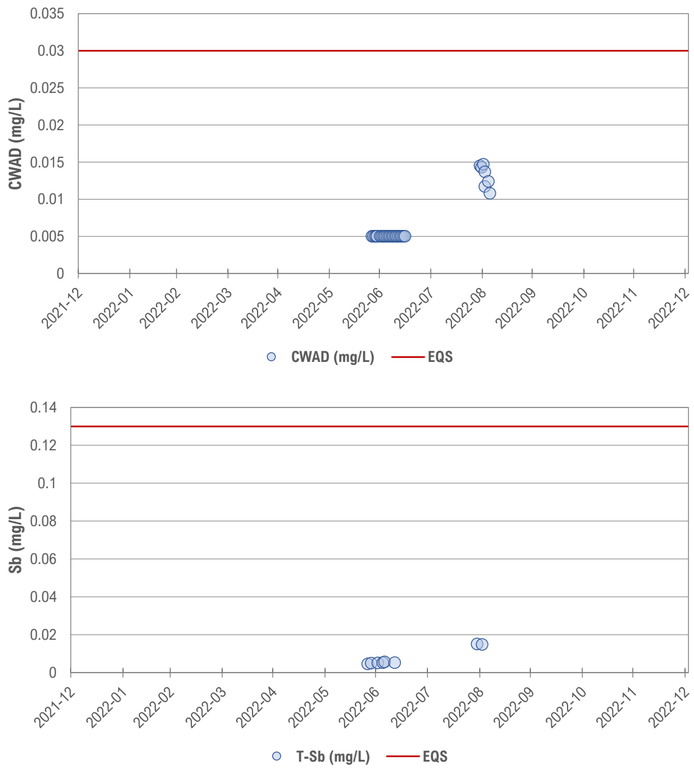

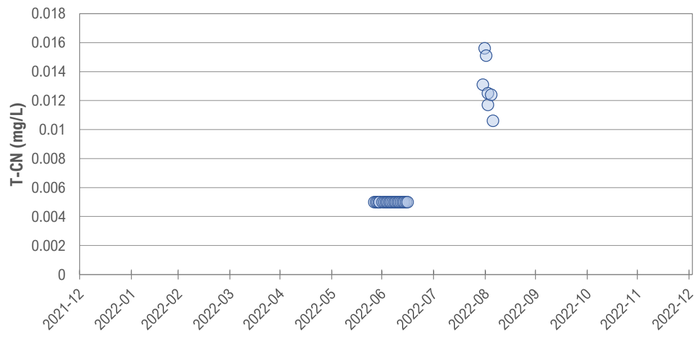

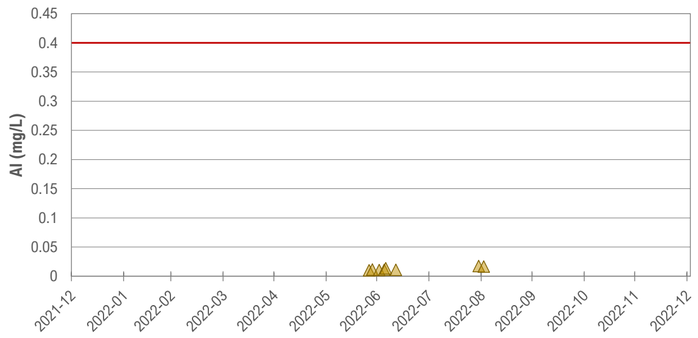

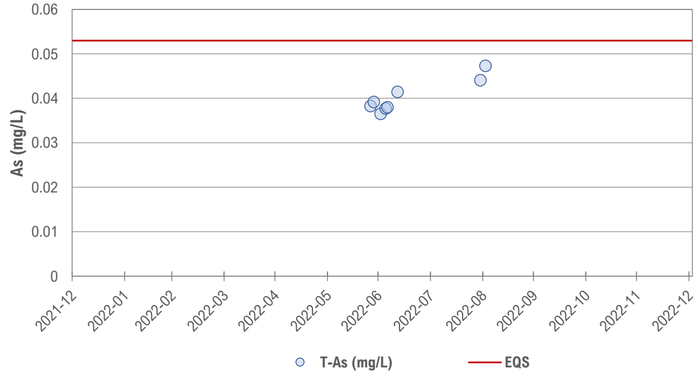

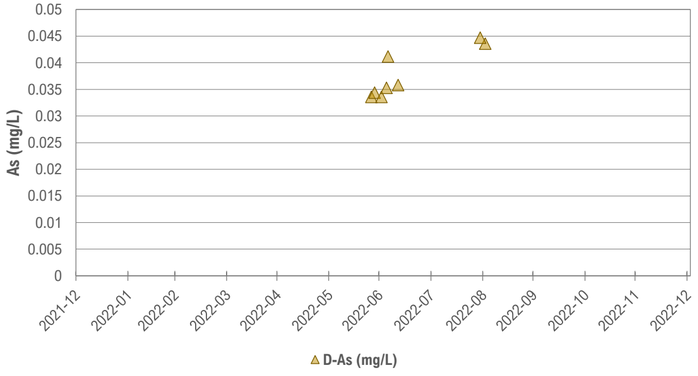

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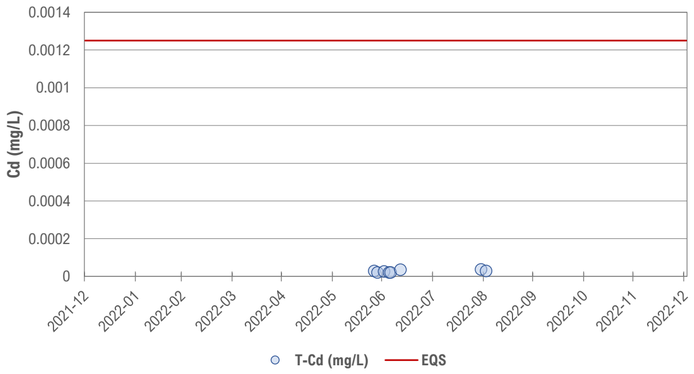

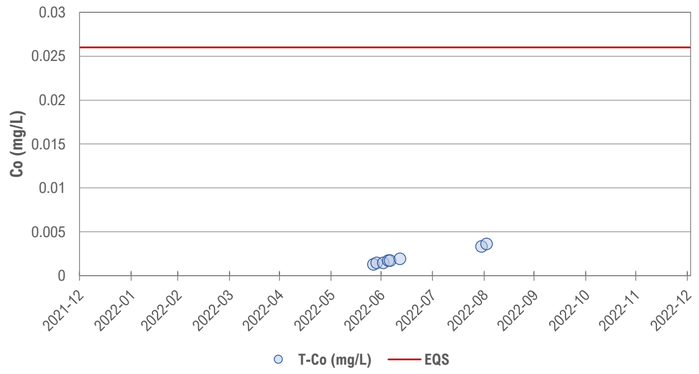

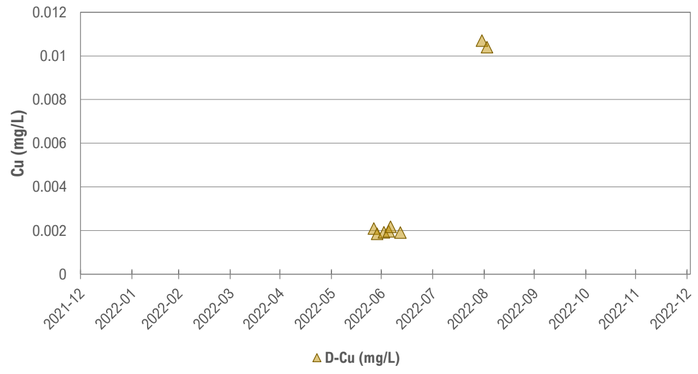

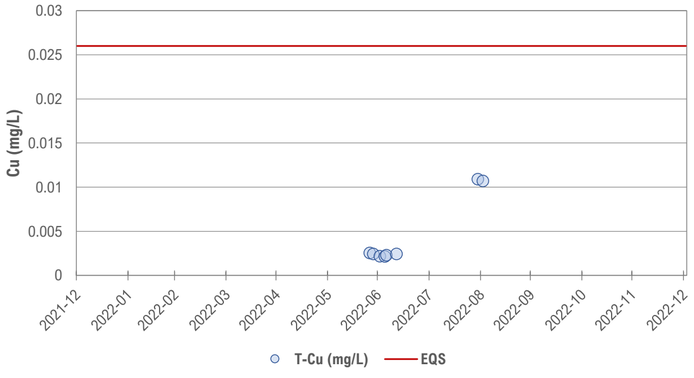

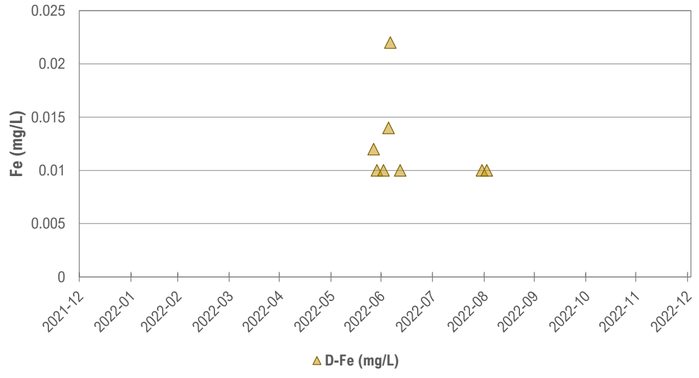

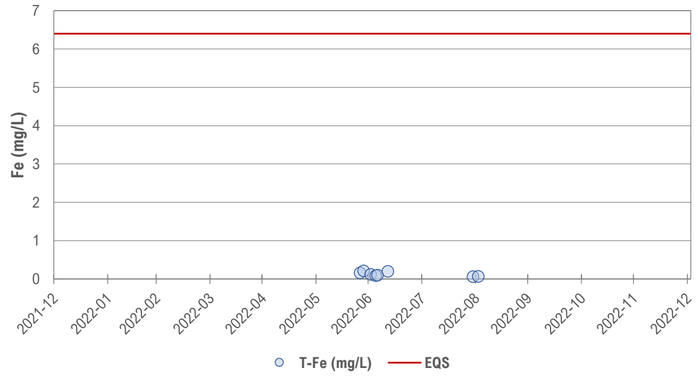

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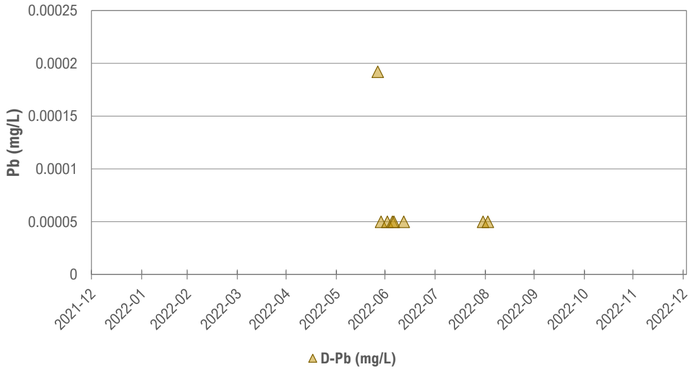

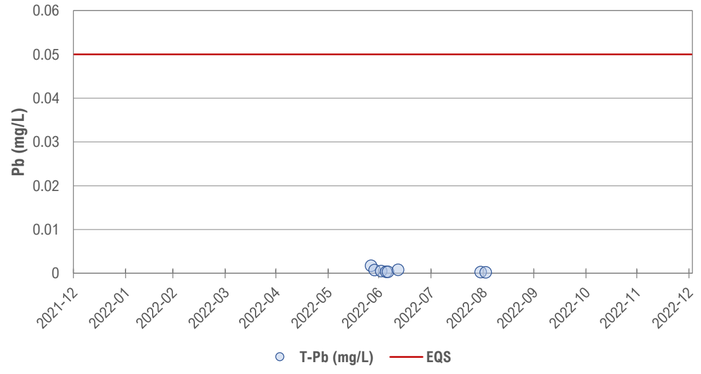

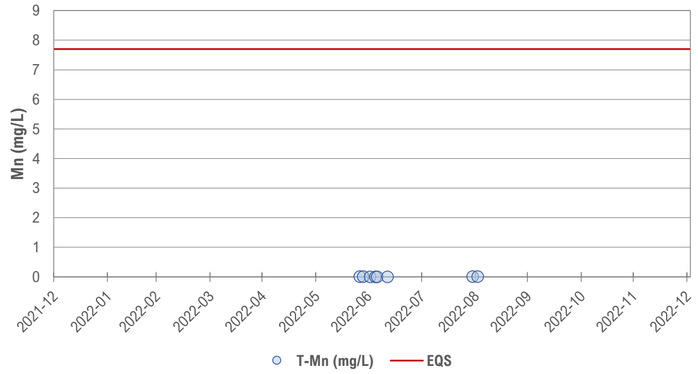

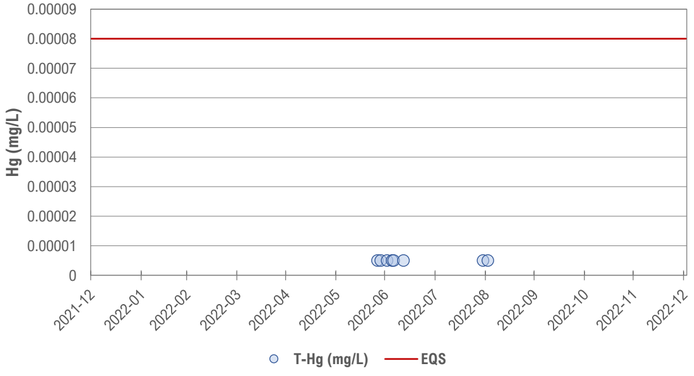

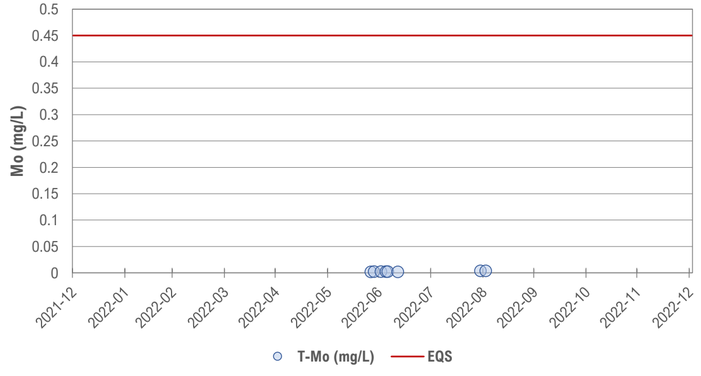

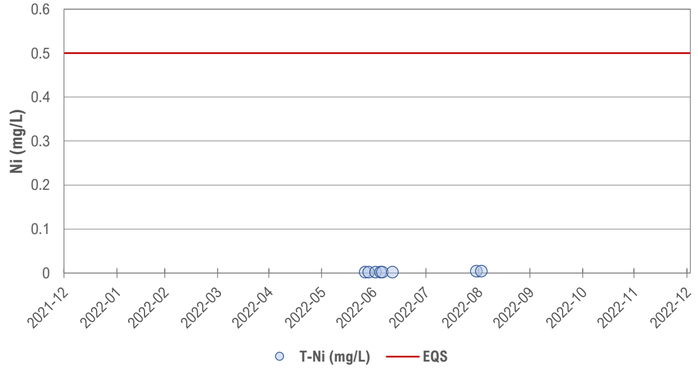

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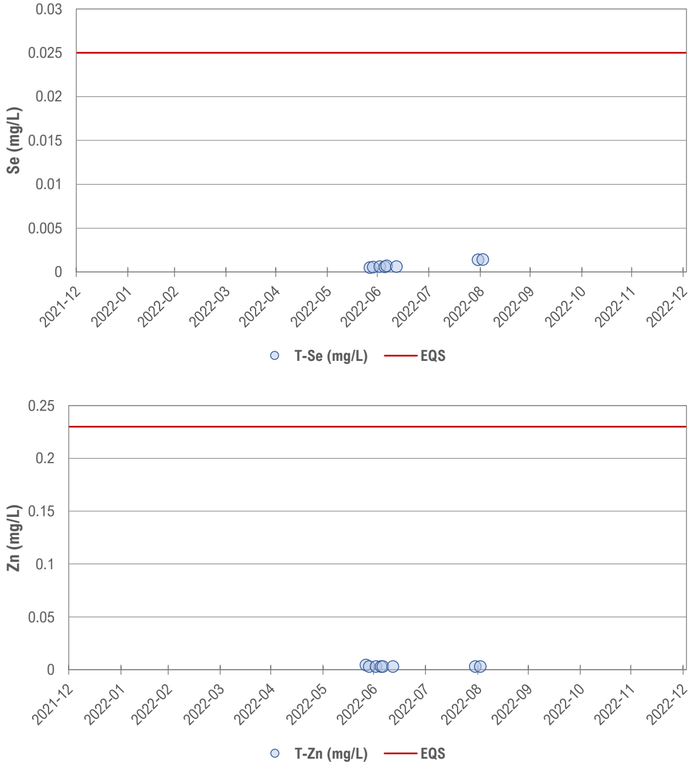

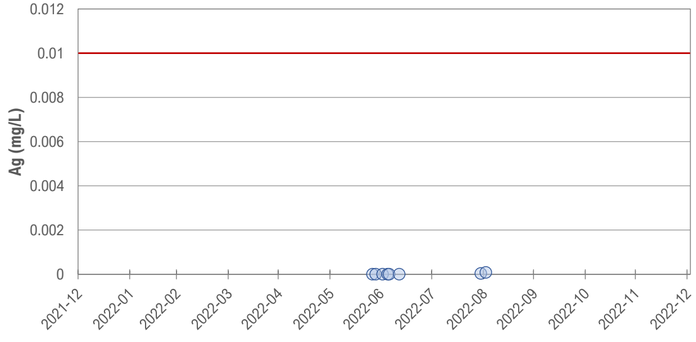

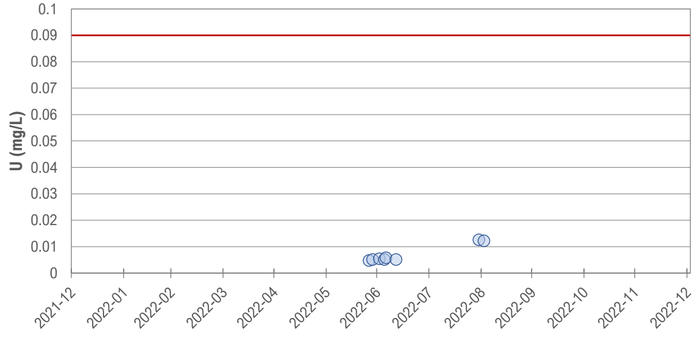

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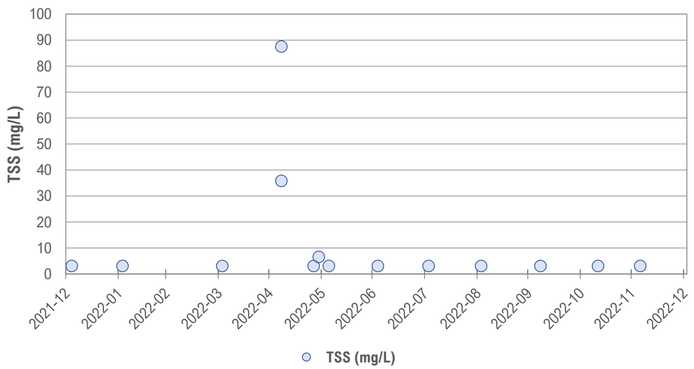

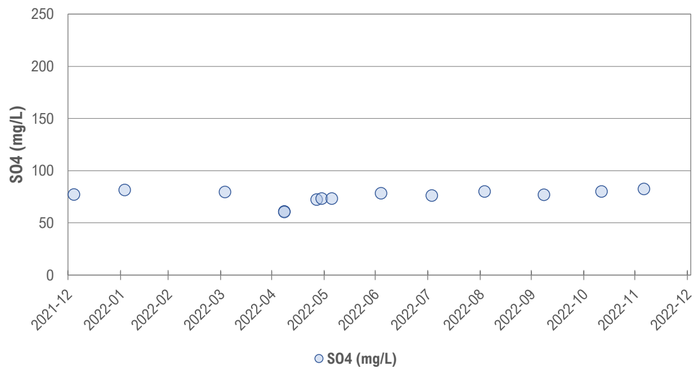

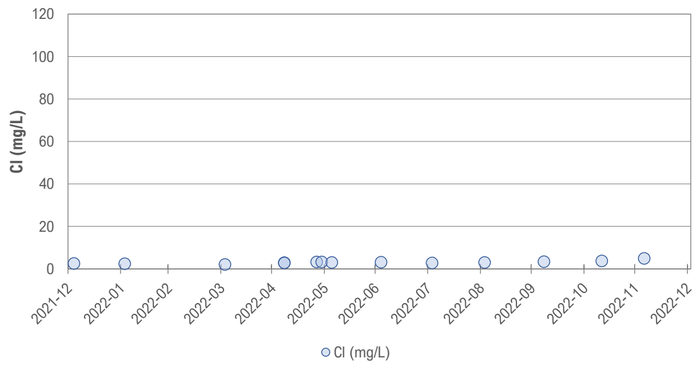

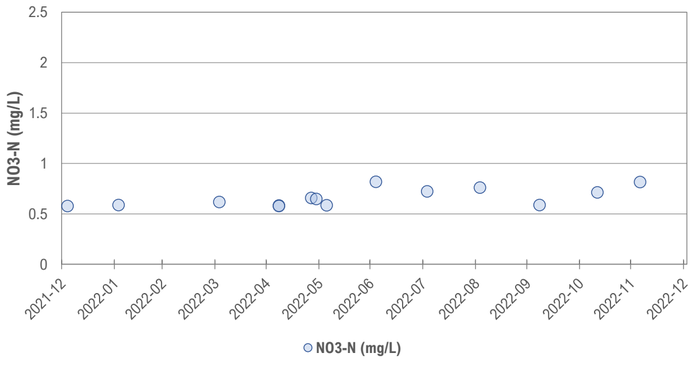

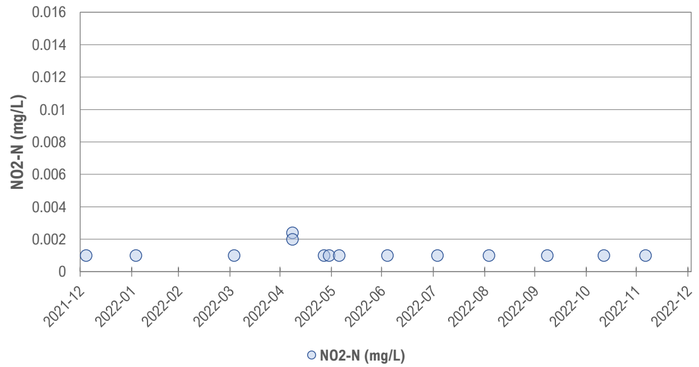

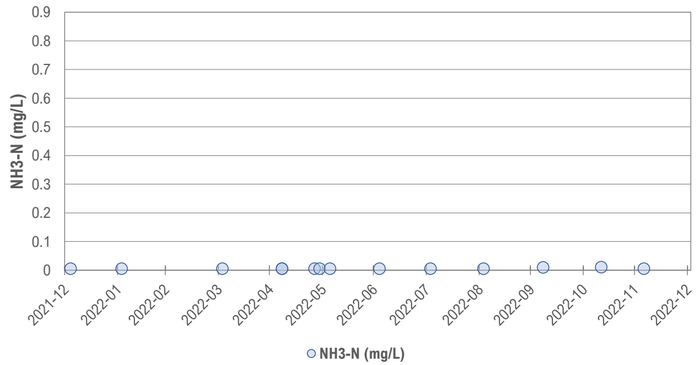

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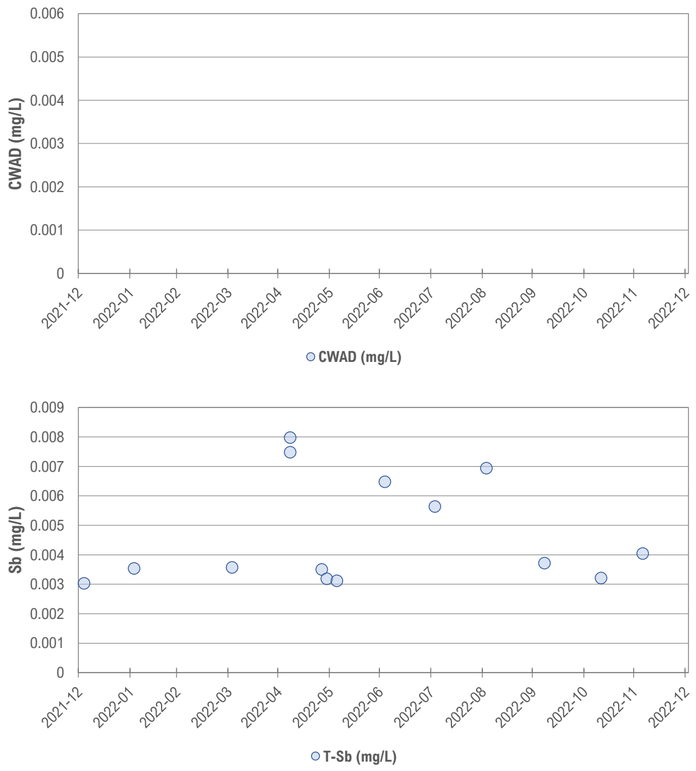

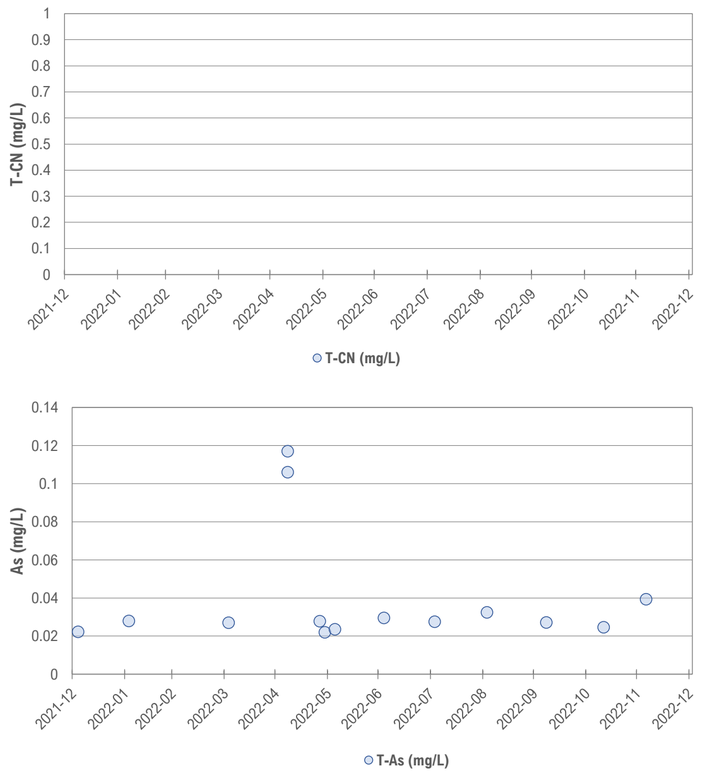

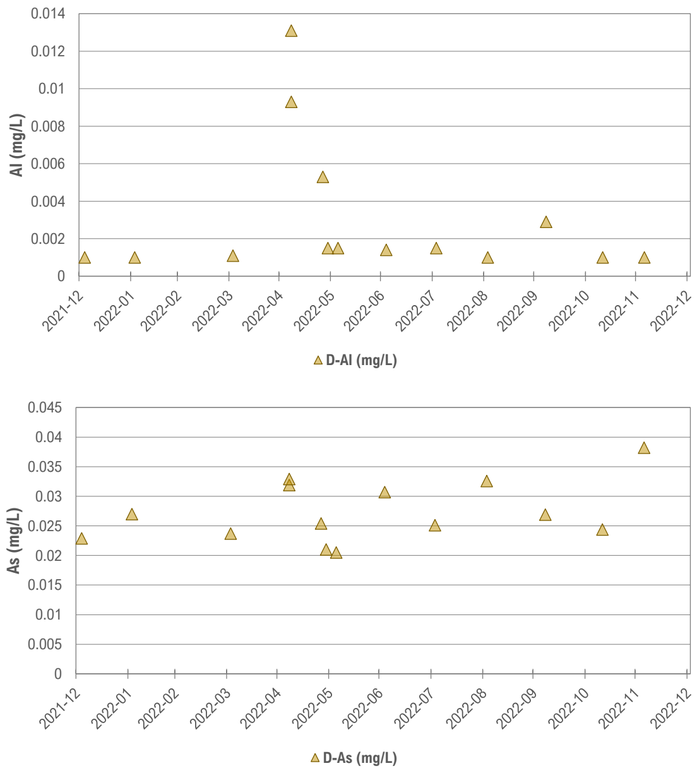

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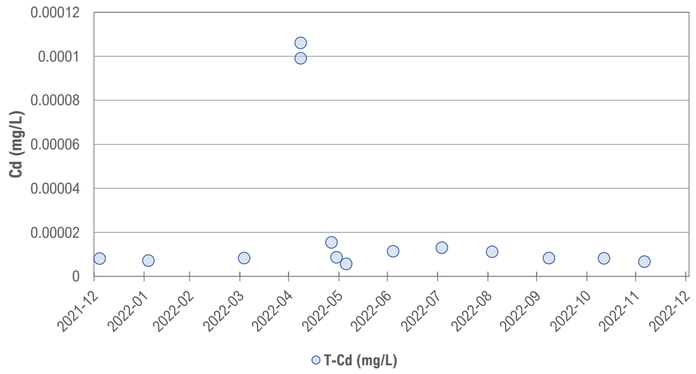

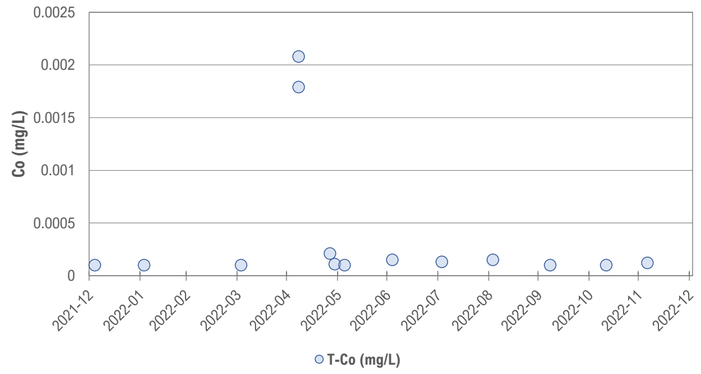

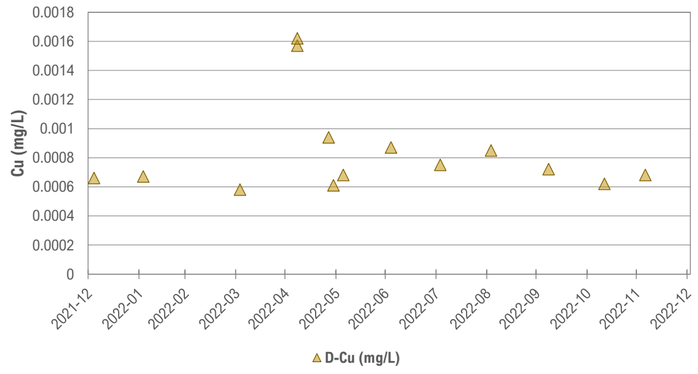

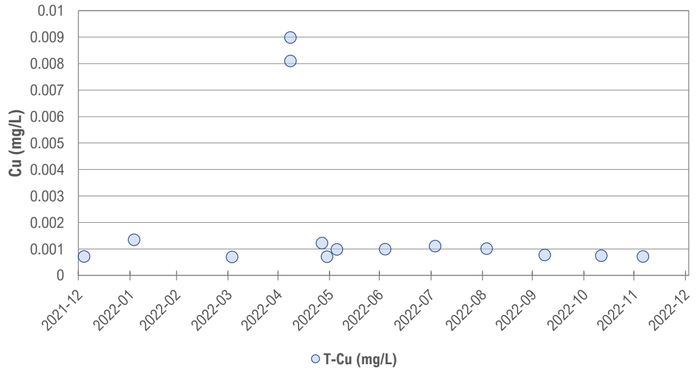

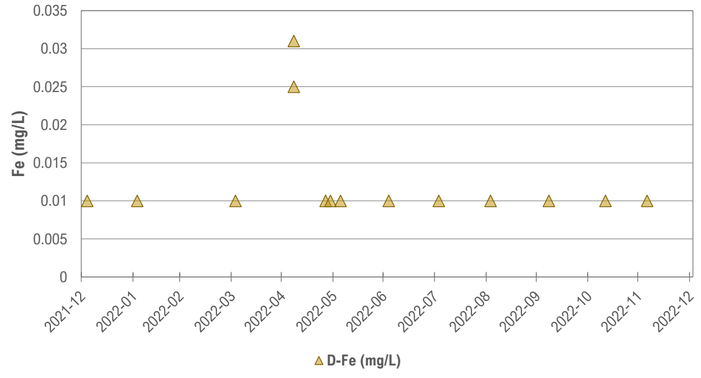

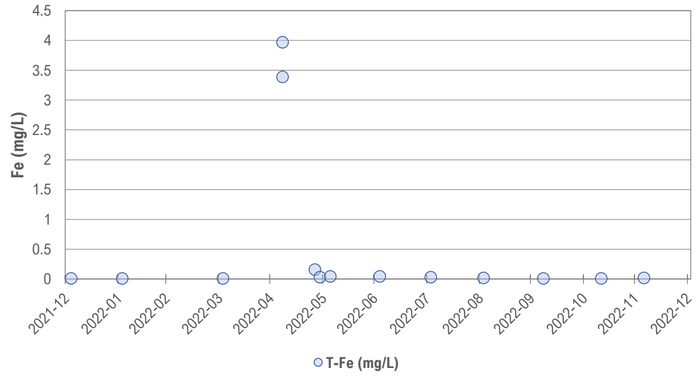

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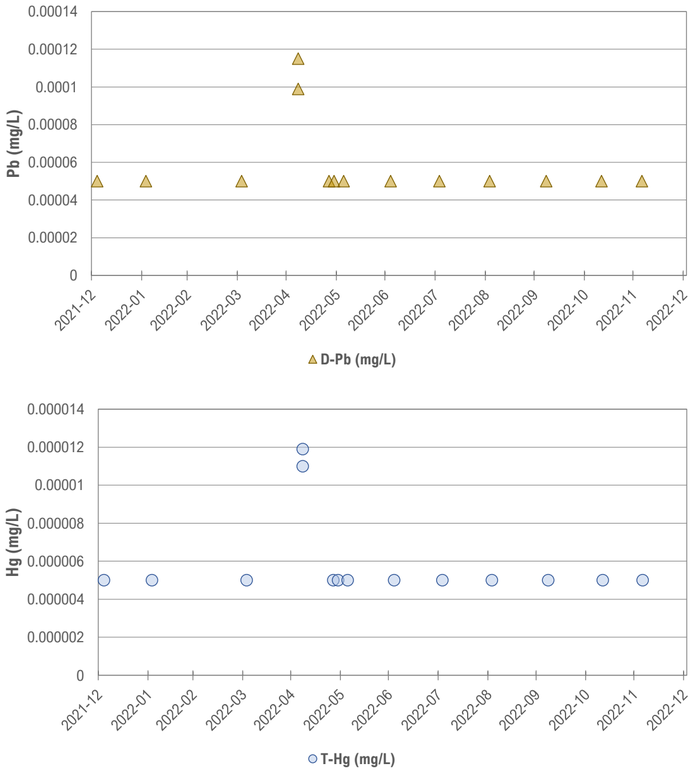

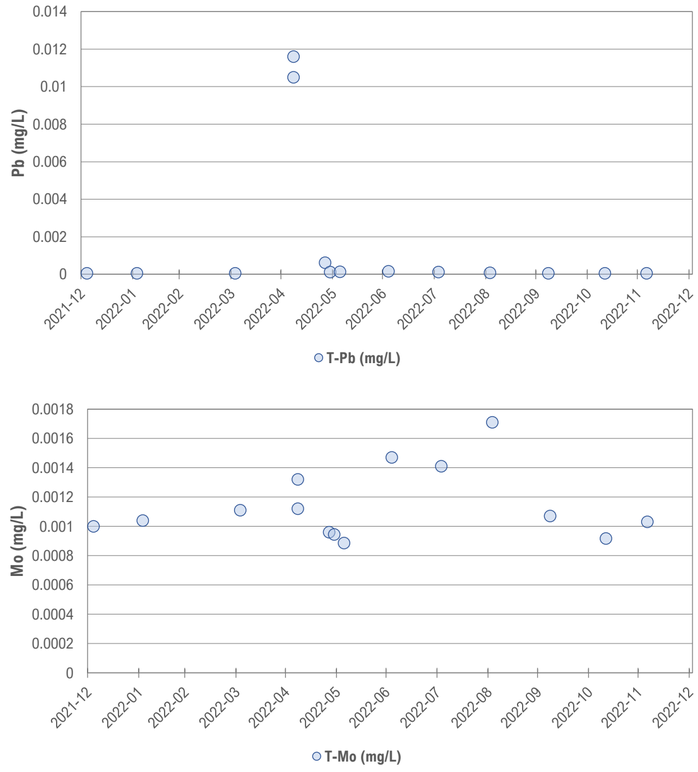

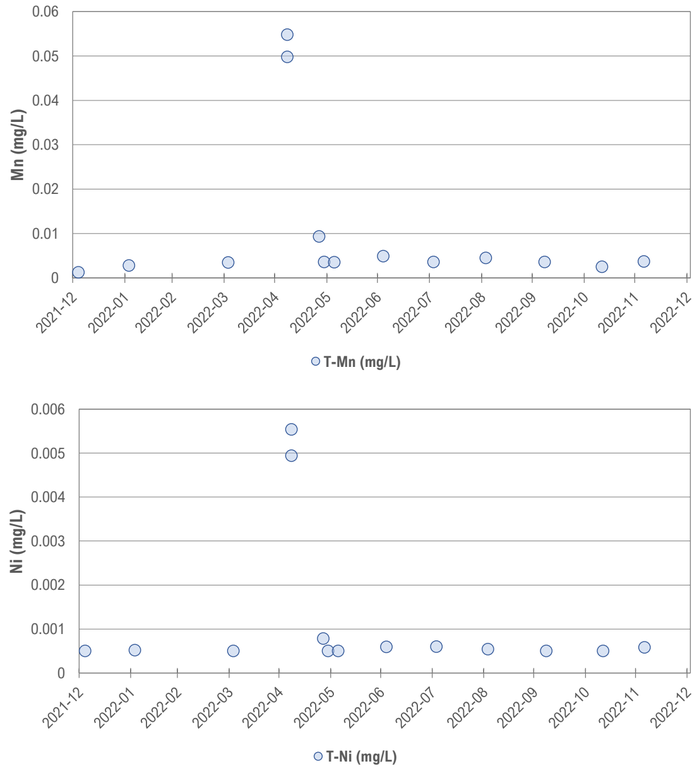

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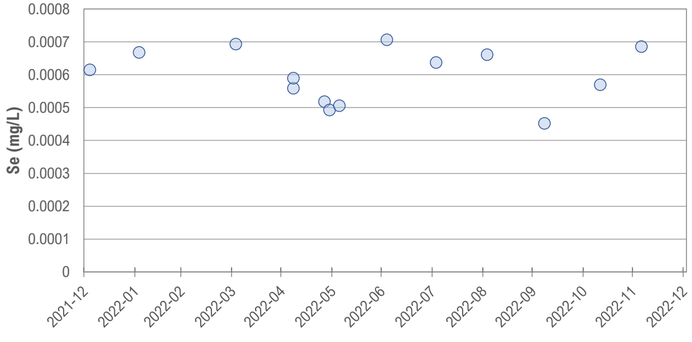

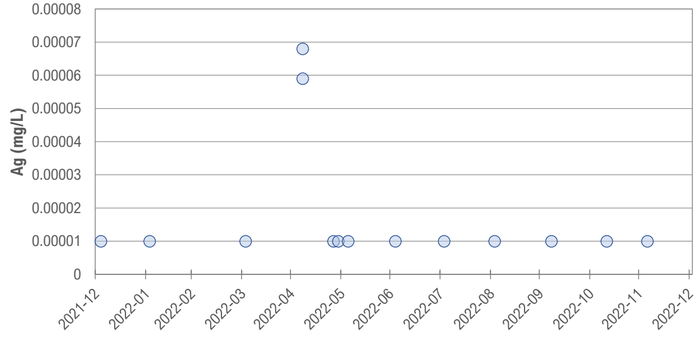

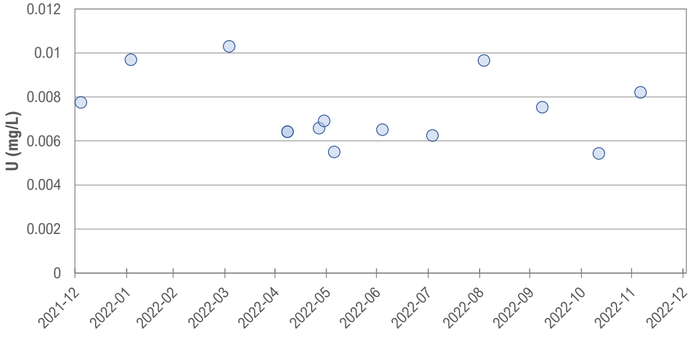

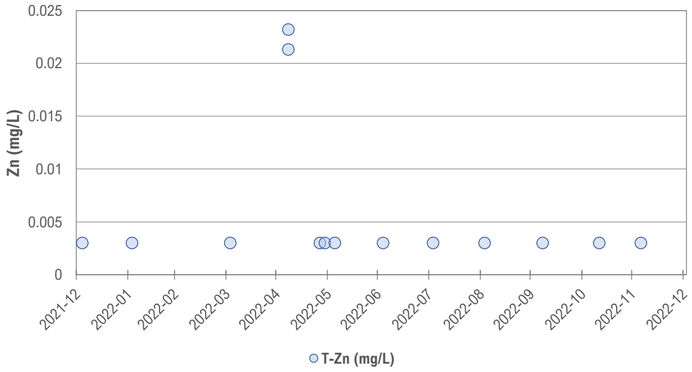

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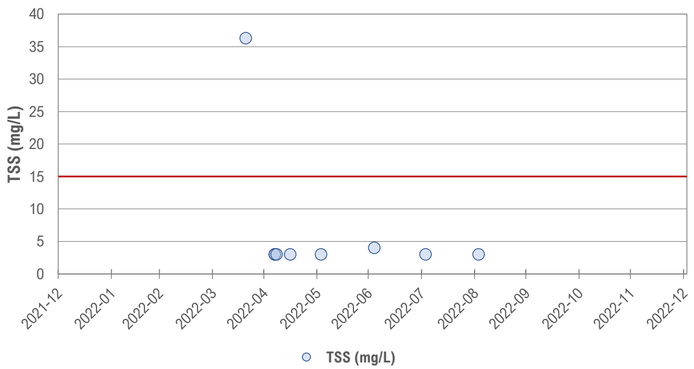

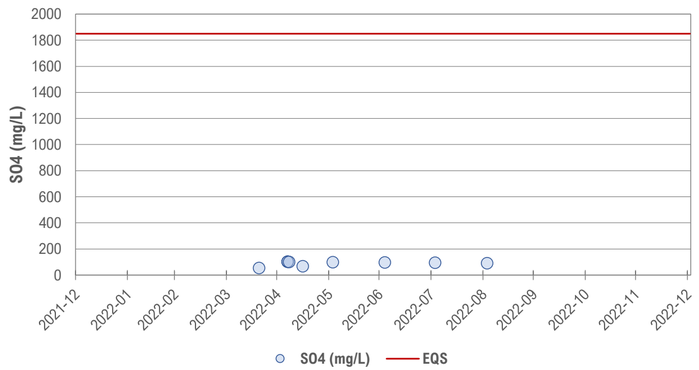

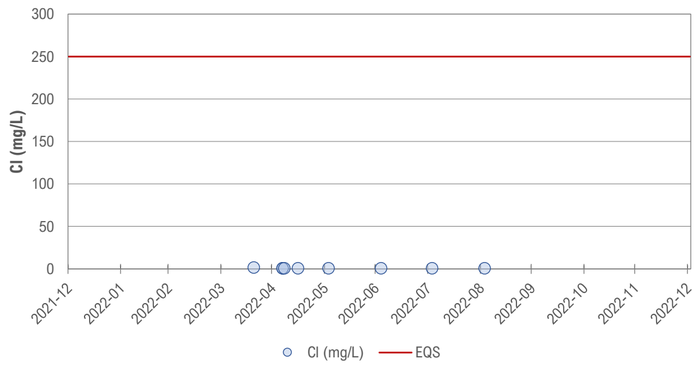

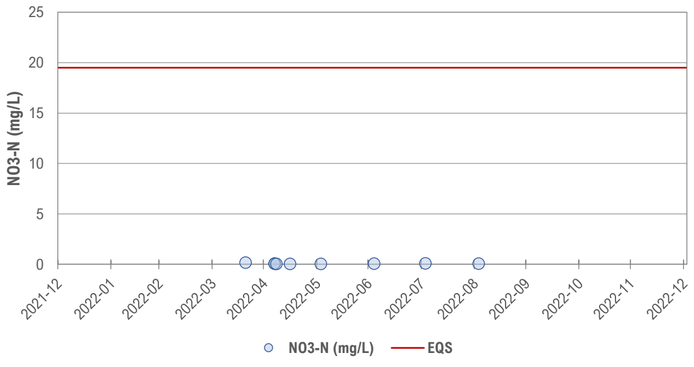

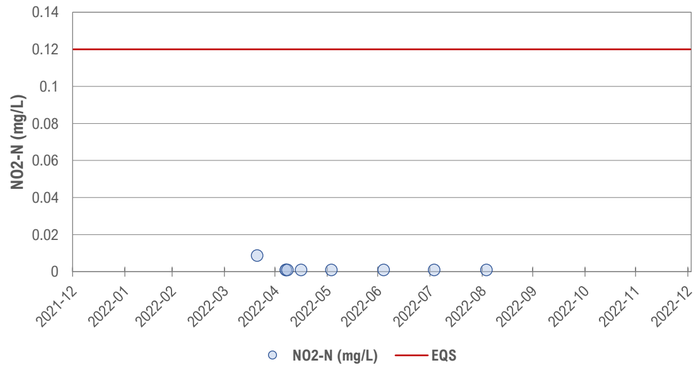

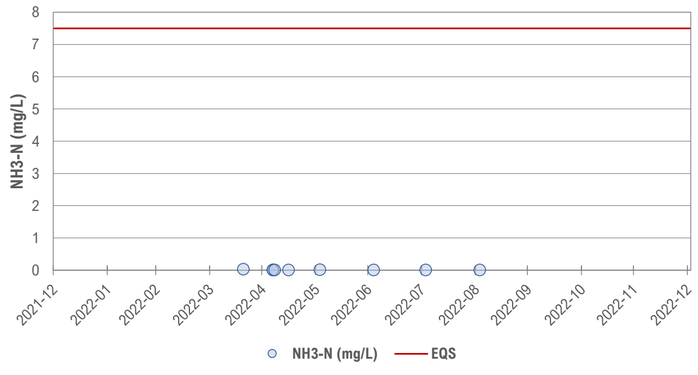

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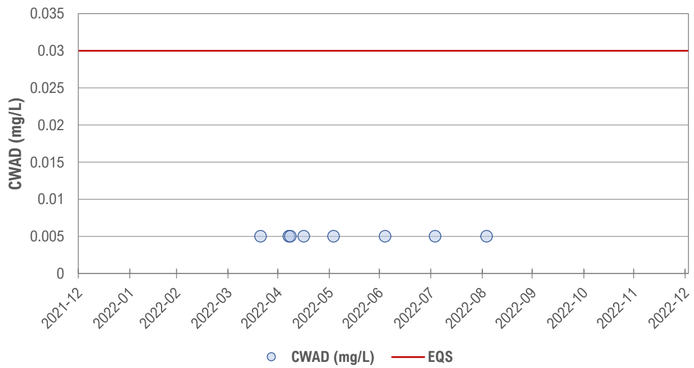

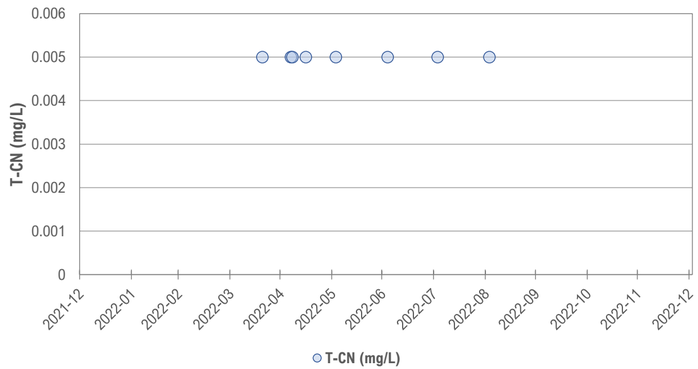

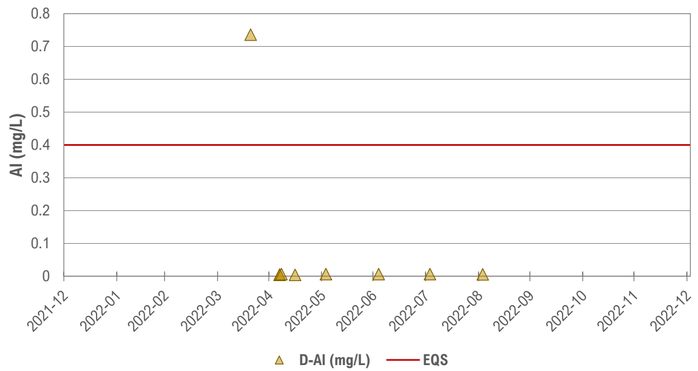

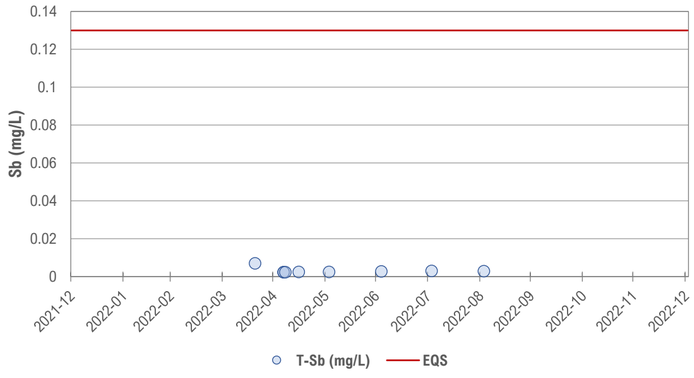

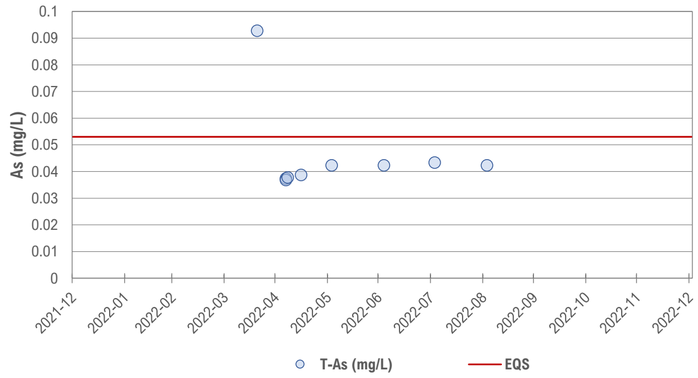

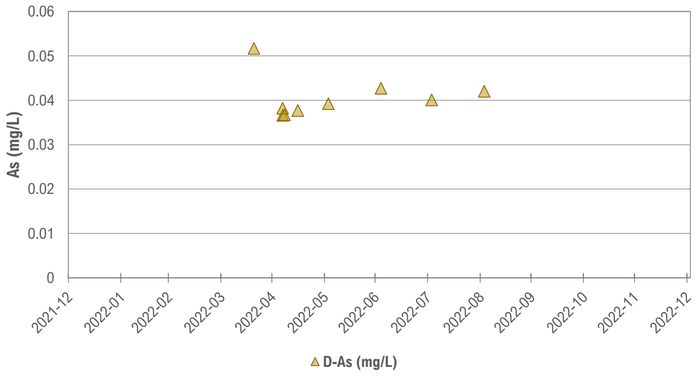

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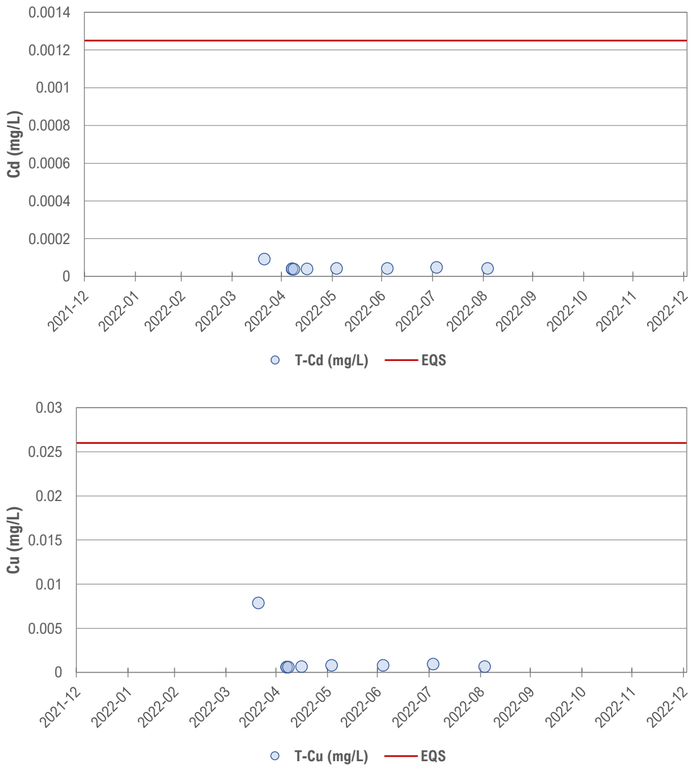

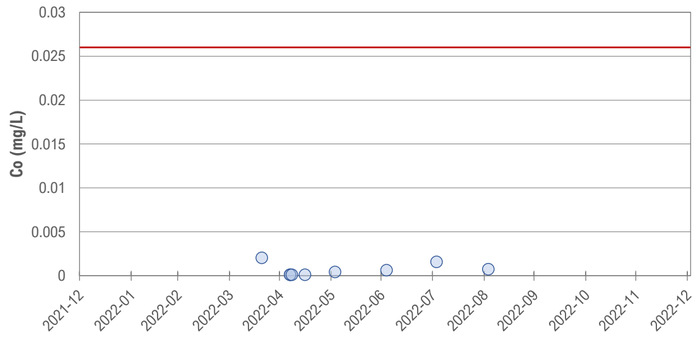

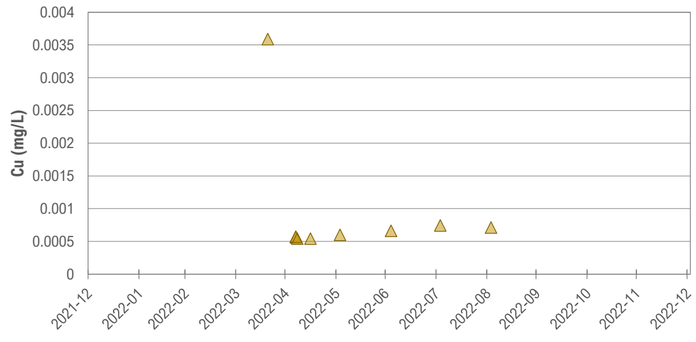

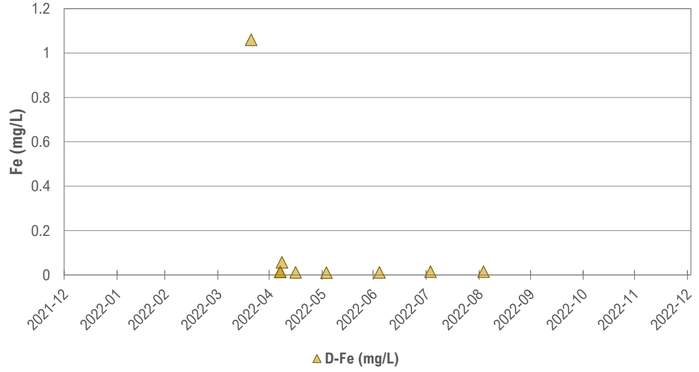

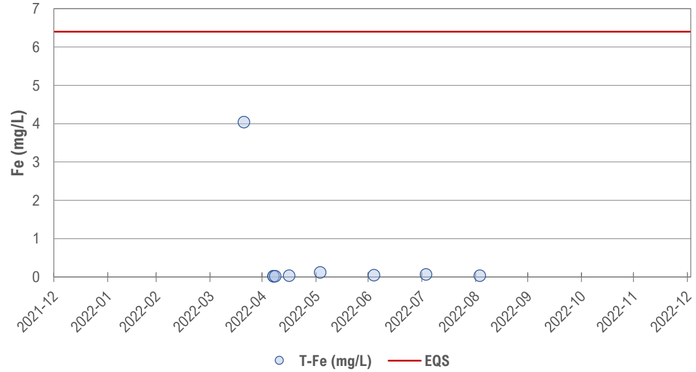

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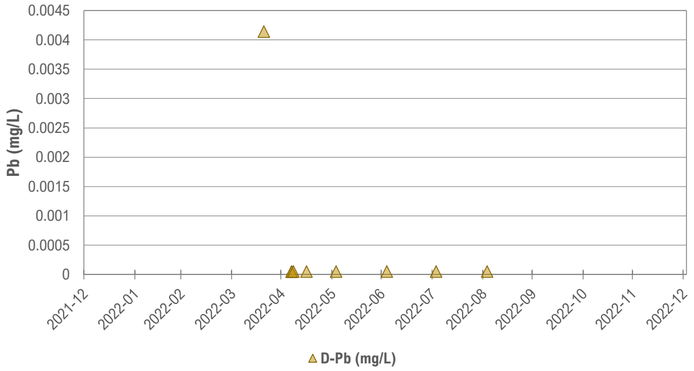

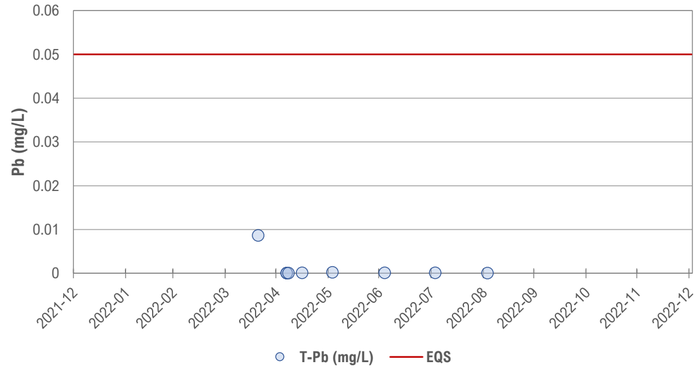

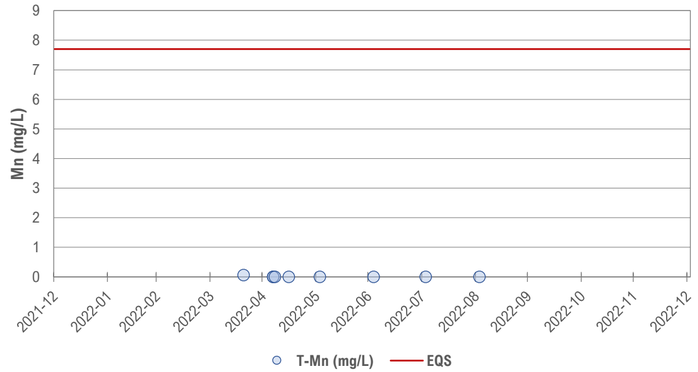

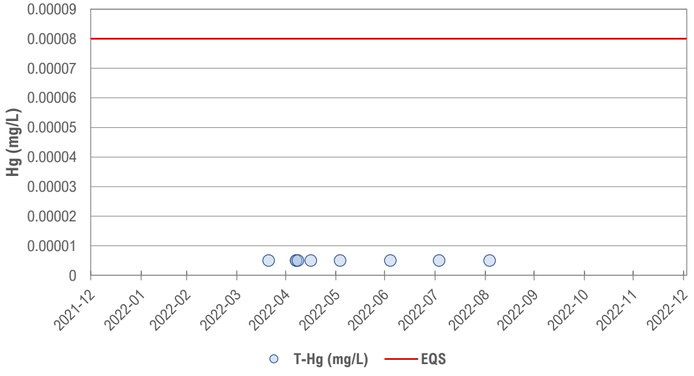

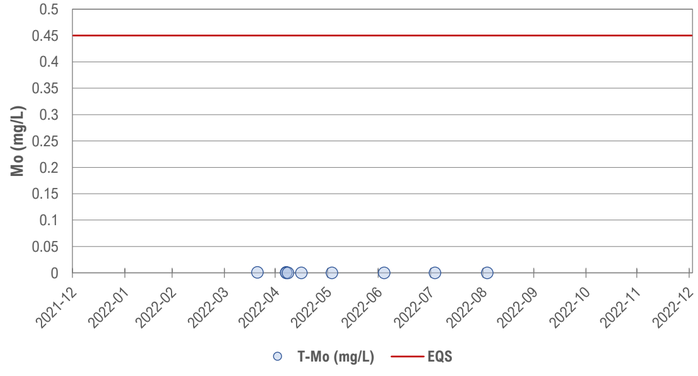

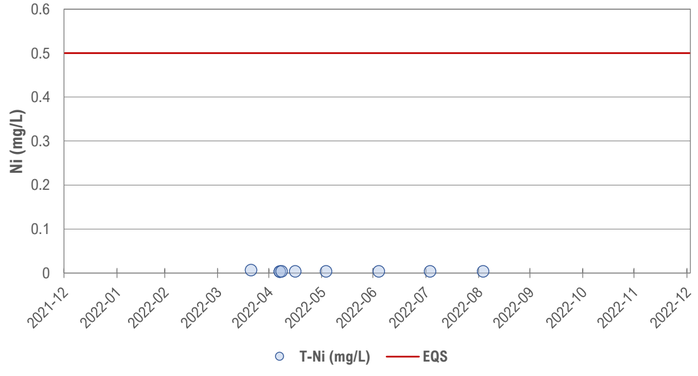

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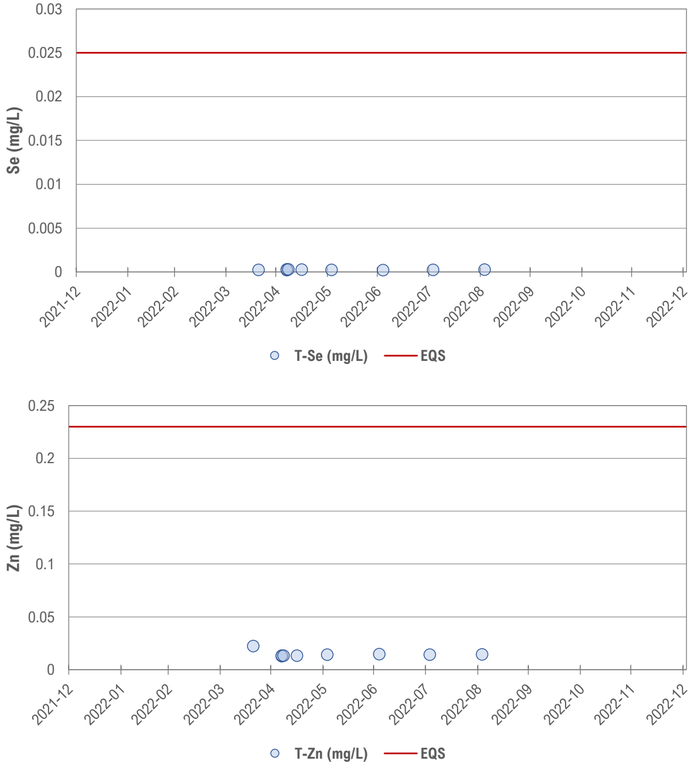

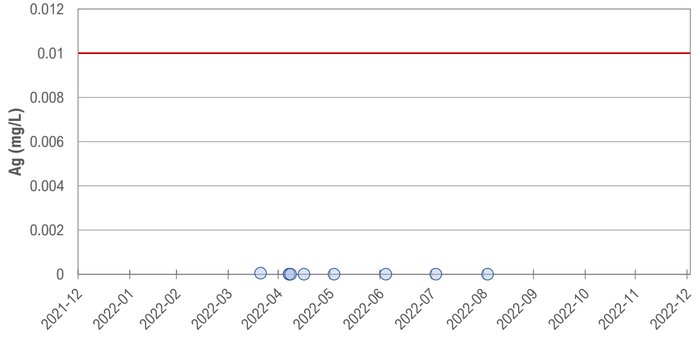

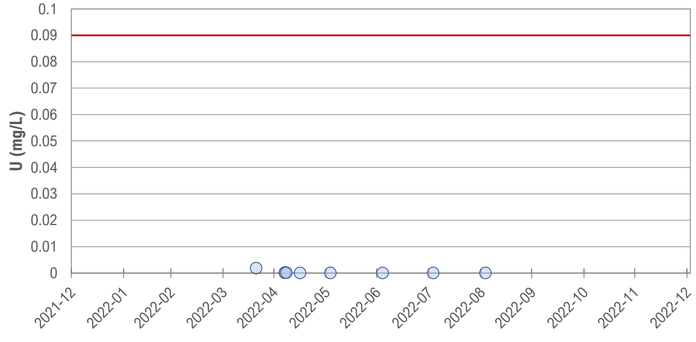

Appendix C: Dissolved versus Total Metals 2022 QA/QC Results

VICTORIA GOLD CORP

Appendix C: Dissolved *versus t*otal metal concentration analysis for water samples collected in 2022 - Eagle Gold Project.

Stations	W1							W10							W20							W21							W22						
Trace Element	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**
Aluminum	19	0	0	0	0	0	19	8	0	0	0	0	0	8	11	0	0	0	0	0	11	23	0	0	0	0	0	23	21	0	0	0	0	0	21
Antimony	18	***1***	0	0	0	0	19	7	***1***	0	0	0	0	8	10	***1***	0	0	0	0	11	23	0	0	0	0	0	23	19	***2***	0	0	0	0	21
Arsenic	16	***3***	0	0	0	0	19	6	***2***	0	0	0	0	8	10	***1***	0	0	0	0	11	22	***1***	0	0	0	0	23	19	***2***	0	0	0	0	21
Barium	17	***2***	0	0	0	0	19	5	***3***	0	0	0	0	8	8	***3***	0	0	0	0	11	18	***5***	0	0	0	0	23	14	***7***	0	0	0	0	21
Beryllium	19	0	0	0	0	0	19	8	0	0	0	0	0	8	11	0	0	0	0	0	11	23	0	0	0	0	0	23	21	0	0	0	0	0	21
Bismuth	19	0	0	0	0	0	19	8	0	0	0	0	0	8	11	0	0	0	0	0	11	23	0	0	0	0	0	23	21	0	0	0	0	0	21
Boron	19	0	0	0	0	0	19	8	0	0	0	0	0	8	11	0	0	0	0	0	11	23	0	0	0	0	0	23	21	0	0	0	0	0	21
Cadmium	16	***3***	***1***	0	0	0	19	7	***1***	0	0	0	0	8	9	***2***	0	0	0	0	11	20	***3***	***1***	***1***	0	0	23	17	***4***	***2***	0	0	0	21
Calcium	11	***8***	0	0	0	0	19	6	***2***	0	0	0	0	8	8	***3***	0	0	0	0	11	13	***10***	0	0	0	0	23	13	***8***	0	0	0	0	21
Chromium	19	0	0	0	0	0	19	8	0	0	0	0	0	8	11	0	0	0	0	0	11	23	0	0	0	0	0	23	21	0	0	0	0	0	21
Cobalt	19	0	0	0	0	0	19	8	0	0	0	0	0	8	11	0	0	0	0	0	11	23	0	0	0	0	0	23	21	0	0	0	0	0	21
Copper	19	0	0	0	0	0	19	7	***1***	***1***	0	0	0	8	11	0	0	0	0	0	11	23	0	0	0	0	0	23	19	***2***	***1***	***1***	***1***	0	21
Iron	19	0	0	0	0	0	19	8	0	0	0	0	0	8	11	0	0	0	0	0	11	23	0	0	0	0	0	23	21	0	0	0	0	0	21
Lead	19	0	0	0	0	0	19	8	0	0	0	0	0	8	11	0	0	0	0	0	11	23	0	0	0	0	0	23	21	0	0	0	0	0	21
Lithium	16	***3***	0	0	0	0	19	4	***4***	0	0	0	0	8	10	***1***	0	0	0	0	11	18	***5***	0	0	0	0	23	18	***3***	0	0	0	0	21
Magnesium	10	***9***	0	0	0	0	19	6	***2***	0	0	0	0	8	8	***3***	0	0	0	0	11	13	***10***	0	0	0	0	23	13	***8***	0	0	0	0	21
Manganese	19	0	0	0	0	0	19	8	0	0	0	0	0	8	11	0	0	0	0	0	11	23	0	0	0	0	0	23	21	0	0	0	0	0	21
Mercury	18	***1***	***1***	0	0	0	19	8	0	0	0	0	0	8	11	0	0	0	0	0	11	23	0	0	0	0	0	23	21	0	0	0	0	0	21
Molybdenum	12	***7***	***1***	***1***	0	0	19	4	***4***	0	0	0	0	8	9	***2***	0	0	0	0	11	14	***9***	***4***	***2***	***1***	0	23	16	***5***	***3***	***2***	***2***	***1***	21
Nickel	19	0	0	0	0	0	19	7	***1***	0	0	0	0	8	11	0	0	0	0	0	11	22	***1***	***1***	0	0	0	23	18	***3***	0	0	0	0	21
Phosphorus	3	***16***	***16***	***16***	***16***	***11***	19	1	***7***	***7***	***7***	***7***	***3***	8	0	***11***	***10***	***10***	***10***	***7***	11	7	***16***	***16***	***15***	***14***	***11***	23	0	***21***	***21***	***20***	***18***	***17***	21
Potassium	13	***6***	0	0	0	0	19	5	***3***	0	0	0	0	8	8	***3***	0	0	0	0	11	14	***9***	0	0	0	0	23	10	***11***	0	0	0	0	21
Selenium	15	***4***	***1***	0	0	0	19	4	***4***	***3***	0	0	0	8	6	***5***	***2***	***1***	0	0	11	16	***7***	0	0	0	0	23	8	***13***	***6***	***2***	0	0	21
Silicon	14	***5***	0	0	0	0	19	7	***1***	0	0	0	0	8	9	***2***	0	0	0	0	11	19	***4***	0	0	0	0	23	18	***3***	***1***	0	0	0	21
Silver	19	0	0	0	0	0	19	8	0	0	0	0	0	8	11	0	0	0	0	0	11	23	0	0	0	0	0	23	21	0	0	0	0	0	21
Sodium	8	***11***	0	0	0	0	19	4	***4***	0	0	0	0	8	7	***4***	0	0	0	0	11	9	***14***	0	0	0	0	23	13	***8***	0	0	0	0	21
Strontium	16	***3***	0	0	0	0	19	6	***2***	0	0	0	0	8	10	***1***	0	0	0	0	11	20	***3***	0	0	0	0	23	18	***3***	0	0	0	0	21
Thallium	19	0	0	0	0	0	19	8	0	0	0	0	0	8	11	0	0	0	0	0	11	23	0	0	0	0	0	23	21	0	0	0	0	0	21
Tin	18	***1***	***1***	***1***	0	0	19	8	0	0	0	0	0	8	11	0	0	0	0	0	11	23	0	0	0	0	0	23	21	0	0	0	0	0	21
Titanium	19	0	0	0	0	0	19	8	0	0	0	0	0	8	11	0	0	0	0	0	11	23	0	0	0	0	0	23	21	0	0	0	0	0	21
Uranium	16	***3***	0	0	0	0	19	8	0	0	0	0	0	8	10	***1***	0	0	0	0	11	18	***5***	0	0	0	0	23	17	***4***	0	0	0	0	21
Vanadium	19	0	0	0	0	0	19	8	0	0	0	0	0	8	11	0	0	0	0	0	11	23	0	0	0	0	0	23	21	0	0	0	0	0	21
Zinc	19	0	0	0	0	0	19	8	0	0	0	0	0	8	11	0	0	0	0	0	11	23	0	0	0	0	0	23	20	***1***	0	0	0	0	21

Note: Highlighetd cells represent exceedances to applicable percentage thresholds

Appendix C: Dissolved *versus t*otal metal concentration analysis for water samples collected in 2022 - Eagle Gold Project.

Stations	W22D							W23							W24							W25							W26						
Trace Element	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**
Aluminum	0	0	0	0	0	0	0	13	0	0	0	0	0	13	0	0	0	0	0	0	0	19	0	0	0	0	0	19	7	0	0	0	0	0	7
Antimony	0	0	0	0	0	0	0	11	***2***	0	0	0	0	13	0	0	0	0	0	0	0	17	***2***	0	0	0	0	19	6	***1***	0	0	0	0	7
Arsenic	0	0	0	0	0	0	0	13	0	0	0	0	0	13	0	0	0	0	0	0	0	17	***2***	0	0	0	0	19	6	***1***	0	0	0	0	7
Barium	0	0	0	0	0	0	0	11	***2***	0	0	0	0	13	0	0	0	0	0	0	0	12	***7***	***1***	0	0	0	19	4	***3***	0	0	0	0	7
Beryllium	0	0	0	0	0	0	0	13	0	0	0	0	0	13	0	0	0	0	0	0	0	19	0	0	0	0	0	19	6	***1***	***1***	0	0	0	7
Bismuth	0	0	0	0	0	0	0	13	0	0	0	0	0	13	0	0	0	0	0	0	0	19	0	0	0	0	0	19	7	0	0	0	0	0	7
Boron	0	0	0	0	0	0	0	13	0	0	0	0	0	13	0	0	0	0	0	0	0	19	0	0	0	0	0	19	7	0	0	0	0	0	7
Cadmium	0	0	0	0	0	0	0	12	***1***	***1***	0	0	0	13	0	0	0	0	0	0	0	14	***5***	***1***	0	0	0	19	3	***4***	***1***	0	0	0	7
Calcium	0	0	0	0	0	0	0	7	***6***	0	0	0	0	13	0	0	0	0	0	0	0	10	***9***	0	0	0	0	19	4	***3***	0	0	0	0	7
Chromium	0	0	0	0	0	0	0	13	0	0	0	0	0	13	0	0	0	0	0	0	0	19	0	0	0	0	0	19	7	0	0	0	0	0	7
Cobalt	0	0	0	0	0	0	0	13	0	0	0	0	0	13	0	0	0	0	0	0	0	17	***2***	0	0	0	0	19	7	0	0	0	0	0	7
Copper	0	0	0	0	0	0	0	12	***1***	***1***	***1***	0	0	13	0	0	0	0	0	0	0	17	***2***	0	0	0	0	19	7	0	0	0	0	0	7
Iron	0	0	0	0	0	0	0	13	0	0	0	0	0	13	0	0	0	0	0	0	0	19	0	0	0	0	0	19	7	0	0	0	0	0	7
Lead	0	0	0	0	0	0	0	13	0	0	0	0	0	13	0	0	0	0	0	0	0	19	0	0	0	0	0	19	7	0	0	0	0	0	7
Lithium	0	0	0	0	0	0	0	12	***1***	0	0	0	0	13	0	0	0	0	0	0	0	12	***7***	0	0	0	0	19	5	***2***	0	0	0	0	7
Magnesium	0	0	0	0	0	0	0	9	***4***	0	0	0	0	13	0	0	0	0	0	0	0	13	***6***	***1***	0	0	0	19	7	0	0	0	0	0	7
Manganese	0	0	0	0	0	0	0	13	0	0	0	0	0	13	0	0	0	0	0	0	0	18	***1***	***1***	0	0	0	19	6	***1***	***1***	***1***	***1***	0	7
Mercury	0	0	0	0	0	0	0	13	0	0	0	0	0	13	0	0	0	0	0	0	0	18	***1***	***1***	0	0	0	19	7	0	0	0	0	0	7
Molybdenum	0	0	0	0	0	0	0	8	***5***	0	0	0	0	13	0	0	0	0	0	0	0	10	***9***	***5***	0	0	0	19	6	***1***	0	0	0	0	7
Nickel	0	0	0	0	0	0	0	12	***1***	0	0	0	0	13	0	0	0	0	0	0	0	18	***1***	0	0	0	0	19	7	0	0	0	0	0	7
Phosphorus	0	0	0	0	0	0	0	1	***12***	***11***	***11***	***11***	***10***	13	0	0	0	0	0	0	0	0	***19***	***19***	***18***	***17***	***15***	19	0	***7***	***7***	***7***	***6***	***5***	7
Potassium	0	0	0	0	0	0	0	12	***1***	0	0	0	0	13	0	0	0	0	0	0	0	8	***11***	0	0	0	0	19	4	***3***	0	0	0	0	7
Selenium	0	0	0	0	0	0	0	10	***3***	0	0	0	0	13	0	0	0	0	0	0	0	9	***10***	***4***	***1***	0	0	19	4	***3***	0	0	0	0	7
Silicon	0	0	0	0	0	0	0	11	***2***	0	0	0	0	13	0	0	0	0	0	0	0	15	***4***	0	0	0	0	19	5	***2***	0	0	0	0	7
Silver	0	0	0	0	0	0	0	13	0	0	0	0	0	13	0	0	0	0	0	0	0	19	0	0	0	0	0	19	7	0	0	0	0	0	7
Sodium	0	0	0	0	0	0	0	11	***2***	0	0	0	0	13	0	0	0	0	0	0	0	10	***9***	0	0	0	0	19	6	***1***	***1***	***1***	***1***	0	7
Strontium	0	0	0	0	0	0	0	7	***6***	0	0	0	0	13	0	0	0	0	0	0	0	17	***2***	0	0	0	0	19	5	***2***	0	0	0	0	7
Thallium	0	0	0	0	0	0	0	13	0	0	0	0	0	13	0	0	0	0	0	0	0	19	0	0	0	0	0	19	7	0	0	0	0	0	7
Tin	0	0	0	0	0	0	0	12	***1***	***1***	***1***	0	0	13	0	0	0	0	0	0	0	17	***2***	***1***	0	0	0	19	7	0	0	0	0	0	7
Titanium	0	0	0	0	0	0	0	13	0	0	0	0	0	13	0	0	0	0	0	0	0	19	0	0	0	0	0	19	7	0	0	0	0	0	7
Uranium	0	0	0	0	0	0	0	10	***3***	0	0	0	0	13	0	0	0	0	0	0	0	11	***8***	0	0	0	0	19	5	***2***	0	0	0	0	7
Vanadium	0	0	0	0	0	0	0	13	0	0	0	0	0	13	0	0	0	0	0	0	0	19	0	0	0	0	0	19	7	0	0	0	0	0	7
Zinc	0	0	0	0	0	0	0	13	0	0	0	0	0	13	0	0	0	0	0	0	0	18	***1***	***1***	0	0	0	19	6	***1***	0	0	0	0	7

Note: Highlighetd cells represent exceedances to applicable percentage thresholds

Appendix C: Dissolved *versus* *t*otal metal concentration analysis for water samples collected in 2022 - Eagle Gold Project.

Stations	W27							W27D							W29							W29D							W30						
Trace Element	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**
Aluminum	11	0	0	0	0	0	11	0	0	0	0	0	0	0	17	0	0	0	0	0	17	0	0	0	0	0	0	0	7	*1*	0	0	0	0	8
Antimony	9	*2*	0	0	0	0	11	0	0	0	0	0	0	0	17	0	0	0	0	0	17	0	0	0	0	0	0	0	8	0	0	0	0	0	8
Arsenic	10	*1*	0	0	0	0	11	0	0	0	0	0	0	0	17	0	0	0	0	0	17	0	0	0	0	0	0	0	7	*1*	0	0	0	0	8
Barium	10	*1*	0	0	0	0	11	0	0	0	0	0	0	0	12	*5*	0	0	0	0	17	0	0	0	0	0	0	0	6	*2*	0	0	0	0	8
Beryllium	11	0	0	0	0	0	11	0	0	0	0	0	0	0	17	0	0	0	0	0	17	0	0	0	0	0	0	0	7	*1*	*1*	0	0	0	8
Bismuth	11	0	0	0	0	0	11	0	0	0	0	0	0	0	17	0	0	0	0	0	17	0	0	0	0	0	0	0	8	0	0	0	0	0	8
Boron	11	0	0	0	0	0	11	0	0	0	0	0	0	0	17	0	0	0	0	0	17	0	0	0	0	0	0	0	8	0	0	0	0	0	8
Cadmium	9	*2*	0	0	0	0	11	0	0	0	0	0	0	0	14	*3*	*2*	0	0	0	17	0	0	0	0	0	0	0	8	0	0	0	0	0	8
Calcium	6	*5*	0	0	0	0	11	0	0	0	0	0	0	0	8	*9*	0	0	0	0	17	0	0	0	0	0	0	0	4	*4*	0	0	0	0	8
Chromium	11	0	0	0	0	0	11	0	0	0	0	0	0	0	17	0	0	0	0	0	17	0	0	0	0	0	0	0	8	0	0	0	0	0	8
Cobalt	11	0	0	0	0	0	11	0	0	0	0	0	0	0	17	0	0	0	0	0	17	0	0	0	0	0	0	0	8	0	0	0	0	0	8
Copper	11	0	0	0	0	0	11	0	0	0	0	0	0	0	17	0	0	0	0	0	17	0	0	0	0	0	0	0	8	0	0	0	0	0	8
Iron	11	0	0	0	0	0	11	0	0	0	0	0	0	0	17	0	0	0	0	0	17	0	0	0	0	0	0	0	7	*1*	0	0	0	0	8
Lead	11	0	0	0	0	0	11	0	0	0	0	0	0	0	17	0	0	0	0	0	17	0	0	0	0	0	0	0	8	0	0	0	0	0	8
Lithium	8	*3*	0	0	0	0	11	0	0	0	0	0	0	0	13	*4*	0	0	0	0	17	0	0	0	0	0	0	0	7	*1*	*1*	0	0	0	8
Magnesium	8	*3*	0	0	0	0	11	0	0	0	0	0	0	0	10	*7*	0	0	0	0	17	0	0	0	0	0	0	0	7	*1*	0	0	0	0	8
Manganese	11	0	0	0	0	0	11	0	0	0	0	0	0	0	17	0	0	0	0	0	17	0	0	0	0	0	0	0	8	0	0	0	0	0	8
Mercury	11	0	0	0	0	0	11	0	0	0	0	0	0	0	17	0	0	0	0	0	17	0	0	0	0	0	0	0	8	0	0	0	0	0	8
Molybdenum	6	*5*	*2*	*1*	0	0	11	0	0	0	0	0	0	0	12	*5*	*1*	*1*	0	0	17	0	0	0	0	0	0	0	8	0	0	0	0	0	8
Nickel	11	0	0	0	0	0	11	0	0	0	0	0	0	0	13	*4*	0	0	0	0	17	0	0	0	0	0	0	0	7	*1*	0	0	0	0	8
Phosphorus	1	*10*	*9*	*9*	*8*	*5*	11	0	0	0	0	0	0	0	2	*15*	*15*	*15*	*14*	*14*	17	0	0	0	0	0	0	0	0	*8*	*8*	*8*	*7*	*7*	8
Potassium	8	*3*	0	0	0	0	11	0	0	0	0	0	0	0	8	*9*	0	0	0	0	17	0	0	0	0	0	0	0	6	*2*	0	0	0	0	8
Selenium	6	*5*	0	0	0	0	11	0	0	0	0	0	0	0	8	*9*	*4*	0	0	0	17	0	0	0	0	0	0	0	6	*2*	0	0	0	0	8
Silicon	10	*1*	0	0	0	0	11	0	0	0	0	0	0	0	15	*2*	0	0	0	0	17	0	0	0	0	0	0	0	6	*2*	0	0	0	0	8
Silver	11	0	0	0	0	0	11	0	0	0	0	0	0	0	17	0	0	0	0	0	17	0	0	0	0	0	0	0	8	0	0	0	0	0	8
Sodium	7	*4*	0	0	0	0	11	0	0	0	0	0	0	0	10	*7*	0	0	0	0	17	0	0	0	0	0	0	0	7	*1*	0	0	0	0	8
Strontium	8	*3*	0	0	0	0	11	0	0	0	0	0	0	0	15	*2*	0	0	0	0	17	0	0	0	0	0	0	0	5	*3*	0	0	0	0	8
Thallium	11	0	0	0	0	0	11	0	0	0	0	0	0	0	17	0	0	0	0	0	17	0	0	0	0	0	0	0	8	0	0	0	0	0	8
Tin	11	0	0	0	0	0	11	0	0	0	0	0	0	0	17	0	0	0	0	0	17	0	0	0	0	0	0	0	8	0	0	0	0	0	8
Titanium	11	0	0	0	0	0	11	0	0	0	0	0	0	0	17	0	0	0	0	0	17	0	0	0	0	0	0	0	8	0	0	0	0	0	8
Uranium	9	*2*	0	0	0	0	11	0	0	0	0	0	0	0	13	*4*	0	0	0	0	17	0	0	0	0	0	0	0	5	*3*	0	0	0	0	8
Vanadium	11	0	0	0	0	0	11	0	0	0	0	0	0	0	17	0	0	0	0	0	17	0	0	0	0	0	0	0	8	0	0	0	0	0	8
Zinc	11	0	0	0	0	0	11	0	0	0	0	0	0	0	16	*1*	0	0	0	0	17	0	0	0	0	0	0	0	7	*1*	0	0	0	0	8

Note: Highlighetd cells represent exceedances to applicable percentage thresholds

Appendix C: Dissolved *versus t*otal metal concentration analysis for water samples collected in 2022 - Eagle Gold Project.

Stations	W31							W39							W39 New							W39 Old							W4						
Trace Element	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**
Aluminum	11	0	0	0	0	0	11	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	*2*	*2*	*2*	*1*	0	42
Antimony	9	*2*	0	0	0	0	11	4	*1*	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	*6*	*4*	*2*	*1*	0	42
Arsenic	10	*1*	0	0	0	0	11	4	*1*	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	*5*	*2*	*1*	0	0	42
Barium	7	*4*	0	0	0	0	11	3	*2*	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	*17*	0	0	0	0	42
Beryllium	11	0	0	0	0	0	11	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	0	0	0	0	0	42
Bismuth	11	0	0	0	0	0	11	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	0	0	0	0	0	42
Boron	11	0	0	0	0	0	11	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	0	0	0	0	0	42
Cadmium	9	*2*	*1*	*1*	*1*	0	11	4	*1*	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38	*4*	*2*	0	0	0	42
Calcium	8	*3*	0	0	0	0	11	3	*2*	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	*21*	0	0	0	0	42
Chromium	11	0	0	0	0	0	11	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	0	0	0	0	0	42
Cobalt	11	0	0	0	0	0	11	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	*6*	*4*	*2*	0	0	42
Copper	10	*1*	*1*	0	0	0	11	4	*1*	*1*	*1*	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35	*7*	*2*	*2*	*1*	*1*	42
Iron	11	0	0	0	0	0	11	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	*2*	*2*	*2*	*2*	0	42
Lead	11	0	0	0	0	0	11	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	*3*	*3*	*2*	*2*	*1*	42
Lithium	8	*3*	0	0	0	0	11	4	*1*	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	*13*	*1*	0	0	0	42
Magnesium	6	*5*	0	0	0	0	11	3	*2*	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	*16*	0	0	0	0	42
Manganese	11	0	0	0	0	0	11	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	*11*	*3*	0	0	0	42
Mercury	11	0	0	0	0	0	11	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	*1*	0	0	0	0	42
Molybdenum	8	*3*	0	0	0	0	11	3	*2*	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	*19*	*5*	*1*	0	0	42
Nickel	11	0	0	0	0	0	11	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	*6*	*1*	0	0	0	42
Phosphorus	1	*10*	*10*	*10*	*10*	*9*	11	1	*4*	*4*	*4*	*4*	*4*	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	*41*	*39*	*38*	*38*	*36*	42
Potassium	5	*6*	0	0	0	0	11	4	*1*	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	*17*	*2*	0	0	0	42
Selenium	6	*5*	*3*	0	0	0	11	2	*3*	*1*	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	*24*	*9*	*1*	0	0	42
Silicon	8	*3*	0	0	0	0	11	4	*1*	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	*8*	0	0	0	0	42
Silver	10	*1*	0	0	0	0	11	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	0	0	0	0	0	42
Sodium	4	*7*	0	0	0	0	11	2	*3*	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	*19*	*1*	*1*	0	0	42
Strontium	6	*5*	0	0	0	0	11	3	*2*	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	*14*	*1*	0	0	0	42
Thallium	11	0	0	0	0	0	11	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	0	0	0	0	0	42
Tin	10	*1*	*1*	*1*	0	0	11	4	*1*	*1*	*1*	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	*1*	*1*	0	0	0	42
Titanium	11	0	0	0	0	0	11	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	*2*	*2*	*2*	*2*	0	42
Uranium	9	*2*	0	0	0	0	11	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	*9*	*3*	*1*	0	0	42
Vanadium	11	0	0	0	0	0	11	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	0	0	0	0	0	42
Zinc	11	0	0	0	0	0	11	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	*1*	*1*	*1*	*1*	0	42

Note: Highlighted cells represent exceedances to applicable percentage thresholds

Appendix C: Dissolved *versus* t otal metal concentration analysis for water samples collected in 2022 - Eagle Gold Project.

Stations	W45							W49							W4-Mix							W5							W51						
Trace Element	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**
Aluminum	12	0	0	0	0	0	12	6	0	0	0	0	0	6	25	2	1	1	1	0	27	12	0	0	0	0	0	12	12	0	0	0	0	0	12
Antimony	11	1	0	0	0	0	12	5	1	0	0	0	0	6	22	5	1	0	0	0	27	11	1	0	0	0	0	12	12	0	0	0	0	0	12
Arsenic	12	0	0	0	0	0	12	6	0	0	0	0	0	6	24	3	0	0	0	0	27	12	0	0	0	0	0	12	12	0	0	0	0	0	12
Barium	9	3	0	0	0	0	12	5	1	0	0	0	0	6	13	14	0	0	0	0	27	9	3	0	0	0	0	12	10	2	0	0	0	0	12
Beryllium	12	0	0	0	0	0	12	6	0	0	0	0	0	6	27	0	0	0	0	0	27	12	0	0	0	0	0	12	12	0	0	0	0	0	12
Bismuth	12	0	0	0	0	0	12	6	0	0	0	0	0	6	27	0	0	0	0	0	27	12	0	0	0	0	0	12	12	0	0	0	0	0	12
Boron	12	0	0	0	0	0	12	6	0	0	0	0	0	6	27	0	0	0	0	0	27	12	0	0	0	0	0	12	12	0	0	0	0	0	12
Cadmium	11	1	0	0	0	0	12	5	1	1	1	0	0	6	22	5	2	1	0	0	27	10	2	1	0	0	0	12	10	2	0	0	0	0	12
Calcium	7	5	0	0	0	0	12	4	2	0	0	0	0	6	13	14	0	0	0	0	27	9	3	0	0	0	0	12	7	5	0	0	0	0	12
Chromium	12	0	0	0	0	0	12	6	0	0	0	0	0	6	27	0	0	0	0	0	27	12	0	0	0	0	0	12	12	0	0	0	0	0	12
Cobalt	12	0	0	0	0	0	12	5	1	1	1	0	0	6	24	3	0	0	0	0	27	12	0	0	0	0	0	12	12	0	0	0	0	0	12
Copper	11	1	1	1	1	1	12	6	0	0	0	0	0	6	23	4	0	0	0	0	27	12	0	0	0	0	0	12	12	0	0	0	0	0	12
Iron	12	0	0	0	0	0	12	6	0	0	0	0	0	6	26	1	1	1	1	0	27	12	0	0	0	0	0	12	12	0	0	0	0	0	12
Lead	12	0	0	0	0	0	12	6	0	0	0	0	0	6	25	2	1	1	0	0	27	12	0	0	0	0	0	12	12	0	0	0	0	0	12
Lithium	10	2	0	0	0	0	12	5	1	0	0	0	0	6	20	7	0	0	0	0	27	10	2	0	0	0	0	12	9	3	2	0	0	0	12
Magnesium	11	1	0	0	0	0	12	4	2	0	0	0	0	6	13	14	0	0	0	0	27	10	2	0	0	0	0	12	10	2	0	0	0	0	12
Manganese	11	1	0	0	0	0	12	5	1	1	1	0	0	6	25	2	0	0	0	0	27	11	1	0	0	0	0	12	12	0	0	0	0	0	12
Mercury	12	0	0	0	0	0	12	6	0	0	0	0	0	6	25	2	1	0	0	0	27	12	0	0	0	0	0	12	12	0	0	0	0	0	12
Molybdenum	9	3	1	0	0	0	12	4	2	0	0	0	0	6	18	9	0	0	0	0	27	8	4	0	0	0	0	12	9	3	0	0	0	0	12
Nickel	11	1	0	0	0	0	12	5	1	1	1	1	0	6	23	4	2	2	0	0	27	11	1	0	0	0	0	12	11	1	0	0	0	0	12
Phosphorus	1	11	11	11	11	8	12	1	5	5	5	4	3	6	0	27	26	26	26	26	27	1	11	11	11	11	10	12	0	12	11	11	11	8	12
Potassium	8	4	0	0	0	0	12	4	2	0	0	0	0	6	17	10	0	0	0	0	27	10	2	0	0	0	0	12	6	6	0	0	0	0	12
Selenium	6	6	2	1	0	0	12	2	4	2	0	0	0	6	13	14	5	1	0	0	27	5	7	3	0	0	0	12	5	7	3	1	0	0	12
Silicon	9	3	0	0	0	0	12	5	1	0	0	0	0	6	21	6	0	0	0	0	27	10	2	0	0	0	0	12	10	2	0	0	0	0	12
Silver	12	0	0	0	0	0	12	6	0	0	0	0	0	6	27	0	0	0	0	0	27	12	0	0	0	0	0	12	11	1	0	0	0	0	12
Sodium	8	4	0	0	0	0	12	3	3	0	0	0	0	6	13	14	0	0	0	0	27	9	3	0	0	0	0	12	8	4	0	0	0	0	12
Strontium	9	3	0	0	0	0	12	4	2	0	0	0	0	6	16	11	0	0	0	0	27	11	1	0	0	0	0	12	8	4	0	0	0	0	12
Thallium	12	0	0	0	0	0	12	6	0	0	0	0	0	6	27	0	0	0	0	0	27	12	0	0	0	0	0	12	12	0	0	0	0	0	12
Tin	12	0	0	0	0	0	12	6	0	0	0	0	0	6	27	0	0	0	0	0	27	12	0	0	0	0	0	12	12	0	0	0	0	0	12
Titanium	12	0	0	0	0	0	12	6	0	0	0	0	0	6	25	2	1	1	1	0	27	12	0	0	0	0	0	12	12	0	0	0	0	0	12
Uranium	8	4	0	0	0	0	12	6	0	0	0	0	0	6	17	10	1	0	0	0	27	8	4	0	0	0	0	12	12	0	0	0	0	0	12
Vanadium	12	0	0	0	0	0	12	6	0	0	0	0	0	6	27	0	0	0	0	0	27	12	0	0	0	0	0	12	12	0	0	0	0	0	12
Zinc	12	0	0	0	0	0	12	5	1	1	1	0	0	6	26	1	0	0	0	0	27	12	0	0	0	0	0	12	12	0	0	0	0	0	12

Note: Highlighetd cells represent exceedances to applicable percentage thresholds

Appendix C: Dissolved *versus t*otal metal concentration analysis for water samples collected in 2022 - Eagle Gold Project.

Stations	W6							W61							W9							W99						
Trace Element	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**	**< 100 %**	**> 100 %**	**> 120 %**	**> 150 %**	**> 200 %**	**> 500 %**	**N**
Aluminum	12	0	0	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	16	*1*	*1*	*1*	*1*	0	17
Antimony	10	*2*	0	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	17	0	0	0	0	0	17
Arsenic	11	*1*	0	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	15	*2*	0	0	0	0	17
Barium	9	*3*	0	0	0	0	12	8	*2*	0	0	0	0	10	7	*5*	0	0	0	0	12	11	*6*	0	0	0	0	17
Beryllium	12	0	0	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	17	0	0	0	0	0	17
Bismuth	12	0	0	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	17	0	0	0	0	0	17
Boron	12	0	0	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	17	0	0	0	0	0	17
Cadmium	11	*1*	*1*	0	0	0	12	10	0	0	0	0	0	10	11	*1*	0	0	0	0	12	15	*2*	0	0	0	0	17
Calcium	8	*4*	0	0	0	0	12	5	*5*	0	0	0	0	10	5	*7*	0	0	0	0	12	8	*9*	0	0	0	0	17
Chromium	12	0	0	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	17	0	0	0	0	0	17
Cobalt	12	0	0	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	17	0	0	0	0	0	17
Copper	10	*2*	0	0	0	0	12	9	*1*	*1*	*1*	0	0	10	11	*1*	0	0	0	0	12	13	*4*	0	0	0	0	17
Iron	12	0	0	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	16	*1*	*1*	*1*	*1*	0	17
Lead	12	0	0	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	16	*1*	0	0	0	0	17
Lithium	9	*3*	0	0	0	0	12	8	*2*	0	0	0	0	10	8	*4*	0	0	0	0	12	14	*3*	0	0	0	0	17
Magnesium	8	*4*	0	0	0	0	12	5	*5*	0	0	0	0	10	7	*5*	0	0	0	0	12	9	*8*	0	0	0	0	17
Manganese	12	0	0	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	16	*1*	0	0	0	0	17
Mercury	12	0	0	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	16	*1*	0	0	0	0	17
Molybdenum	10	*2*	0	0	0	0	12	6	*4*	0	0	0	0	10	9	*3*	0	0	0	0	12	13	*4*	*2*	*1*	0	0	17
Nickel	11	*1*	0	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	16	*1*	*1*	0	0	0	17
Phosphorus	0	*12*	*12*	*12*	*11*	*11*	12	2	*8*	*8*	*7*	*4*	0	10	1	*11*	*11*	*10*	*10*	*5*	12	1	*16*	*15*	*15*	*14*	*13*	17
Potassium	6	*6*	0	0	0	0	12	6	*4*	0	0	0	0	10	6	*6*	0	0	0	0	12	8	*9*	0	0	0	0	17
Selenium	6	*6*	0	0	0	0	12	3	*7*	0	0	0	0	10	3	*9*	0	0	0	0	12	11	*6*	0	0	0	0	17
Silicon	12	0	0	0	0	0	12	9	*1*	0	0	0	0	10	12	0	0	0	0	0	12	13	*4*	0	0	0	0	17
Silver	12	0	0	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	17	0	0	0	0	0	17
Sodium	7	*5*	0	0	0	0	12	6	*4*	0	0	0	0	10	5	*7*	0	0	0	0	12	8	*9*	0	0	0	0	17
Strontium	10	*2*	0	0	0	0	12	5	*5*	0	0	0	0	10	8	*4*	0	0	0	0	12	12	*5*	0	0	0	0	17
Thallium	12	0	0	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	17	0	0	0	0	0	17
Tin	12	0	0	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	16	*1*	*1*	*1*	*1*	*1*	17
Titanium	12	0	0	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	16	*1*	*1*	0	0	0	17
Uranium	7	*5*	0	0	0	0	12	8	*2*	0	0	0	0	10	10	*2*	0	0	0	0	12	14	*3*	0	0	0	0	17
Vanadium	12	0	0	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	17	0	0	0	0	0	17
Zinc	11	*1*	*1*	0	0	0	12	10	0	0	0	0	0	10	12	0	0	0	0	0	12	15	*2*	*1*	*1*	0	0	17

Note: Highlighetd cells represent exceedances to applicable percentage thresholds

VICTORIA GOLD CORP

Eagle Gold Project

Project #109030

Heap Leach Facility

2023 Annual Water Balance Modeling Report

Document # 109030-51100-01-WBM-0001

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1. INTRODUCTION

This document has been prepared by Forte Dynamics Inc. (Forte) on behalf of Victoria Gold Corp. (VGC) for the Eagle Gold Project. The purpose of this model is to provide guidance on future water management strategies for the Heap Leach Facility (HLF) and to understand climatic effects on the solution storage facilities. These results will be incorporated into the site wide water balance and water quality model as part of the annual reporting for the Eagle Gold Project.

This report describes the HLF water balance model inputs and outputs. The model has been developed and updated using historic measured data for ore placement, solution measurements and management, and other relevant operational and meteorological data as it pertains to the HLF. Model results include outputs developed for the site wide water balance and water quality models as well as the stochastic projections surrounding the In-Heap Pond. Importantly, the model results, presented herein, do not represent all site wide water management practices associated with the Events Pond, which is dealt with in the site-wide water balance model (Lorax 2023), however they do represent general water management practices associated with the HLF. This model incorporates operational lessons learned for solution management as well as integrating measured In-Heap Pond levels and the extent of stacked and leached ore for the start of the model (January 1, 2023).

2. INPUTS AND ASSUMPTIONS

The HLF Water Balance Model used by Forte makes use of a large array of operational, meteorological, ore hydrodynamic properties, and metallurgical input data. Over the course of operations, ore samples have been collected and tested to characterize ore properties which have been applied in the HLF water balance model. The HLF water balance model incorporates these details surrounding the HLF while providing operations with the ability to utilize measured inputs to better understand solution and pond level management.

2.1 Modeling Timeframe

- **Deterministic Modeling:**
    - Operations modeled from:
        - 1/1/2023 – 12/31/2028: Normal Operations (stacking and leaching of the HLF)
        - 1/1/2029 – 12/31/2029: Residual recovery and make-up water shutoff
            - 2/15/2029 – 10/10/2036: Discharge to treatment at target of 6.5 L/s for 1000m Set, 10 L/s for Climate Change Set
        - 1/1/2030 – 12/31/2031: Solution management (ore rinsing, recirculation, and discharge to treatment)
        - 1/1/2032 – 12/31/2036: Draindown (cover placement, recirculation, and discharge to treatment)
            - 5/1/2032 – 10/31/2032: Cover placement, completed in October.
        - 10/10/2036 – End of Run: Reduced discharge rate based on solution in system with maximum of 6.5 L/s for 1000m Set and 7.5 L/s for Climate Change Set, through to passive treatment.
        - *Resource:* VGC input with guidance from Forte engineering experience
- **Stochastic Modeling:**
    - Operations modeled from:
        - 1/1/2023 – 8/31/2023: Normal Operations (stacking and leaching of the HLF)
        - *Resource:* Unchanged from previous Annual Report (Forte 2022).

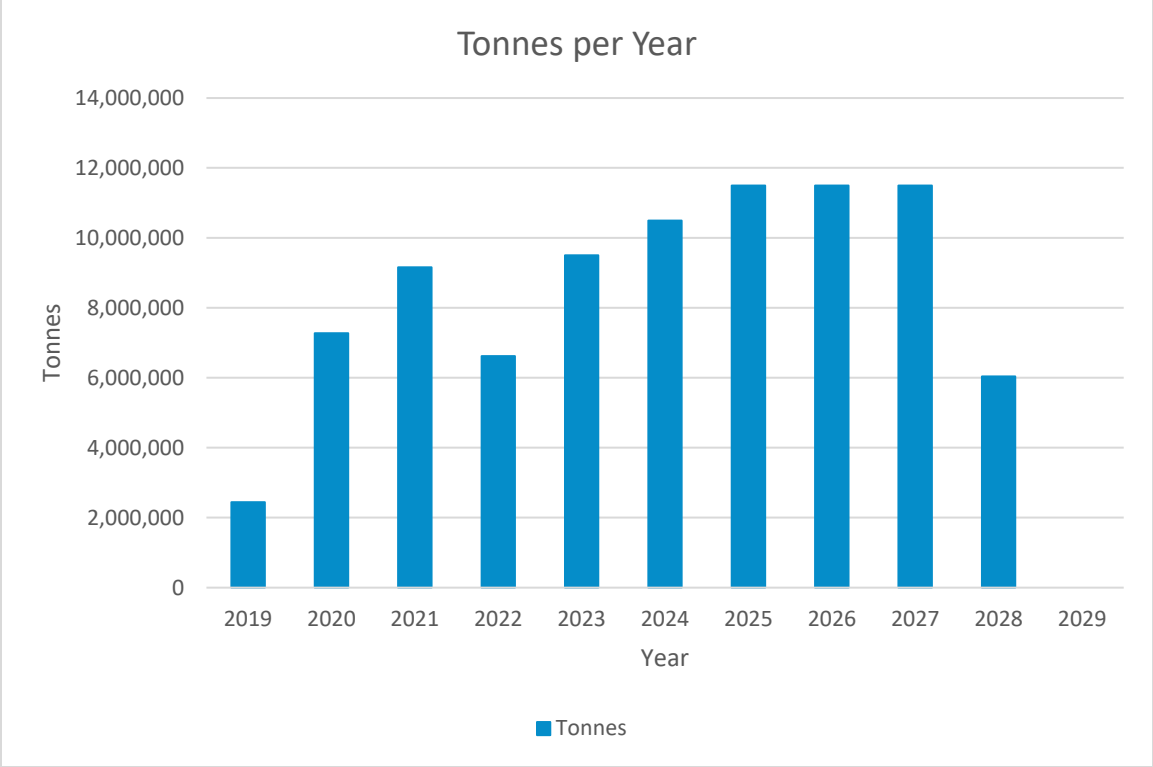
2.2 Ore Properties

- **Initial Moisture Content:**
    - 2.6% by weight
        - *Resource:* Average of the previous year of measured site data
- **Residual Moisture Content:**
    - 8.6% by weight, corresponding to a 7.69% by weight for Brooks-Corey calculations.
        - *Resource:* Unchanged from previous Annual Report (Forte 2022).
- **Active Leaching Ore Moisture Content**
    - 14.35% - 11.46% by weight
        - *Resource:* Unchanged from previous Annual Report (Forte 2022).

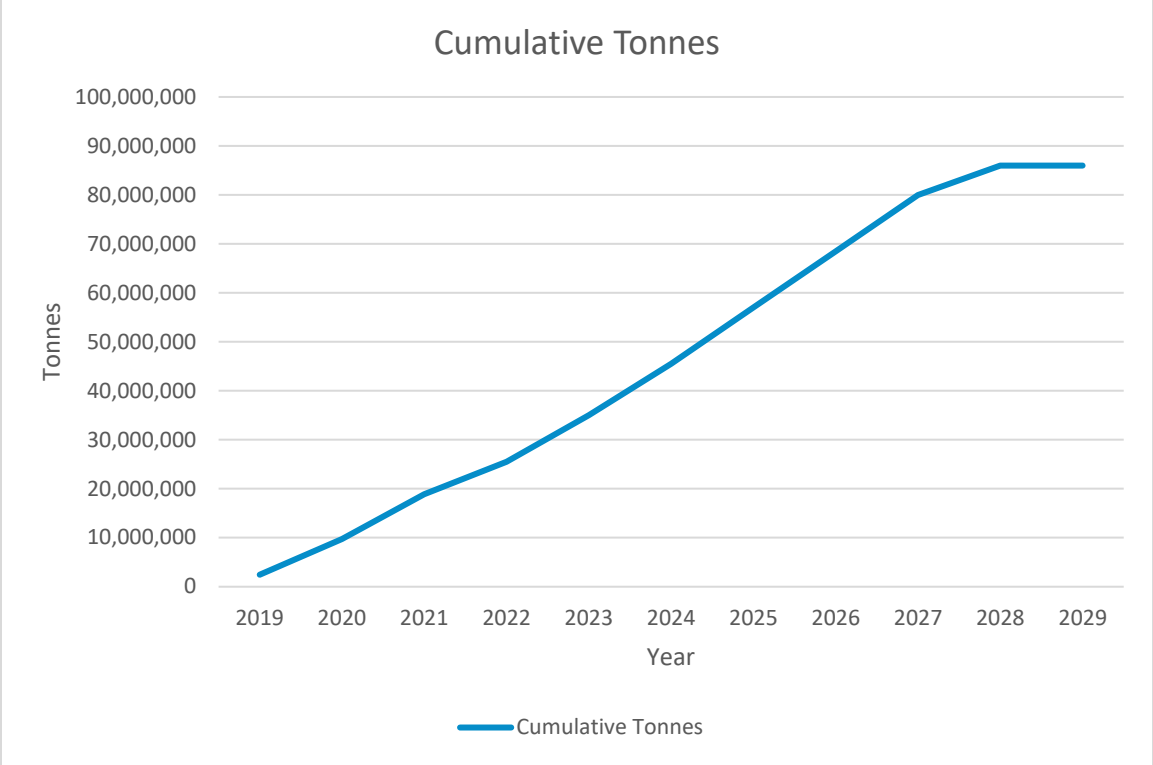
- **Bulk Dry Density**
  - 1.90 tonne/m^3
    - *Resource:* Average of the previous year of measured site data
- **Density Consolidation**
  - Density_Consolidated=Bulk_Density*Overburden_Depth^(Power_Factor), curve fit equation developed from test work with the Power Factor calculated as 0.0195
    - *Resource:* Unchanged from previous Annual Report (Forte 2022).
- **Specific Gravity**
  - 2.65
    - *Resource:* Unchanged from previous Annual Report (Forte 2022).
- **Saturated Hydraulic Conductivity**
  - 0.07268 cm/s (universally scaled down by 1 order of magnitude in model for in-field correction)
    - *Resource:* Unchanged from previous Annual Report (Forte 2022).
- **Saturated Hydraulic Conductivity Consolidation**
  - K_sat_Consolidated=Density_Consolidated*Slope+Intercept, linear fit equation developed from test work with Slope=-0.2285 and Intercept=0.4657
    - *Resource:* Unchanged from previous Annual Report (Forte 2022).
- **SCS Curve Number – Loaded HLF**
  - 70 for un-leached ore, 91 for leached ore
    - *Resource:* Unchanged from previous Annual Report
- **SCS Curve Number – Un-loaded HLF**
  - 99 for un-loaded HLF area, treated as bare LLDPE liner surface.
    - *Resource:* Unchanged from previous Annual Report
- **Closure Material**
  - 31% infiltration for plateau, 37% infiltration for side-slopes of net precipitation
    - *Resource:* based on initial research results on closure covers (Okane 2023)

2.3 Heap Leach Facility Parameters

- **Total Tonnes:**
  - 86Mt (shown in Plot 1 and Plot 2)
    - *Resource:* VGC
- **HLF Phasing:**
  - Phase 1A - 1/1/2019: 210,000 m^2 Total
  - Phase 1B - 9/21/2020: 460,000 m^2 Total
  - Phase 2A - 4/20/2022: 560,000 m^2 Total
  - Phase 2B - 4/16/2023: 668,000 m^2 Total
  - Phase 3 - 4/3/2025: 983,000 m^2 Total



Plot 1 - Mine Plan: Tonnes per Year



Plot 2 - Mine Plan: Cumulative Tonnes

- **Loading Months:**
    - Forecast stacking occurs year-round with reduced loading rates in January through March per the mine plan provided by VGC.
        - Historic loading utilizes actual tonnage placed to date.
        - *Resource:* VGC.
- **Ultimate Elevation:**
    - 1225 m above mean sea level
        - *Resource:* Unchanged from previous Annual Report (Forte 2022).
- **Lift Height:**
    - 10 - 12m
        - *Resource:* Unchanged from previous Annual Report (Forte 2022).
- **Precipitation Soak-Up/Initial Abstraction of Precipitation:**
    - SCS Curve Number Excess Moisture Method Used
        - *Resource:* Unchanged from previous Annual Report (Forte 2022).
- **Evaporation Loss from Drip Emitters:**
    - 0.5% applied in months with average daily temperatures above 0 Celsius.
        - *Resource:* Unchanged from previous Annual Report (Forte 2022).

2.4 Operational Parameters

- **Initial Leach Cycle:**
    - 90 days
        - *Resource:* Average of the previous year of measured site data.
- **Leaching Application Rate (nominal):**
    - 10 L/hr/m^2 target
        - Application rate fluctuates based on area under leach and total flow from the plant.
            - This also varies in forecasting based on solution management practices and recirculation when needed.
        - *Resource:* Average of the previous year of measured site data.
- **Target Plant Flow Rate:**
    - 1800 m^3/hr, varies through start-up and is dependent on the total available area for leaching.
        - *Resource:* Average of the previous year of measured site data.
    - Deterministic Modeling: For the updated Deterministic Model simulations performed by Forte, additional specificity of the plant flow rate and its effect on overall solution management is necessary. This includes allowing for fluctuations of this flow rate to manage the In-Heap Pond solution level by utilizing recirculation as required.
        - *After the forecasting date:* During normal operations (following initial ramp-up during development of the HLF), the Target Plant Flow Rate is 1800 m^3/hr, limited

by the Leaching Application Rate with the Evaporation Loss from Drip Emitters being subtracted off in the applicable months. During the winter months (January through March) the flow rate is managed through reductions as required to account for the reduction in HLF stacking and to maintain In-Heap Pond levels.

- *Once the mine reaches the end of loading:* The Make-up Water supply is turned off, at which point solution is managed through the steady but relatively low discharge of barren solution to treatment while the majority is recirculated, in order to maintain solution levels in the In-Heap Pond and provide one year of additional gold recovery. The duration of additional recirculation for gold recovery in this modeling is assumed to be one year, however this duration may change based on economics. After the one year of recirculation for gold recovery, a two year period. Upon conclusion of this two year period, cover placement is introduced, which is coupled with the on-going recirculation and discharge of barren solution, reducing the total volume of solution in the system. More information for the modeling of Make-up Water, Discharge to Treatment, Leach Cycle, and In-Heap Pond can be found in each of those respective sections.

- **Discharge to Treatment Rate:**
  - 1000 m Climate Series: 6.5 L/s starting 2/15/2029 until model run is completed.
  - Climate Change Climate Series: 10 L/s from 2/15/2029 to 2/1/2032, 7.5 L/s until model run is completed.
    - *Resource:* Updated based on recirculation and cover placement schedules with the elimination of make-up water post stacking per VGC input with guidance from Forte engineering experience.
- **Events Pond Storage:**
  - For the updated model runs for the HLF, the Events Pond is not further evaluated as there are no overflows from the In-Heap Pond during any of the simulations for deterministic or stochastic modeling. The Events Pond is now being captured in the site wide water balance and water quality models by Lorax to more accurately reflect site water management practices. A more complete analysis of the Events Pond and DAS is provided as part of the site wide water balance and water quality model reporting (Lorax 2023).
- **In-Heap Pond Storage Volume:**
  - 59,378 m^3 (always occupied during operation), 57,763 m^3 (maximum available storage volume during operation before overflowing to the Events Pond).
    - *Resource:* Unchanged from previous Annual Report (Forte 2022).
  - Additional Discussion: For all of the modeling simulations performed by Forte, the In-Heap Pond was drawn from in the following way:
    - As much solution as required to maintain the circulation of the targeted flow rate of 1800 m^3/hr during normal operations, with that flow rate acting as the maximum

total withdrawal rate from the In-Heap Pond throughout the entire mine life beginning 1/1/2023.

- After stacking is completed (during the recirculation period) solution is drawn from the pond to maintain pond levels and to maintain the targeted Discharge to Treatment rates, with those rates acting as the maximum solution removal rates from the system beginning 1/1/2029. During this time-frame, make-up water is no longer added to the system to assist with maintaining pond storage levels.

- **Cover Placement:**
  - Cover is assumed to be placed starting 5/1/2032 at a rate of 4,600 m^2/day. This continues for the first year until 10/31/2032, leaving an area of the HLF available for recirculation of solution. Upon completion of draindown, the remainder of the HLF is covered, with placement complete by 10/31/2036.
    - *Resource:* Per VGC and Okane input with guidance from Forte engineering experience.

2.5 Meteorological Inputs and Parameters

For the 2023 Annual Report, Lorax provided Forte with measured meteorological data for the site and incorporated it into an updated set of 1000m data.

- **Extreme Precipitation Reference Event:**
  - 54 mm (24-hr, 100 yr Event)
    - *Resource:* Unchanged from previous Annual Report (Forte 2022).
- **Precipitation Data used in Deterministic Modeling:**
  - Two updated, separate composite sets of data provided by Lorax were used by Forte for the updated water balance model.
    - 1000m Set: The hydrologic 2016 year (Oct 2015 to September 2016) repeated as a typical year from start of 2023 through closure.
    - Climate Change Set: This set has the identical basis as the 1000m set (2016 data repeated for years 2023 through 2099); however, Lorax provided a data set to incorporate the effects of climate change on the weather at the site.
    - *Resource:* Unchanged from previous Annual Report (Forte 2022).
    - Refer to Figures 1-4.
- **Potential Evaporation Data used in Deterministic Modeling:**
  - Two separate composite sets of data provided by Lorax were used by Forte for the updated water balance model.
    - 1000m Set: The hydrologic 2016 year (October 2015 to September 2016) repeated as a typical year from start of 2023 through closure.

- Climate Change Set: This set has the identical basis as the 1000m set (2016 data repeated for years 2023 through 2099); however, Lorax provided a data set to incorporate the effects of climate change on the weather at the site.
- *Resource:* Unchanged from previous Annual report (Forte 2022).
- Refer to Figures 5-8.

- **Temperature Data used in Deterministic Modeling:**
  - Two separate composite sets of data provided by Lorax were used by Forte for the updated water balance model.
    - 1000m Set: hydrologic 2016 year (October 2015 to September 2016) repeated as a typical year from start of 2023 through closure.
    - Climate Change Set: This set has the identical basis as the 1000m set (Site Synthetic through 2021, 2016 data repeated for years 2023 through 2099); however, Lorax provided a data set to incorporate the assumed effects of climate change on the weather at the site.
    - *Resource:* Unchanged from previous Annual report (Forte 2022).
    - Refer to Figures 9-12.
- **Stochastic Sampling and Iterations:**
  - Latin Hypercube Sampling, 100 iterations/realizations
    - *Resource:* Engineering and statistical modeling experience updated to reflect the added robustness and detail of the updated operational model with a quarter day timestep.
- **Precipitation Data used in Stochastic Modeling:**
    - 1/1/2023 to 8/31/2023: WGEN (Richardson and Wright, USDA, 1984) with up-front detailed descriptive statistic parameter generation was used on the 71 years of daily Site Synthetic data. Using the stochastic sampling and iterations described previously, 100 realizations of data were produced for each day of data for Precipitation, Maximum and Minimum Temperature, Evaporation, and Solar Radiation.
    - *Resource:* Lorax (Site Synthetic dataset from 2023-2099 provided to Forte for use in WGEN Stochastic data production).
    - Refer to Figures 13 and 14.
- **Potential Evaporation Data used in Stochastic Modeling:**
    - 1/1/2023 to 8/31/2023: Refer to the Precipitation Data used in Stochastic Modeling section for a description of the methodology used to produce the 100 yearly Realizations of data for Precipitation, Maximum and Minimum Temperature, Evaporation, and Solar Radiation.
    - *Resource:* Lorax (Site Synthetic dataset from 2023-2099 provided to Forte for use in WGEN Stochastic data production).

- Refer to Figures 15 and 16.

- **Temperature Data used in Stochastic Modeling:**
  - 1/1/2023 to 8/31/2023: Refer to the Precipitation Data used in Stochastic Modeling section for a description of the methodology used to produce the 100 yearly Realizations of data for Precipitation, Maximum and Minimum Temperature, Evaporation, and Solar Radiation. As WGEN outputs the Minimum and Maximum Average Daily Temperature, the Forte model calculates the overall Average Daily Temperature from the WGEN outputs.
  - *Resource:* Lorax (Site Synthetic dataset from 2023-2099 provided to Forte for use in WGEN Stochastic data production).
  - Refer to Figures 17 and 18.
- **Solar Radiation Data used in Stochastic Modeling:**
  - 1/1/2023 to 8/31/2023: Refer to the Precipitation Data used in Stochastic Modeling section for a description of the methodology used to produce the 100 yearly Realizations of data for Precipitation, Maximum and Minimum Temperature, Evaporation, and Solar Radiation. Solar Radiation is used in the calculation of Evapotranspiration for the HLF.
  - *Resource:* Lorax (Site Synthetic dataset from 2023-2099 provided to Forte for use in WGEN Stochastic data production).
  - Refer to Figure 19.
- **Evapotranspiration Calculated:**
  - Specifically, for the HLF, the Eagle Climate Data was used for the Solar Radiation, Wind Speed, and Relative Humidity necessary (along with temperature data from the 1000m and Climate Change data) for the calculation of Evapotranspiration.
  - The ponds utilized the Evaporation data provided in the 1000m and Climate Change datasets.
  - *Resource:* Lorax 1000m data set provided to Forte in 2021.
  - *Resource:* Lorax Climate Change (CC) data set provided to Forte in 2020
  - Calculations/technique determined by Forte from engineering and HLF modeling experience.
- **Sublimation Calculated:**
  - Sublimation is calculated using heat transfer principles and is included implicitly within the Snow 17 (Snow Accumulation and Ablation, Anderson, 2016) submodel used by Forte as discussed in greater detail below. The Snow 17 approach yields similar results to the method used by Lorax for the site wide water balance and water quality model, however in Forte's experience, this approach more closely aligns to measured snowpack and provides a better representation of snow accumulation and snow melt for HLF operations.

- *Resource:* Lorax 1000m Site Synthetic Data set provide to Forte in 2021.
- *Resource:* Climate Change (CC) Site Synthetic data set provided to Forte in 2020
- These data sets provide the necessary inputs for Snow 17 (Snow Accumulation and Ablation, Anderson, 2016).

o Additional Discussion: Snow 17 uses heat transfer and energy balance methodologies to calculate the energy exchange at the snow-air interface taking into account latent and sensible heat exchange, vapor pressure differential, and dew-point temperature. This model has been calibrated to align to observed snowmelt timing on-site, better capturing the aspect of the HLF and the timing of freshet.

- **Snowfall, Rain, and Melt:**
  - o The division of precipitation between rain and snow and the calculation of Snow Water Equivalent and excess water (rain and melt) are modeled by Forte using the Snow 17 submodel. The Snow 17 submodel takes average daily temperature and precipitation as the critical inputs, and corrects for seasonal solar radiation changes, latitude and altitude in the implicit calculations of melt factor, and lapse rate most notably. Snow 17 also makes use of daily heat deficit, accounting for the internal condition of the snowpack based on the net heat transfer effects due to daily temperature and precipitation at the snow surface. The Snow 17 approach yields similar results to the method used by Lorax for the site wide water balance and water quality model, however in Forte's experience this approach more closely aligns to measured snowpack and provides a better representation of snow accumulation and snow melt for HLF operations.

3. RESULTS AND DISCUSSION

Please refer to Figures 20-35 below for the following discussion of the Deterministic modeling performed from 1/1/2023 through 12/31/2039 and Figures 36 and 37 for the following discussion of the Stochastic modeling performed from 1/1/2023 through 8/31/2023.

3.1 Deterministic Modeling Results

Deterministic modeling of the HLF was performed using two sets of Climate/Meteorological data provided to Forte by Lorax, labeled in the graphs and discussed below as “1000m” and “Climate Change”/ “CC”. The key difference between the 1000m and CC data are changes to account for the impact of climate change on the Eagle site. For the 17-year timeline modeled by Forte in the Deterministic modeling, the results were consolidated into Monthly datasets and graphed as such.

- **In-Heap Pond Volume vs In-Heap Pond Max Pumpable Volume**
    - There was no overflow from the In-Heap Pond to the Events Pond in the forecast model runs.
    - As noted above in Section 2.4, the HLF WBM considers the change in storage volume of the In-Heap Pond only. Modelling of the Events Pond is provided in Lorax (2023).
    - Refer to Figures 20-23.
- **Total Flow to Plant and Drainage from HLF**
    - The Total Flow to Plant (presumed to flow through the plant with negligible changes in volume pumped back to the HLF) and Drainage from HLF rates represent the measured and forecasted values of the “barren” solution flow rate pumped to the HLF and the “pregnant” solution reporting back to the In-Heap Pond from the HLF, respectively.
    - Total Flow to Plant:
        - From approximately 1/1/2023 to 12/31/2028, this flow rate is primarily a function of the Target Plant Flow Rate of 1800 m^3/hr and maintained near the 1800 m^3/hr target throughout most of this time period. Variations in this rate are attributed to solution management practices to prevent the In-Heap Pond from overflowing. Additionally, variations in the Make-Up Water supply are used to indicate that water is being added into the system to maintain the Target Plant Flow Rate (Figure 24 and Figure 25). Variations in leaching flow rate also coincide with the winter months when stacking rates are decreased to manage pond levels. This typically occurs from January through the freshet runoff until approximately mid-April, when there is sufficient volume of solution maintained in the In-Heap Pond for the Total Flow to Plant to consistently meet the target leaching demand of approximately 1800 m^3/hr. In the event that there is not enough solution to meet the Target Plant Flow Rate requirement, the demand for Make-Up Water is triggered as shown in Figure 28 and Figure 29.
        - After 12/31/2028, the Total Flow to Plant demand for solution from the In-Heap Pond becomes secondary after the last ore loaded onto the HLF. Solution from the

In-Heap Pond is actively pumped out to be discharged to treatment (at a low but steady flow rate) as the top priority and the remaining solution/water is recirculated to the HLF for storage within the ore to maintain appropriate In-Heap Pond levels while residual gold recovery continues. Additionally, make-up water is eliminated to reduce the net surplus of solution within the HLF, still allowing for recirculation near the target flow rate.

        - Beyond 12/31/2036 for the 1000m Climate Series and the Climate Change Climate Series, the In-Heap Pond reaches sufficiently low levels that there is no longer a need for continuous recirculation of solution. At this point, the Total Flow to Plant is zero in perpetuity, and the flow from the In-Heap Pond is directed to the HLF passive treatment system. After 2036, cover placement is complete, further reducing infiltration into the system.
    - Drainage from HLF
        - Generally, the Drainage from Heap is a function of the Total Flow to Plant, Make-Up Water, and meteorological factors. Energy transfer (e.g. sublimation of snow and evapotranspiration) is applied at the surface of the HLF as well as the percentage of precipitation (rain or melt) that infiltrates into the HLF. Note that the portion of this precipitation that does not infiltrate into the HLF reports to the In-Heap Pond by running off the HLF or exposed liner then infiltrates into the ore at the lowest surface elevation of the HLF.
    - Refer to Figures 24-27.
- **Make-Up Water and Discharge to Treatment Rates**
    - The Make-Up Water is the difference between the solution demand for leaching of ore on the HLF and the available solution in both the In-Heap sent through the plant. The Make-Up Water requirement is generally seasonal, until the Make-Up Water supply is shut-off after stacking is complete on 12/31/2028. Once the runoff from snow melt is completed by the end of April to early May each year, the demand for Make-Up Water from an outside source begins to increase and fluctuate through the summer until the average temperature falls below 0 Celsius. Once the site is generally below freezing in October, precipitation no longer adds significantly to the In-Heap Pond Volume and the requirement for Make-Up Water reaches its highest levels throughout the remaining period of the winter, as the mine continues to stack new ore on the HLF.
    - The Discharge to Treatment Rates were determined by Forte to maintain In-Heap Pond levels and to prevent overflow to the Events Pond. This discharge is used during the recirculation periods, including residual gold recovery, rinsing with CN destruct, and draindown.

- 1000m Climate Series: On 1/1/2029, discharge to treatment begins at a constant rate of 6.5 L/s. This rate is maintained without interruption until the end of the model run when passive closure is reached.
- Climate Change Climate Series: On 1/1/2029, discharge to treatment begins at a constant rate of 10 L/s. This rate is maintained without interruption until it is decreased on 2/1/2032 to 7.5 L/s (aligning with cover placement) per calibration model runs and Forte engineering judgement. These rates are increased over the 1000 Climate Series, given the increased overall quantity of precipitation in the latter years of the Climate Change Climate Series, and to prevent the In-Heap Pond from overflowing during initiation of draindown of the HLF.

o Refer to Figures 28-31.

- **Snow Water Equivalent**
  - The Snow Water Equivalent (SWE) as modeled by the Snow 17 method shows both the 1000m and Climate Change datasets with SWE reaching a peak in early April, reaching zero (signifying complete melt) by end of April to early May, and beginning to increase again in September of each year. The Climate Change dataset yields greater maximum and lesser minimum SWE values than the repeated 1000m dataset indicating that some years the overall effect of the increased temperature will outweigh the effect of the increased precipitation resulting in lower SWE values, while in other years the exact reversal of effects is seen.
  - Refer to Figures 32-35.

3.2 Stochastic Modeling Results

Stochastic modeling of the HLF was performed using Climate/Meteorological data generated utilizing WGEN and historic data records provided by Lorax. For each model run, the stochastically created Climate/Meteorological data was applied. The basis of the stochastically generated data is the 71-year Site Synthetic data provided by Lorax which was used in the WGEN model to produce 100 realizations of daily climate data for a single-year record. For the 8-month timeline modeled by Forte in the Stochastic modeling, the results were consolidated into weekly datasets and graphed as such.

- **In-Heap Pond Volume vs In-Heap Pond Max Pumpable Volume**
  - There was no overflow from the In-Heap Pond to the Events Pond in the forecast model runs.
  - As noted above in Section 2.4, the HLF WBM considers the change in storage volume of the In-Heap Pond only. Modelling of the Events Pond is provided in Lorax (2023).
  - Refer to Figure 36.

- **Snow Water Equivalent**
  - For the Stochastic modeling, the simulated SWE values reach their maximum around early April with all of the maximum SWE values between 170mm and 240mm. In all datasets, the SWE shows a decrease from the peak value to about zero over the course of late-April to early-May with variations correlated to the climate input data, especially precipitation and temperature.
  - Refer to Figure 37.

4. CONCLUSION/SUMMARY

4.1 Deterministic Modeling

For the modeled period:

- There is no overflow from the In-Heap Pond to the Events Pond.
    - Implicit in this is that there was no release to the environment during this period.
    - The HLF can maintain the no overflows by applying water management strategies, specifically, by turning off the supply of Make-Up Water, utilizing Discharge to Treatment, and by maintaining secondary recirculatory pumping after all of the ore has been loaded onto the HLF.

4.2 Stochastic Modeling

All stochastically generated climate datasets are presented on a weekly basis.

There is a 0% probability of overflow from the In-Heap Pond at any point in 2023 for the HLF model results presented herein. As noted above, this model does not incorporate all the site-wide water management strategies, specifically surrounding the Events Pond which is captured in the site-wide water balance and water quality modeling.

5. REFERENCES

- Reference 1: Forte 2022 – Annual Water Balance Modeling Report
- Reference 2: Lorax 2023 – Site-wide Water Balance and Water Quality Model Report
- Reference 3: Okane 2023 – Okane Consulting Communication 03.10.2023

FIGURES

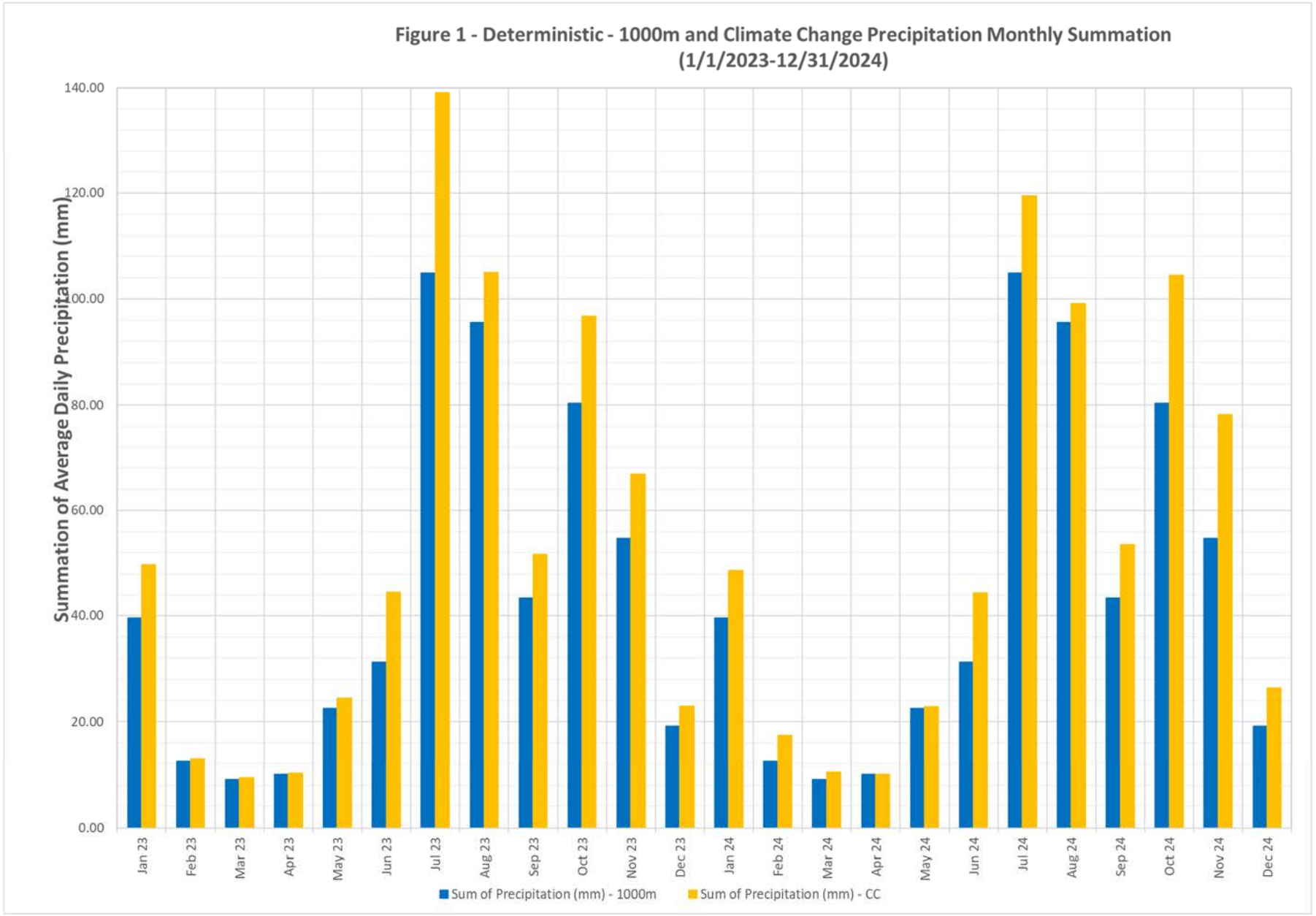


Figure 1 - Deterministic - 1000m and Climate Change Precipitation Monthly Summation
(1/1/2023-12/31/2024)
Summation of Average Daily Precipitation (mm)
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Jan 23
Feb 23
Mar 23
Apr 23
May 23
Jun 23
Jul 23
Aug 23
Sep 23
Oct 23
Nov 23
Dec 23
Jan 24
Feb 24
Mar 24
Apr 24
May 24
Jun 24
Jul 24
Aug 24
Sep 24
Oct 24
Nov 24
Dec 24
Sum of Precipitation (mm) - 1000m
Sum of Precipitation (mm) - CC

Figure 2 - Deterministic - 1000m and Climate Change Precipitation Monthly Summation (1/1/2025-12/31/2029)

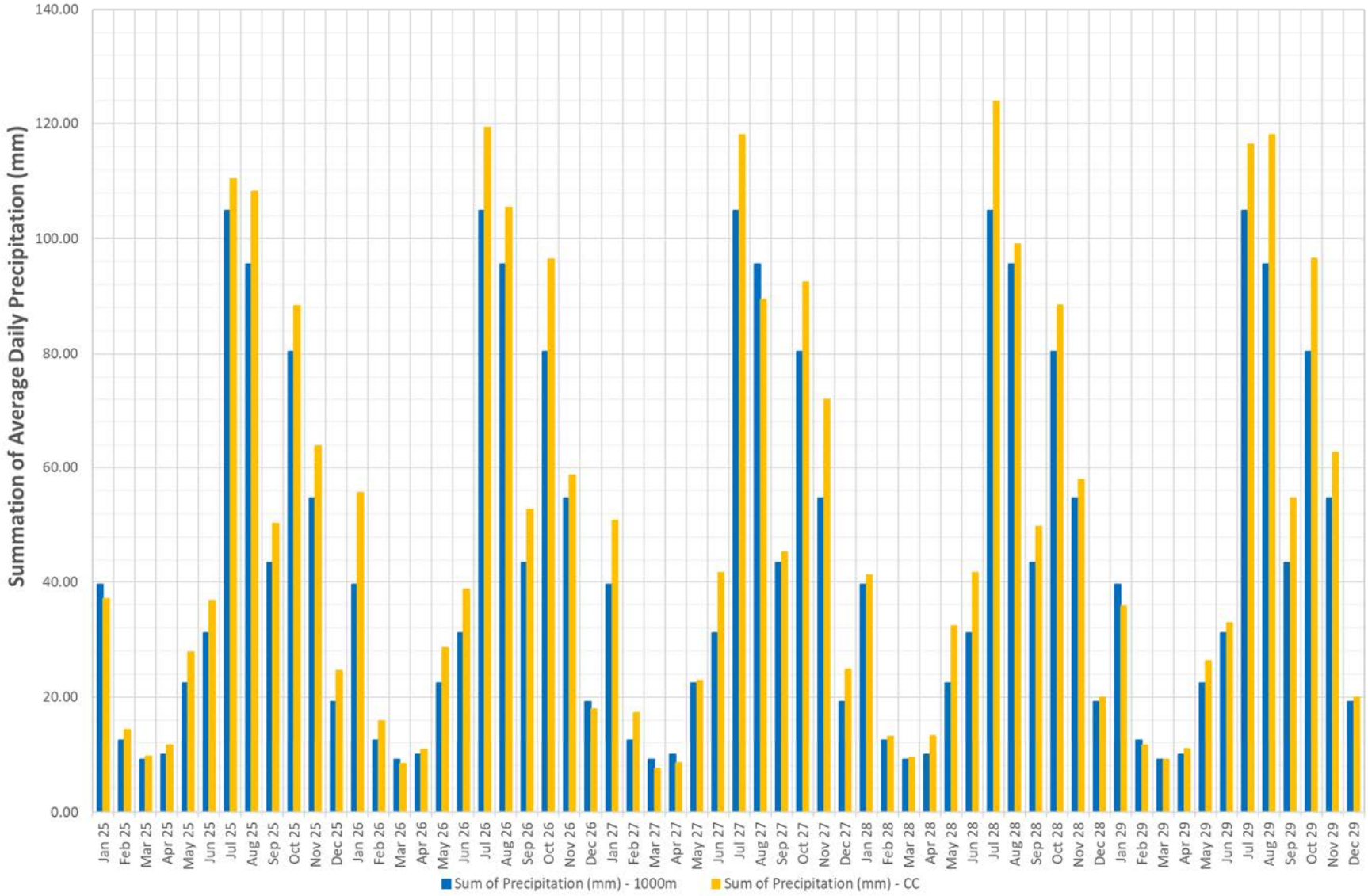


Figure 3 - Deterministic - 1000m and Climate Change Precipitation Monthly Summation (1/1/2030-12/31/2034)

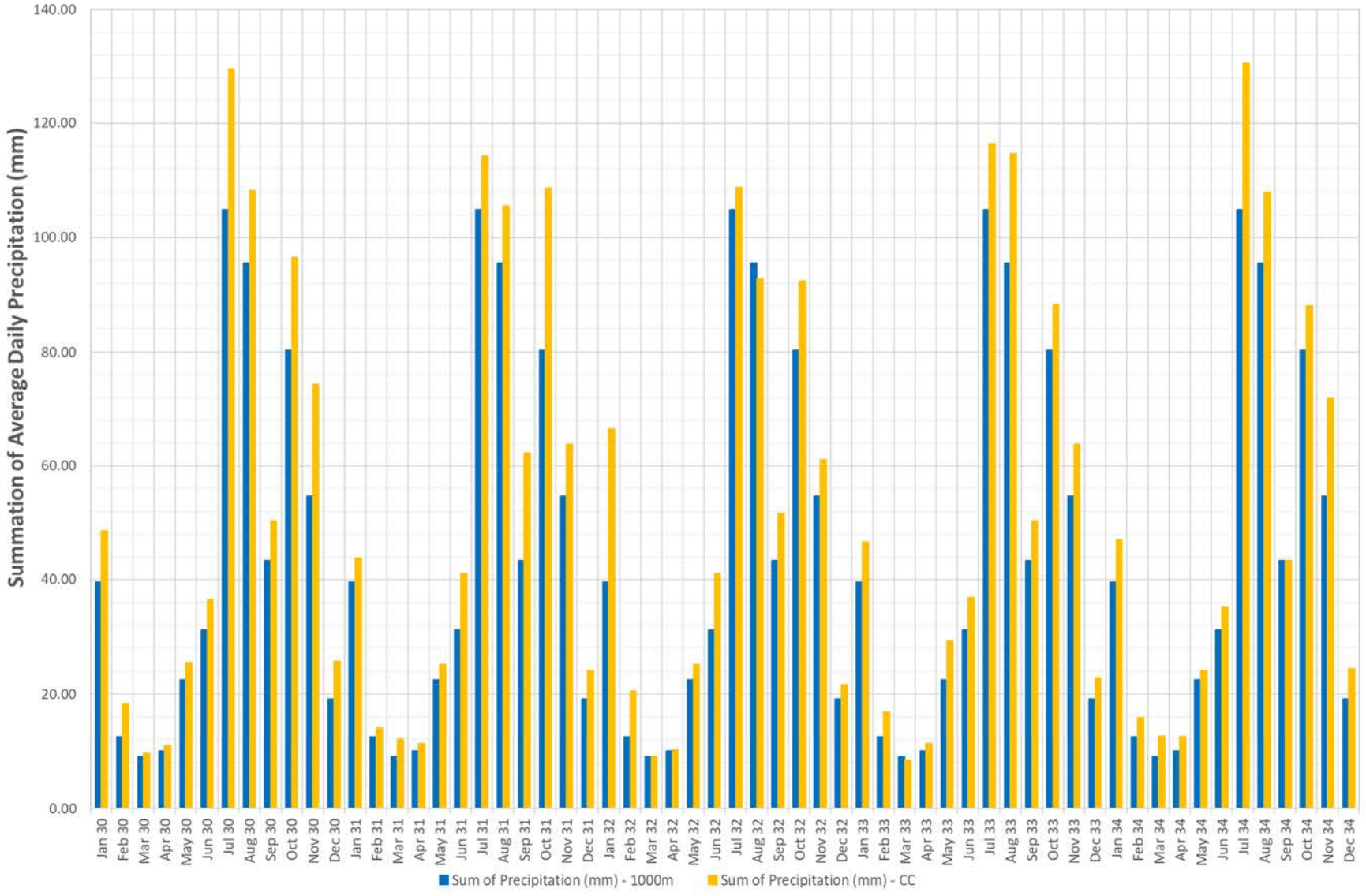


Figure 4 - Deterministic - 1000m and Climate Change Precipitation Monthly Summation (1/1/2035-12/31/2039)

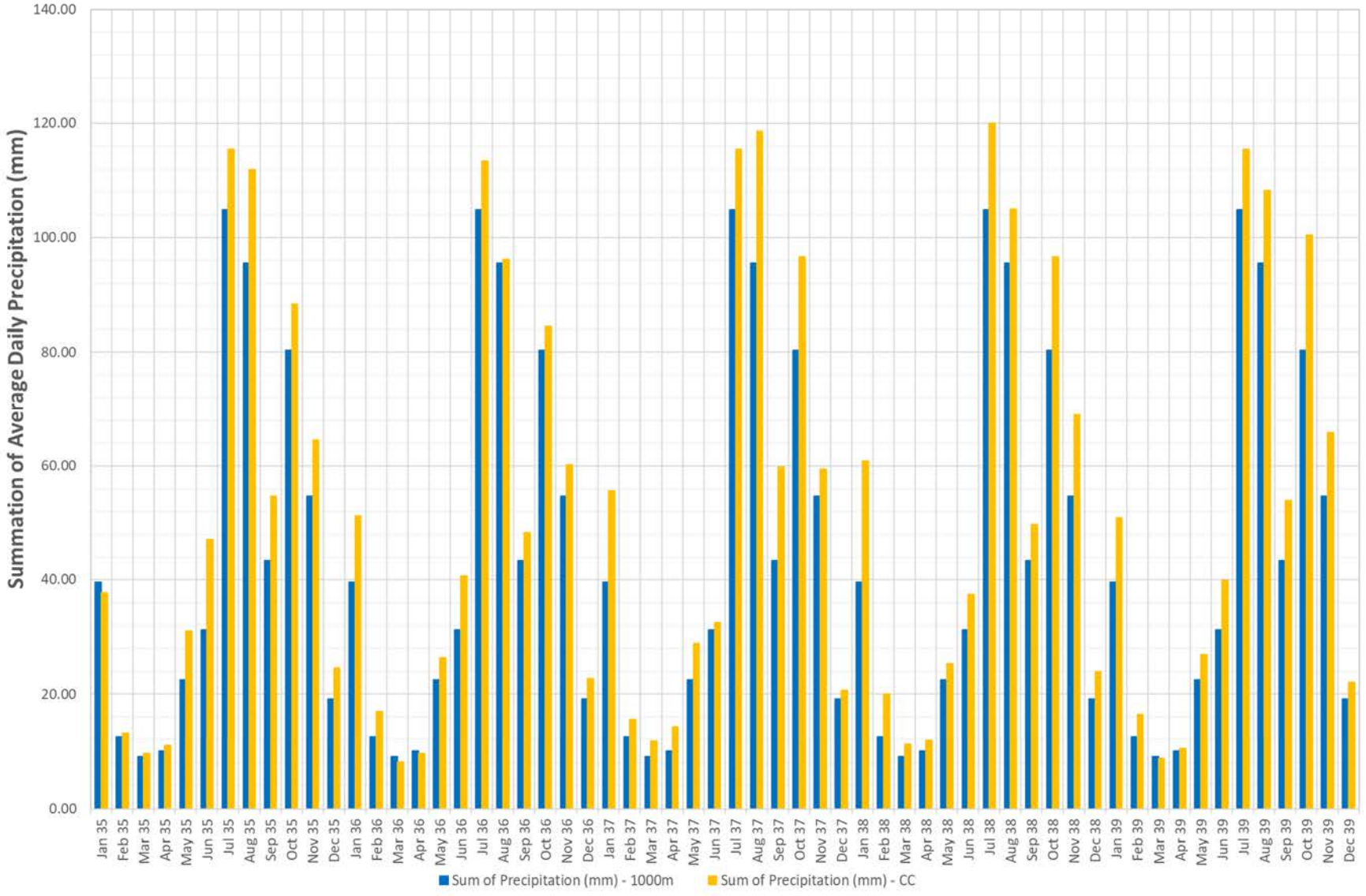


Figure 5 - Deterministic - 1000m and Climate Change Potential Evaporation Monthly Summation (1/1/2023-12/31/2024)

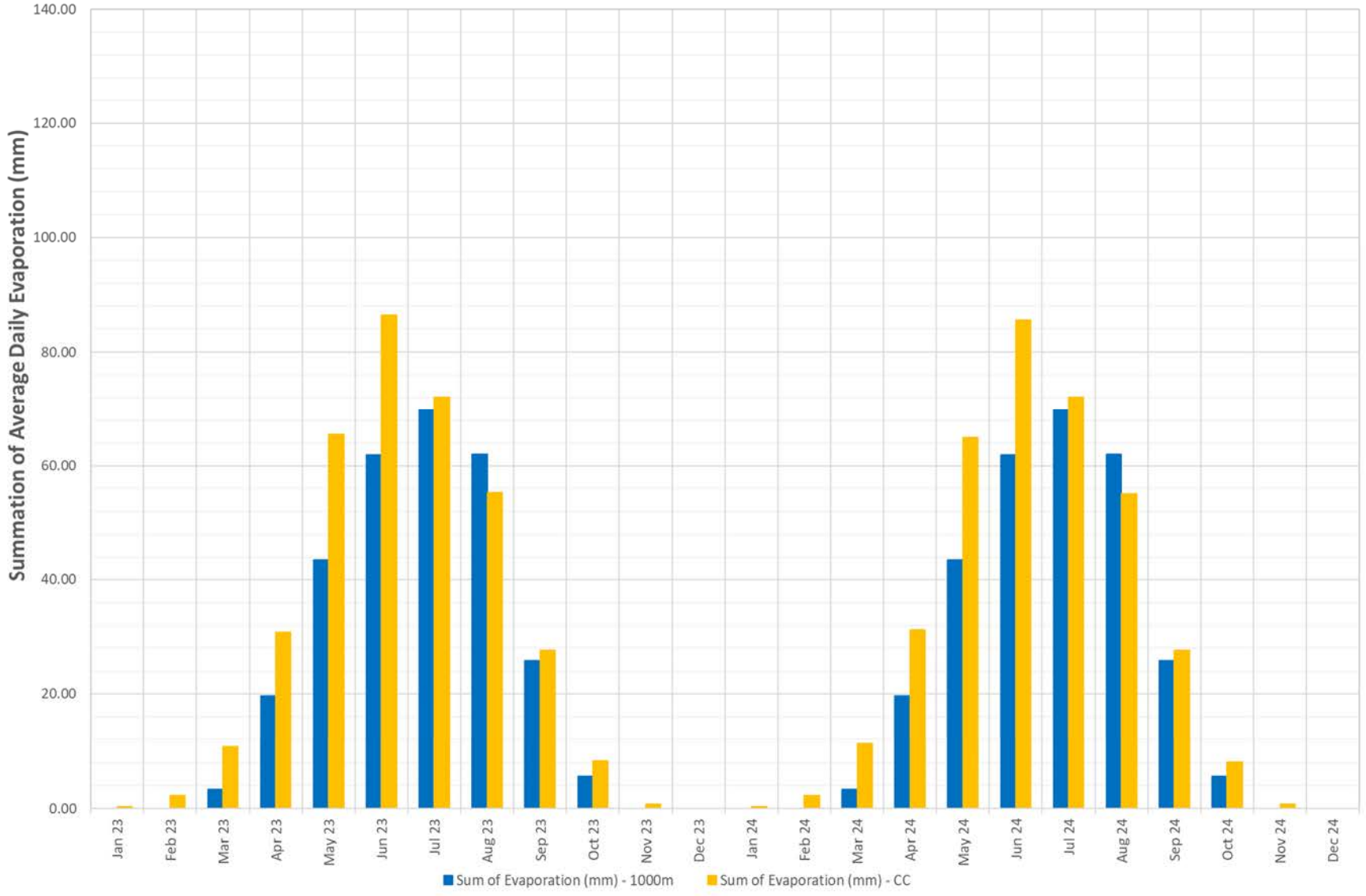


Figure 6 - Deterministic - 1000m and Climate Change Potential Evaporation Monthly Summation (1/1/2025-12/31/2029)

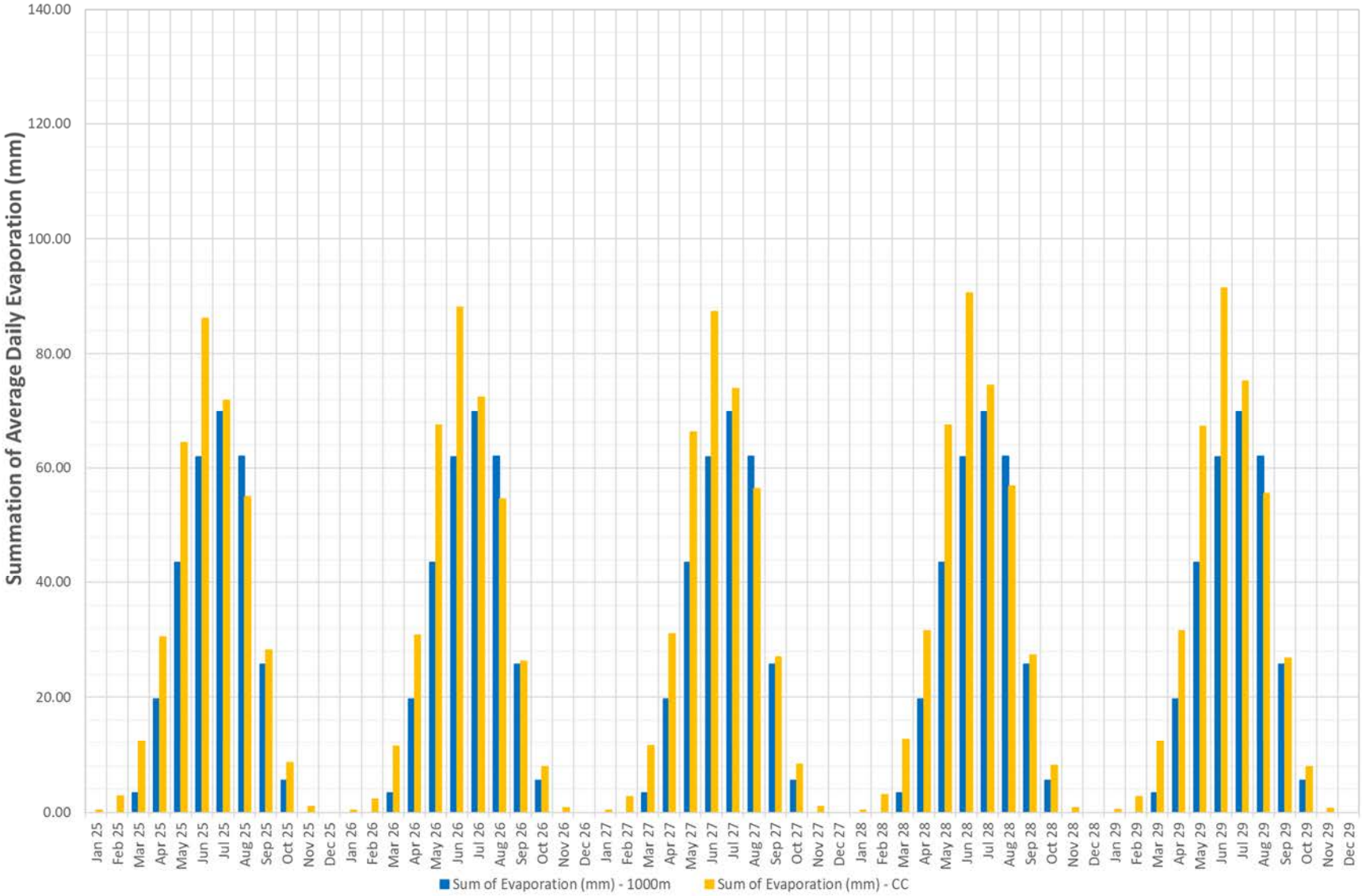


Figure 7 - Deterministic - 1000m and Climate Change Potential Evaporation Monthly Summation (1/1/2030-12/31/2034)

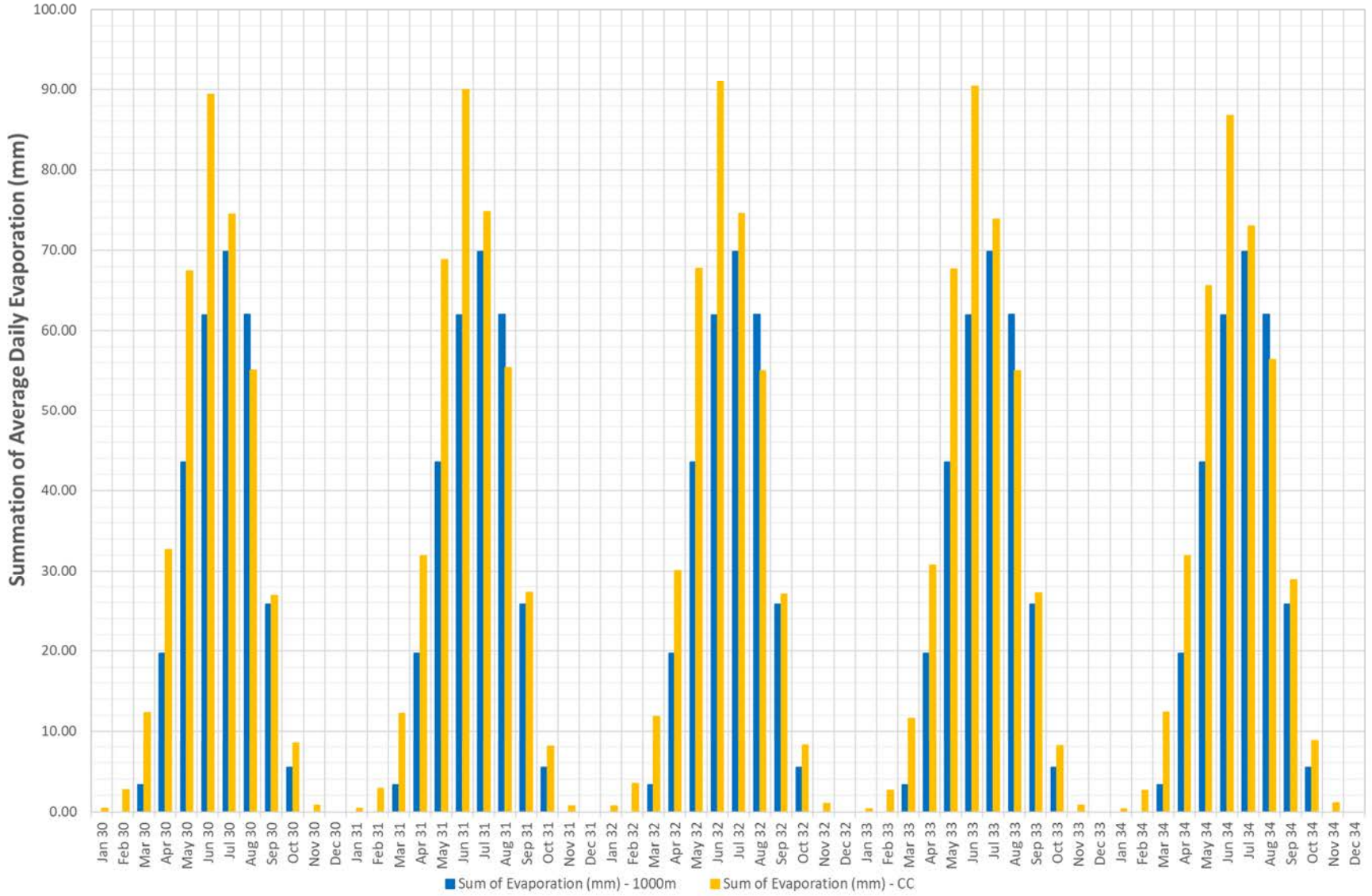


Figure 8 - Deterministic - 1000m and Climate Change Potential Evaporation Monthly Summation (1/1/2035-12/31/2039)

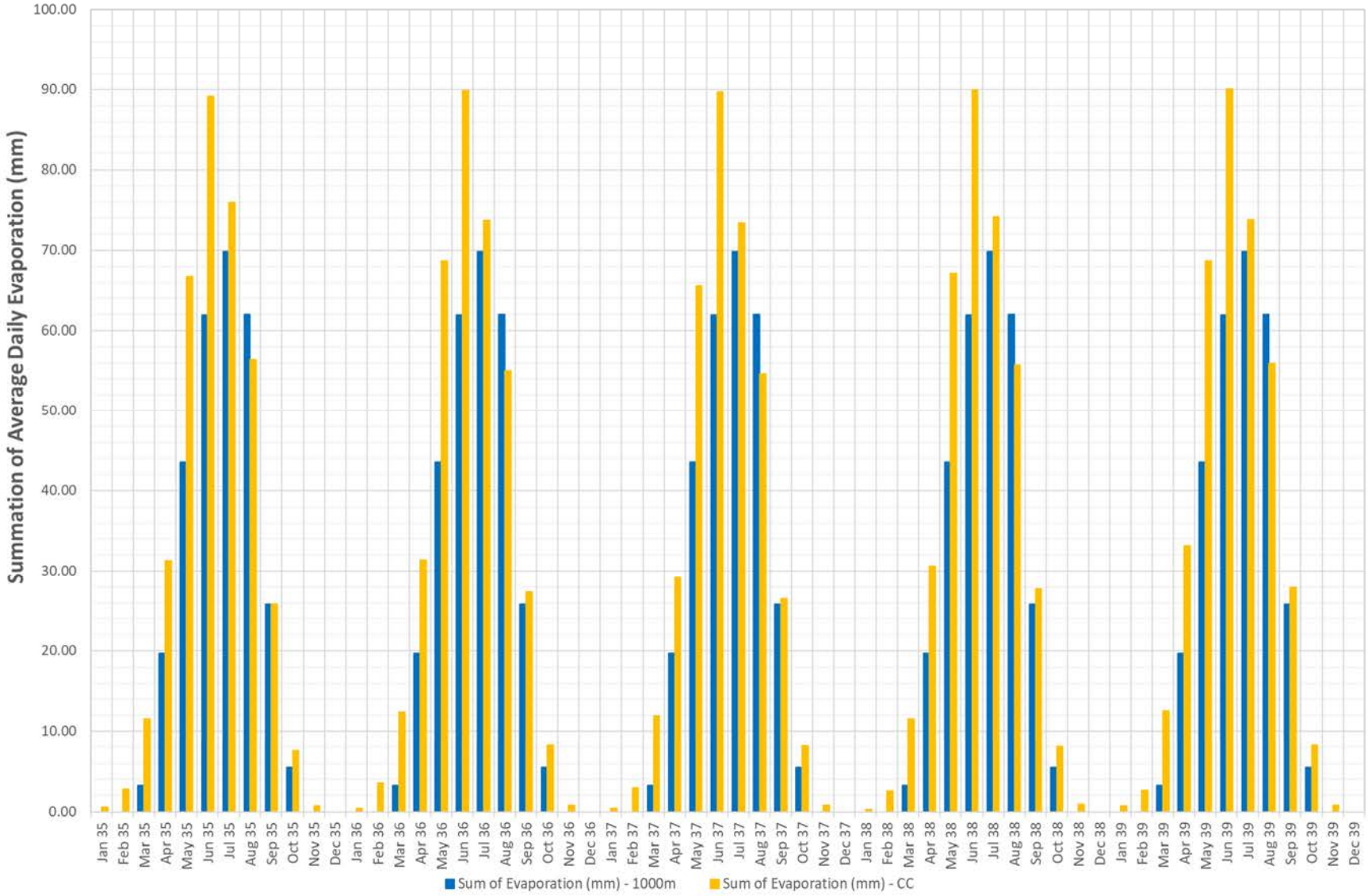


Figure 9 - Deterministic - 1000m and Climate Change Temperature Monthly Average (1/1/2023-12/31/2024)

Figure 10 - Deterministic - 1000m and Climate Change Temperature Monthly Average (1/1/2025-12/31/2029)

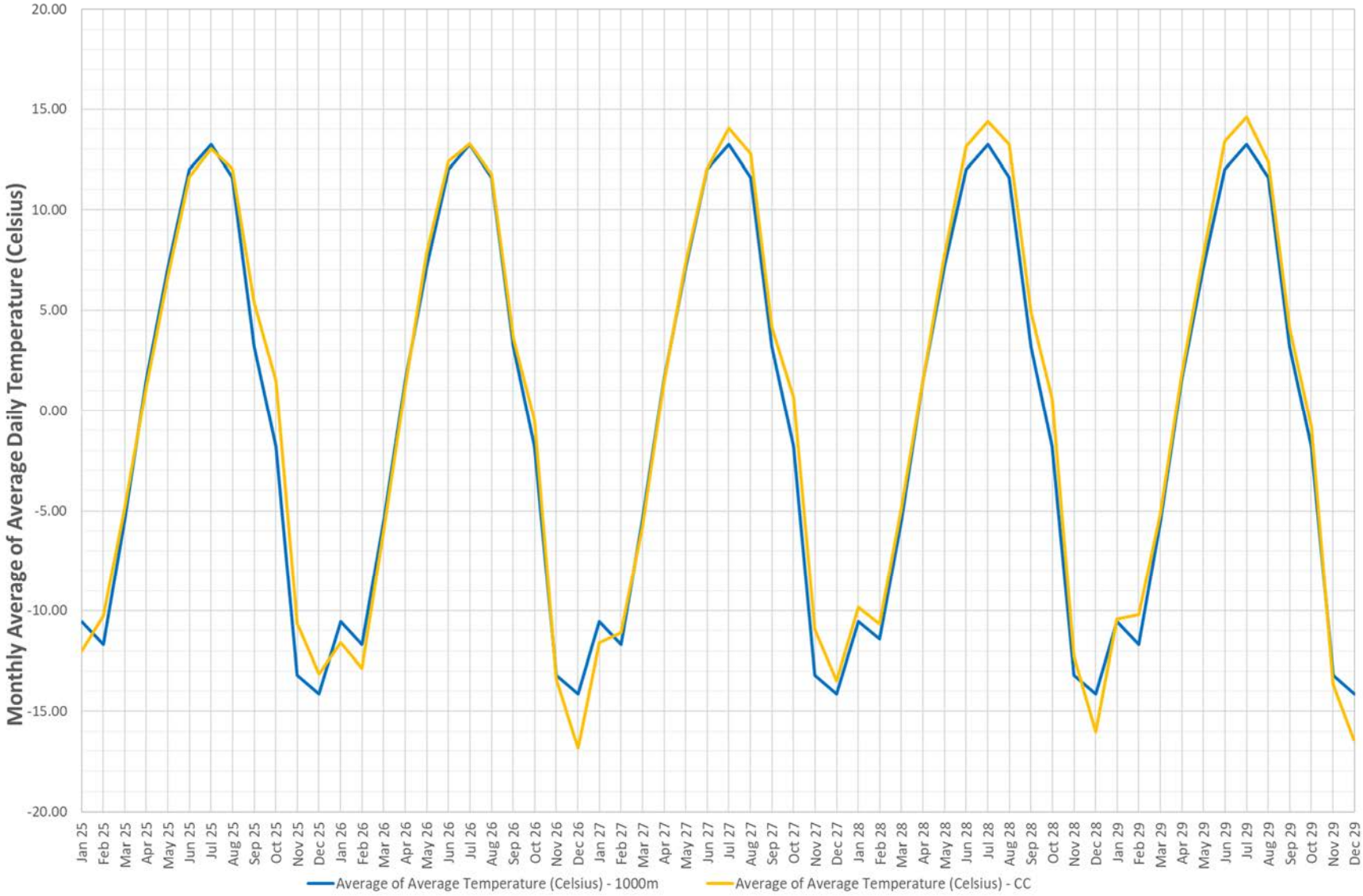


Figure 11 - Deterministic - 1000m and Climate Change Temperature Monthly Average (1/1/2030-12/31/2034)

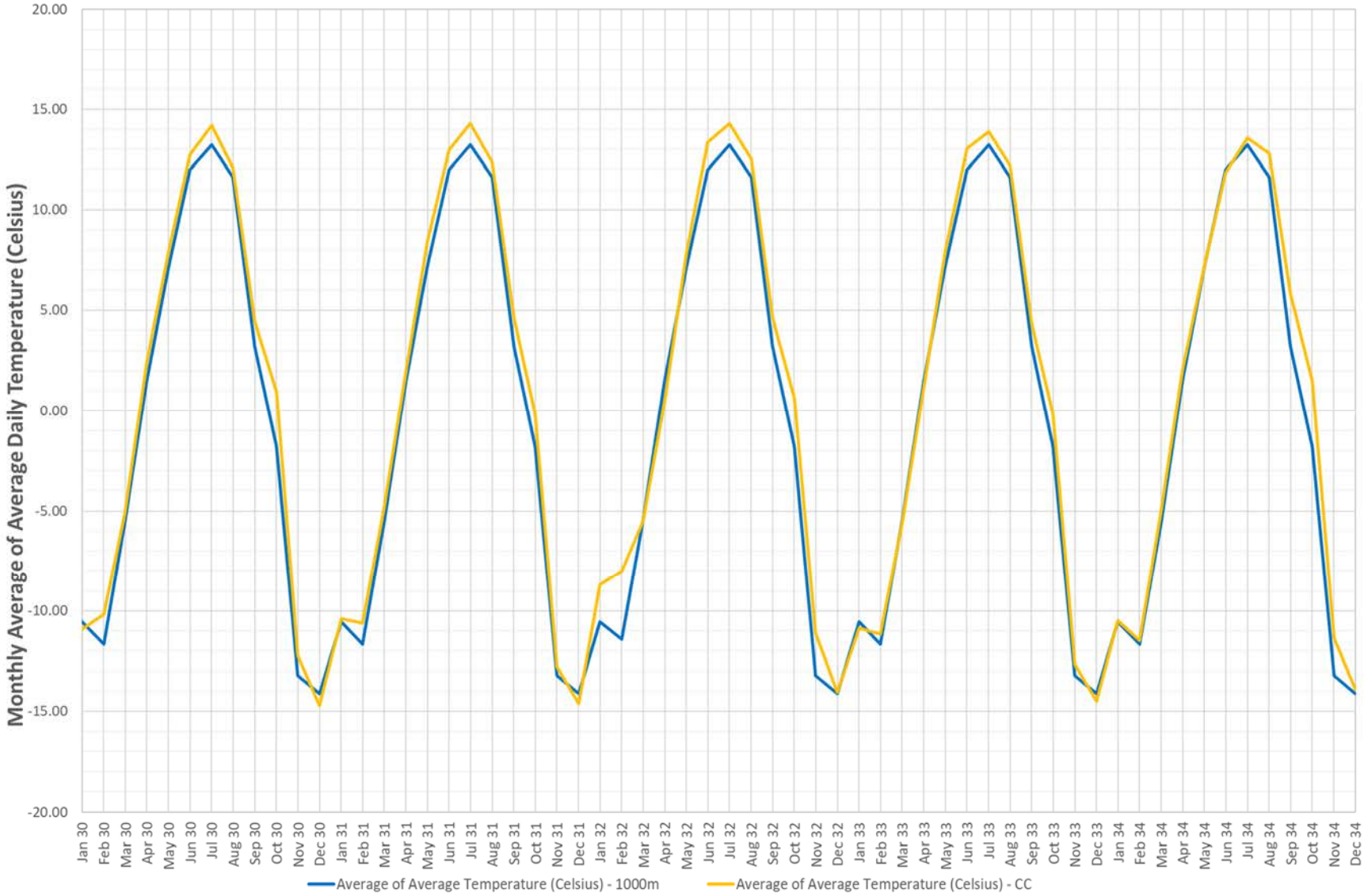


Figure 12 - Deterministic - 1000m and Climate Change Temperature Monthly Average (1/1/2035-12/31/2039)

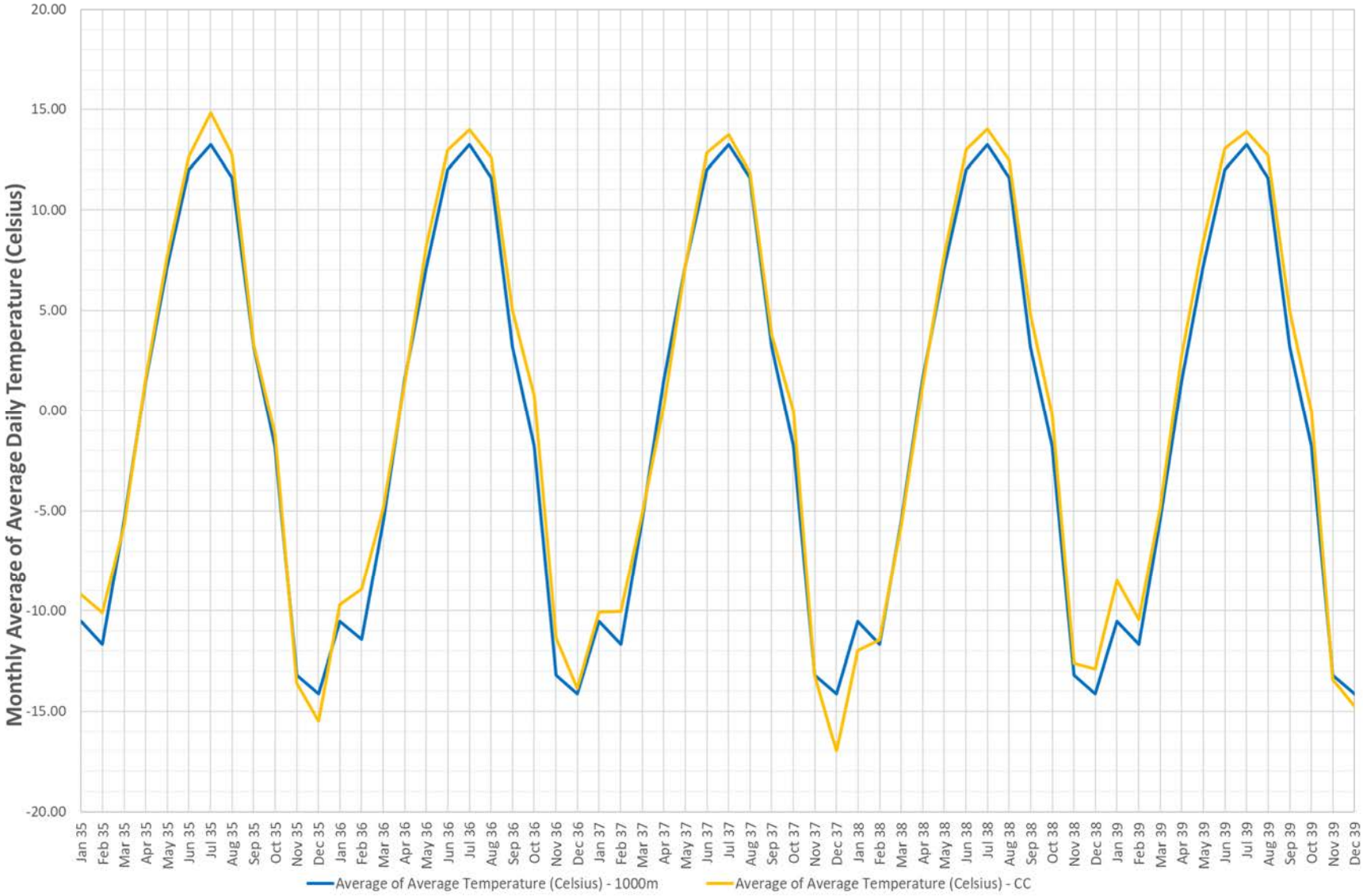
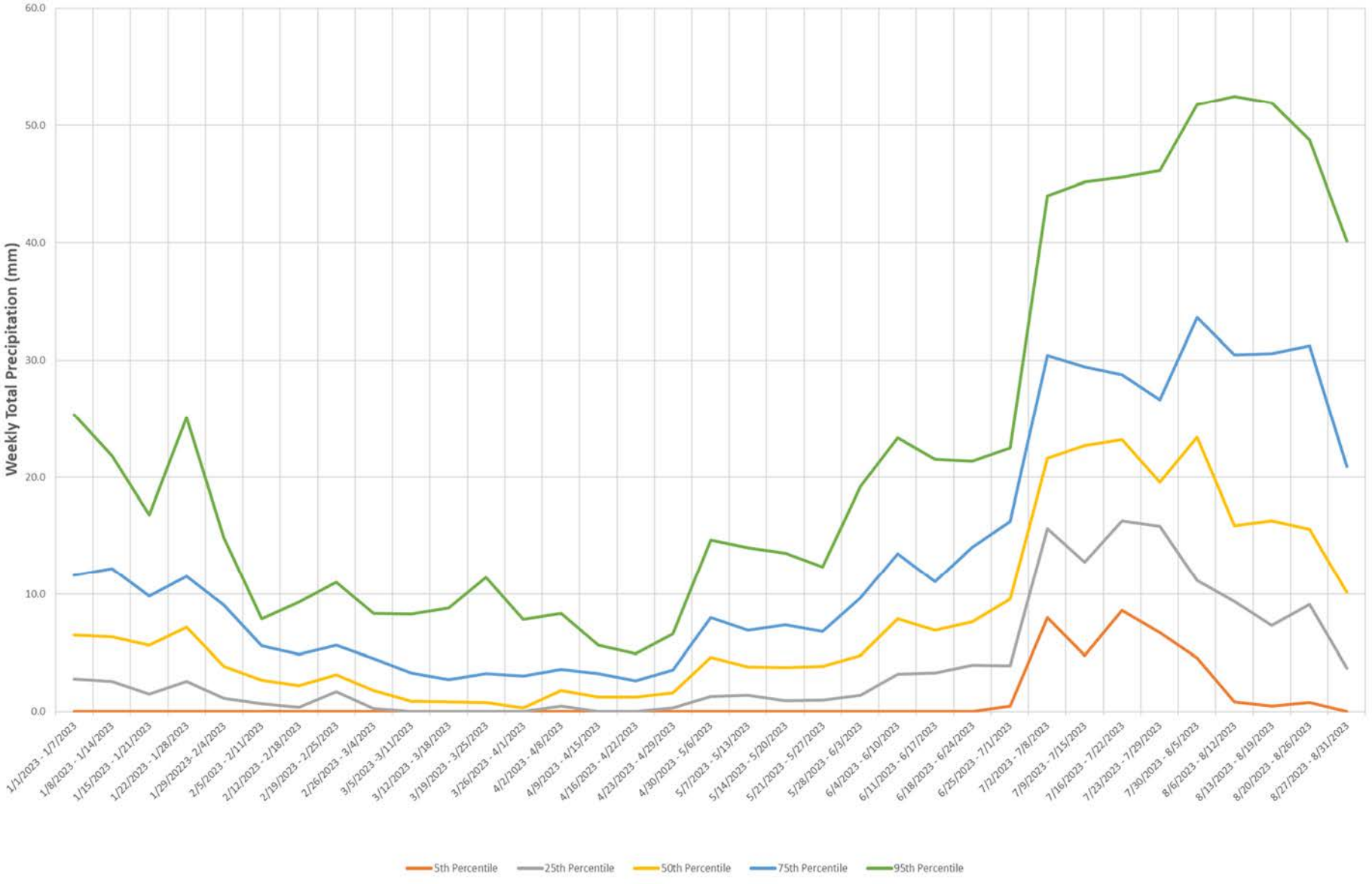


Figure 13 - Stochastic Precipitation Data Used - Weekly Summation



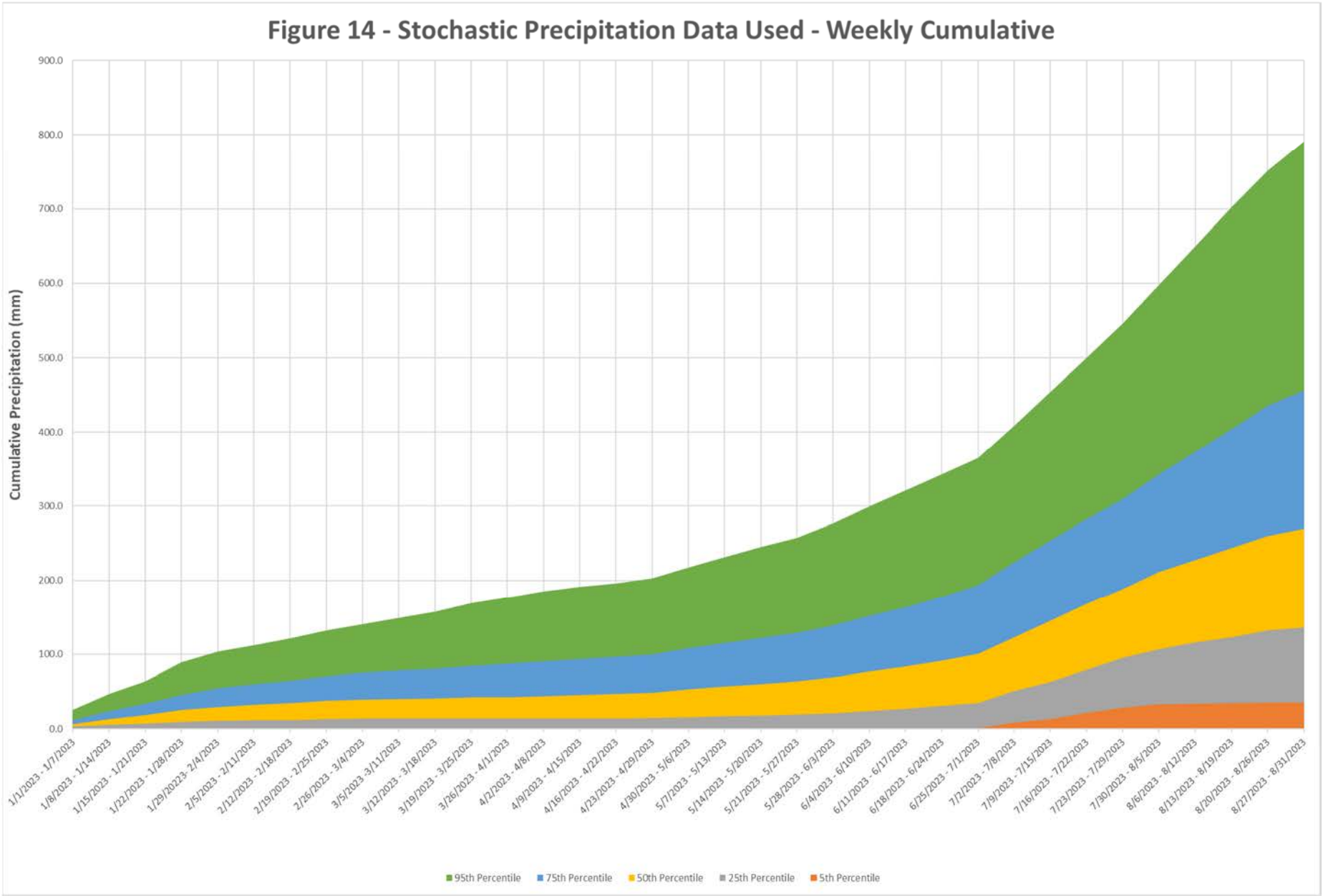
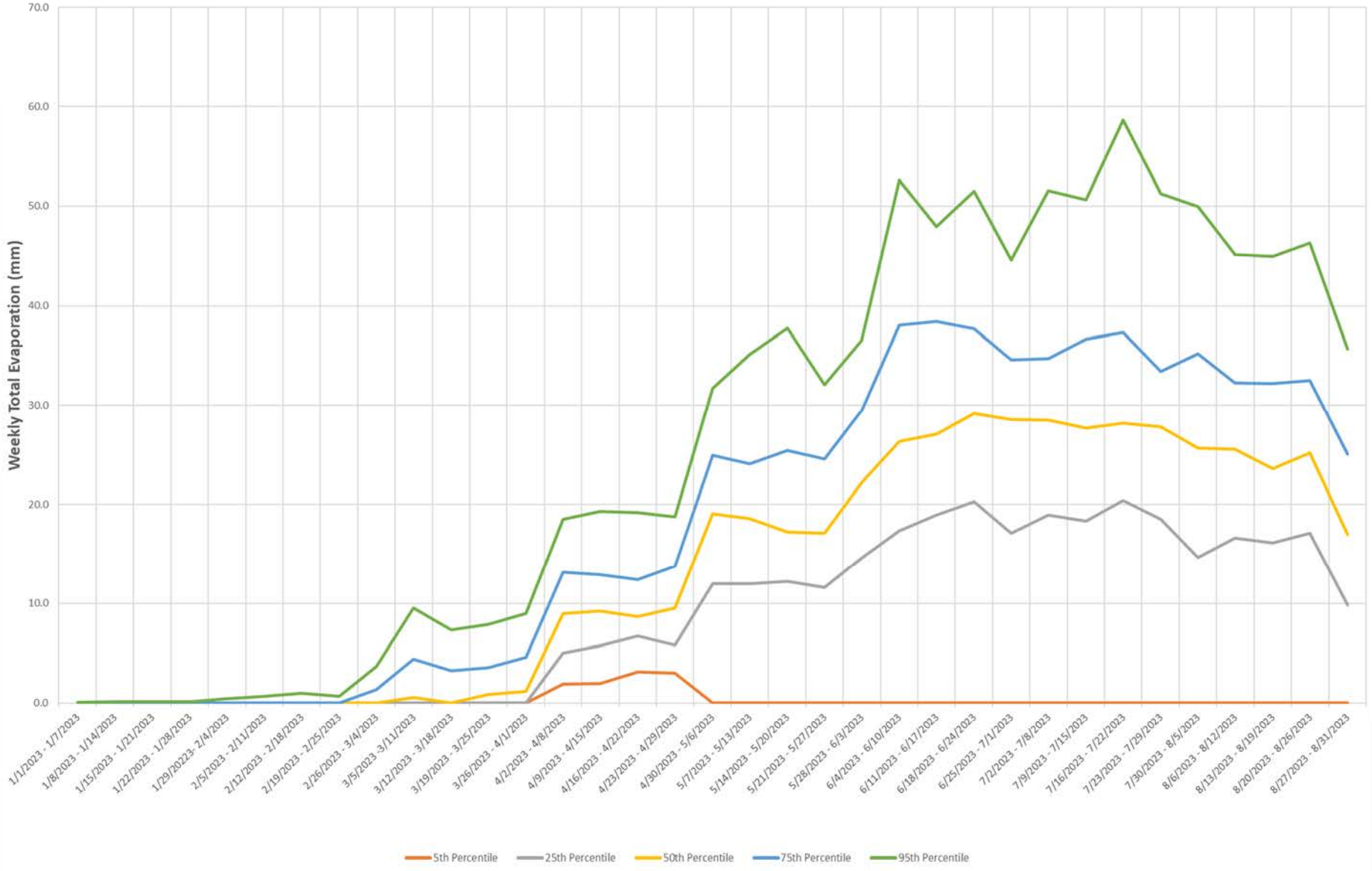


Figure 14 - Stochastic Precipitation Data Used - Weekly Cumulative
Cumulative Precipitation (mm)
900.0
800.0
700.0
600.0
500.0
400.0
300.0
200.0
100.0
0.0
1/1/2023 - 1/7/2023
1/8/2023 - 1/14/2023
1/15/2023 - 1/21/2023
1/22/2023 - 1/28/2023
1/29/20223 - 2/4/2023
2/5/2023 - 2/11/2023
2/12/2023 - 2/18/2023
2/19/2023 - 2/25/2023
2/26/2023 - 3/4/2023
3/5/2023 - 3/11/2023
3/12/2023 - 3/18/2023
3/19/2023 - 3/25/2023
3/26/2023 - 4/1/2023
4/2/2023 - 4/8/2023
4/9/2023 - 4/15/2023
4/16/2023 - 4/22/2023
4/23/2023 - 4/29/2023
4/30/2023 - 5/6/2023
5/7/2023 - 5/13/2023
5/14/2023 - 5/20/2023
5/21/2023 - 5/27/2023
5/28/2023 - 6/3/2023
6/4/2023 - 6/10/2023
6/11/2023 - 6/17/2023
6/18/2023 - 6/24/2023
6/25/2023 - 7/1/2023
7/2/2023 - 7/8/2023
7/9/2023 - 7/15/2023
7/16/2023 - 7/22/2023
7/23/2023 - 7/29/2023
7/30/2023 - 8/5/2023
8/6/2023 - 8/12/2023
8/13/2023 - 8/19/2023
8/20/2023 - 8/26/2023
8/27/2023 - 8/31/2023
95th Percentile
75th Percentile
50th Percentile
25th Percentile
5th Percentile

Figure 15 - Stochastic Evaporation Data Used - Weekly Summation



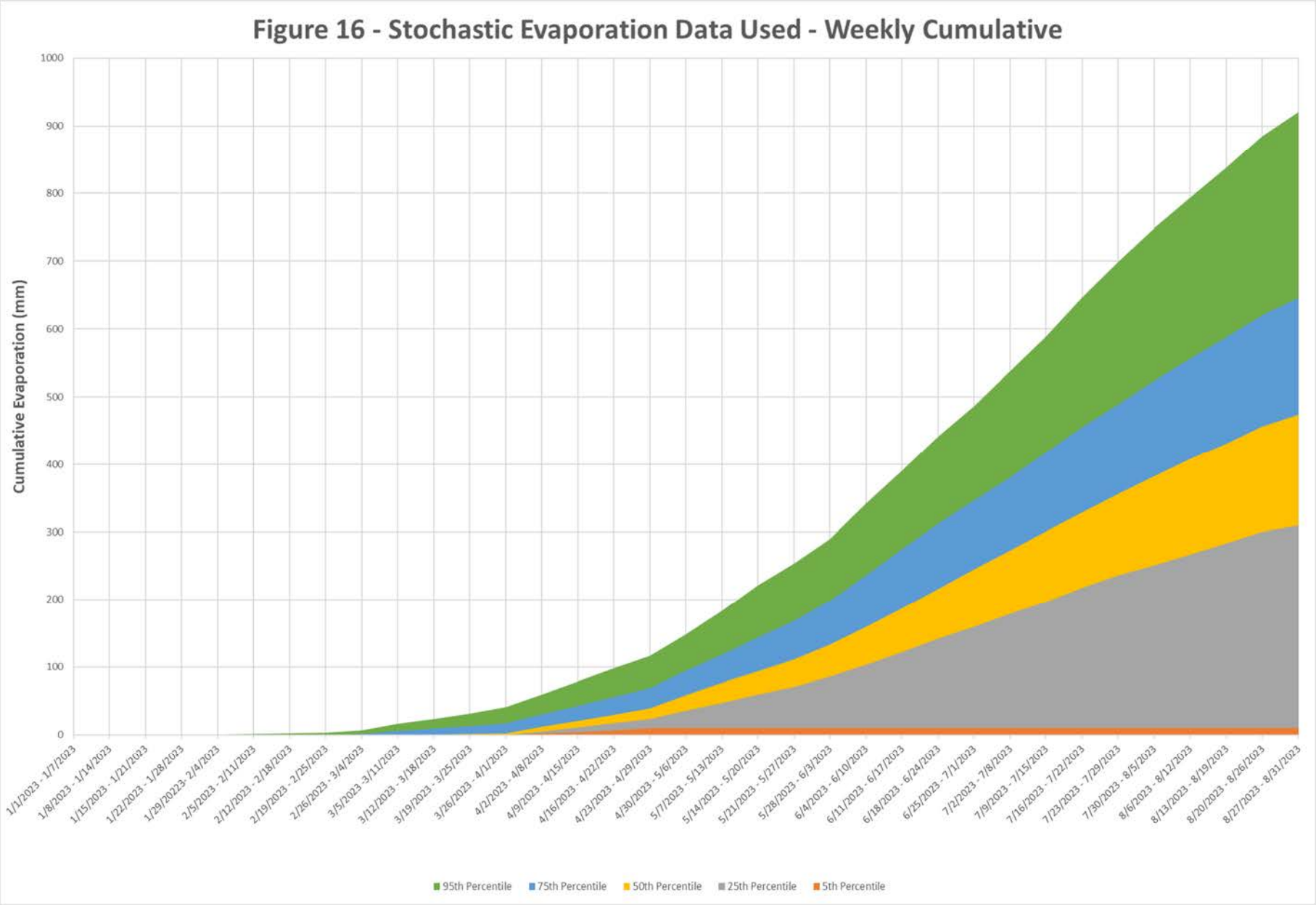


Figure 16 - Stochastic Evaporation Data Used - Weekly Cumulative
Cumulative Evaporation (mm)
0
100
200
300
400
500
600
700
800
900
1000
1/1/2023 - 1/7/2023
1/8/2023 - 1/14/2023
1/15/2023 - 1/21/2023
1/22/2023 - 1/28/2023
1/29/20223- 2/4/2023
2/5/2023 - 2/11/2023
2/12/2023 - 2/18/2023
2/19/2023 - 2/25/2023
2/26/2023 - 3/4/2023
3/5/2023 -3/11/2023
3/12/2023 - 3/18/2023
3/19/2023 - 3/25/2023
3/26/2023 - 4/1/2023
4/2/2023 - 4/8/2023
4/9/2023 - 4/15/2023
4/16/2023 - 4/22/2023
4/23/2023 - 4/29/2023
4/30/2023 - 5/6/2023
5/7/2023 - 5/13/2023
5/14/2023 - 5/20/2023
5/21/2023 - 5/27/2023
5/28/2023 - 6/3/2023
6/4/2023 - 6/10/2023
6/11/2023 - 6/17/2023
6/18/2023 - 6/24/2023
6/25/2023 - 7/1/2023
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7/9/2023 - 7/15/2023
7/16/2023 - 7/22/2023
7/23/2023 - 7/29/2023
7/30/2023 - 8/5/2023
8/6/2023 - 8/12/2023
8/13/2023 - 8/19/2023
8/20/2023 - 8/26/2023
8/27/2023 - 8/31/2023
95th Percentile
75th Percentile
50th Percentile
25th Percentile
5th Percentile

Figure 17 - Stochastic Minimum Temperature Data Used - Weekly Average

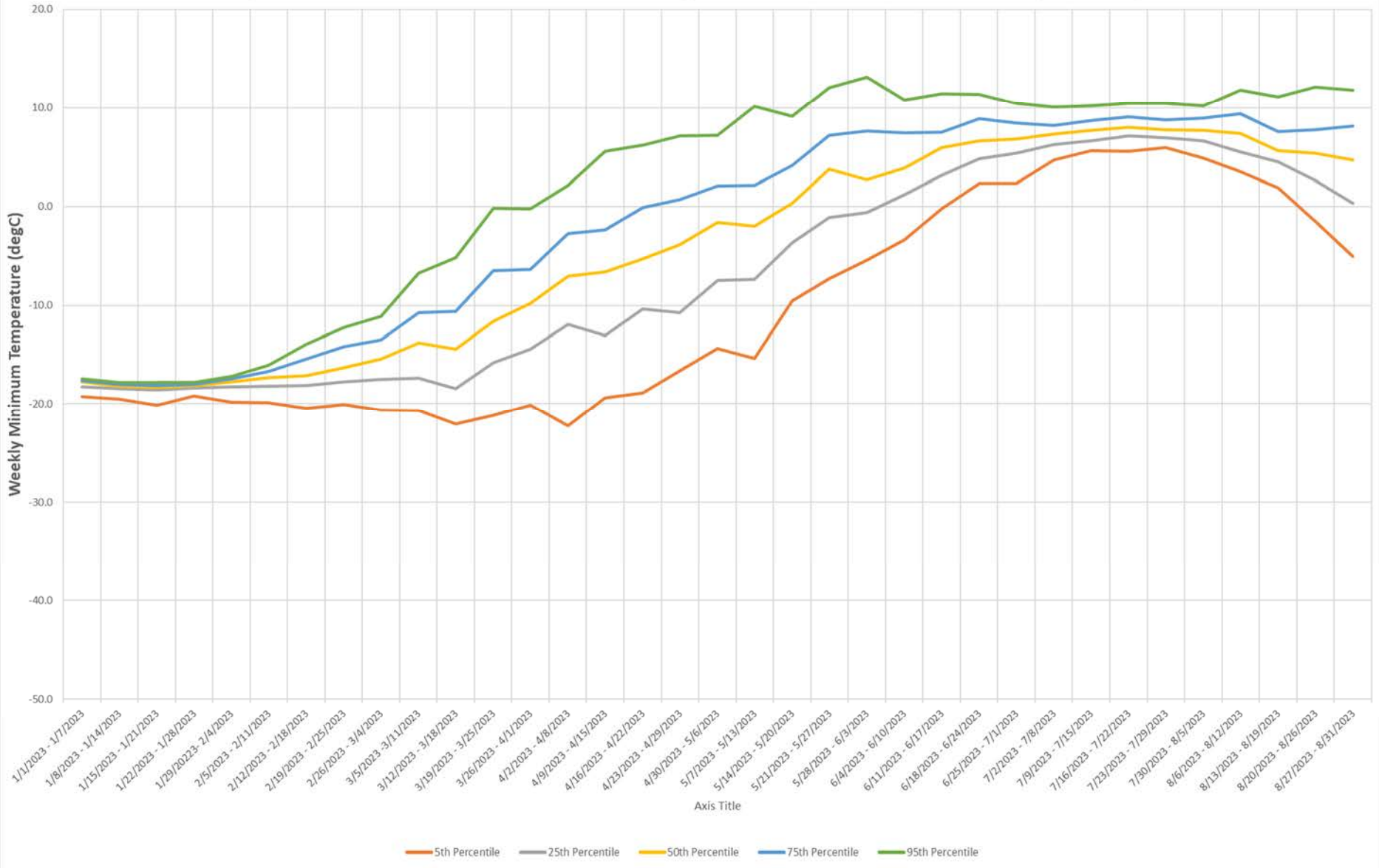


Figure 18 - Stochastic Maximum Temperature Data Used - Weekly Average

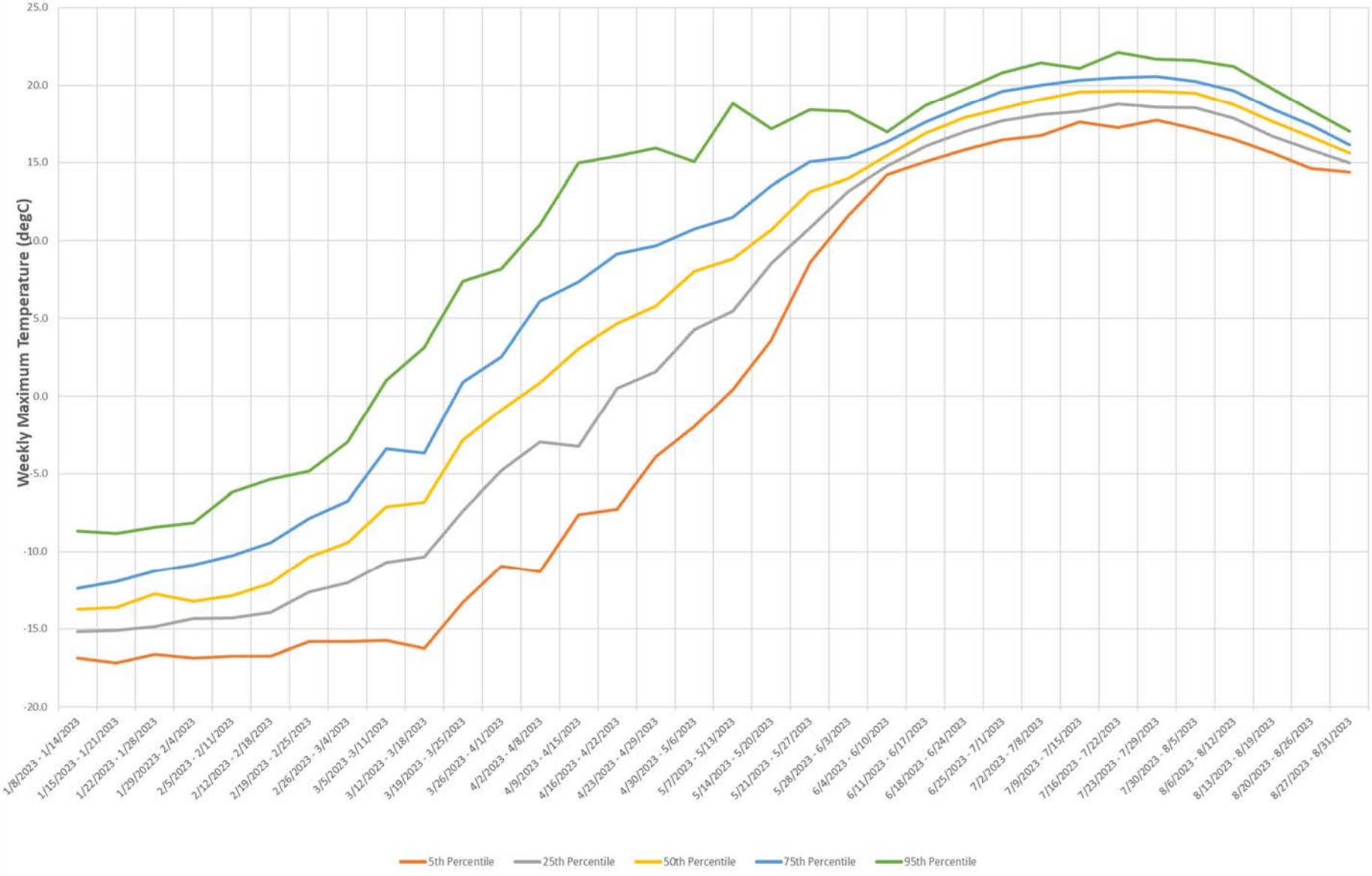


Figure 19 - Stochastic Solar Radiation Data Used - Weekly Average

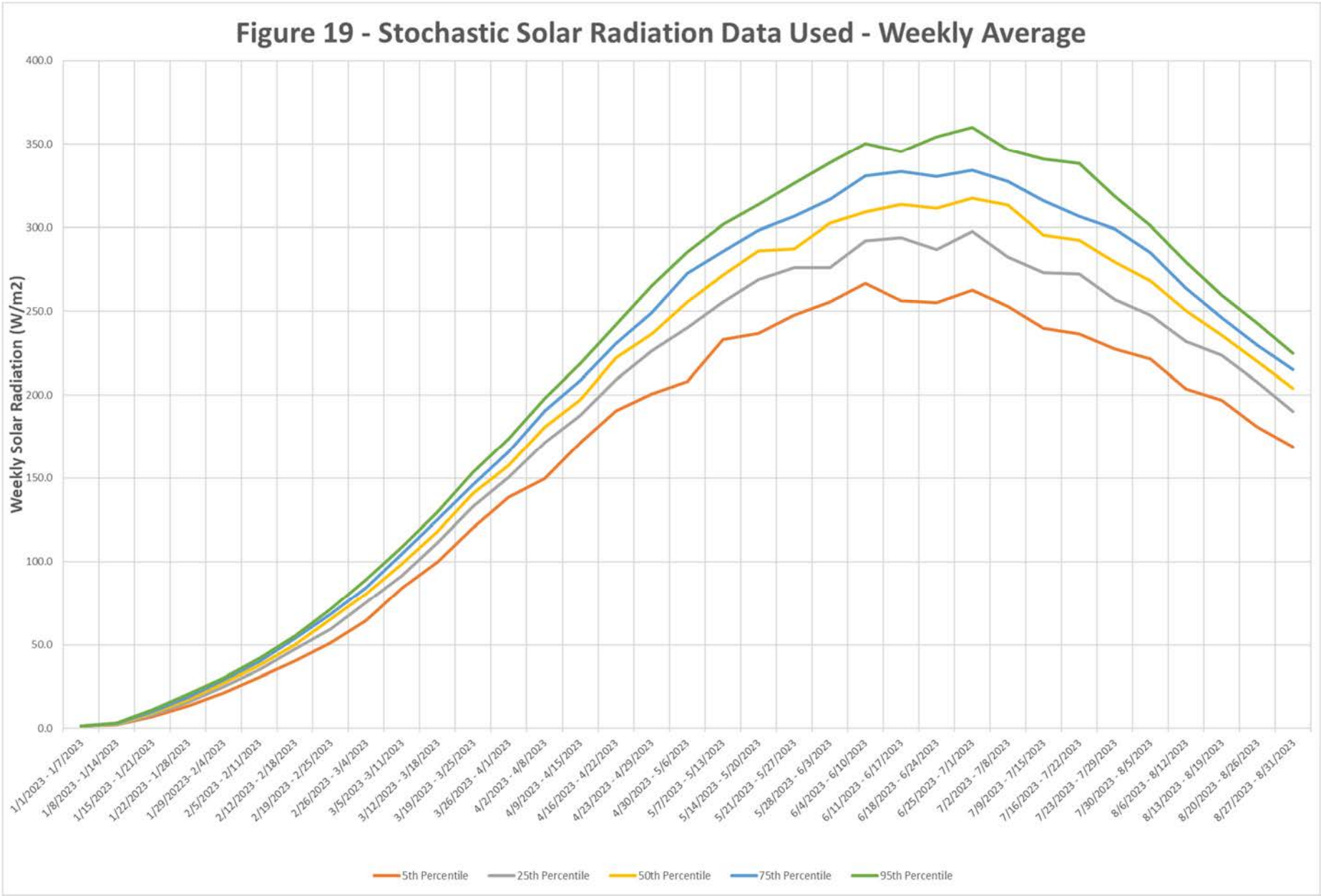
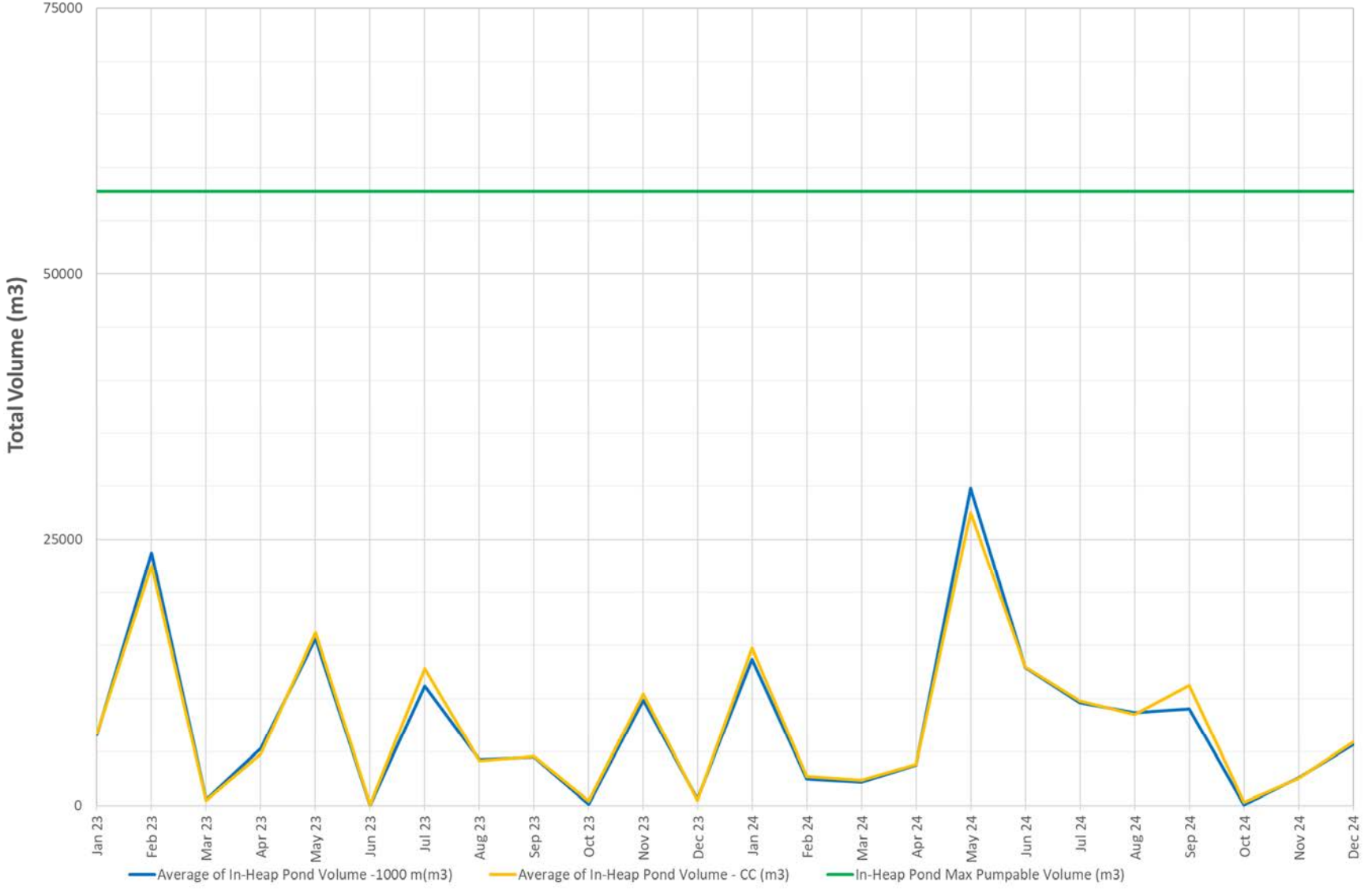


Figure 20 - Deterministic - In-Heap Pond Volume vs In-Heap Pond Max Pumpable Volume (1/1/2023-12/31/2024)



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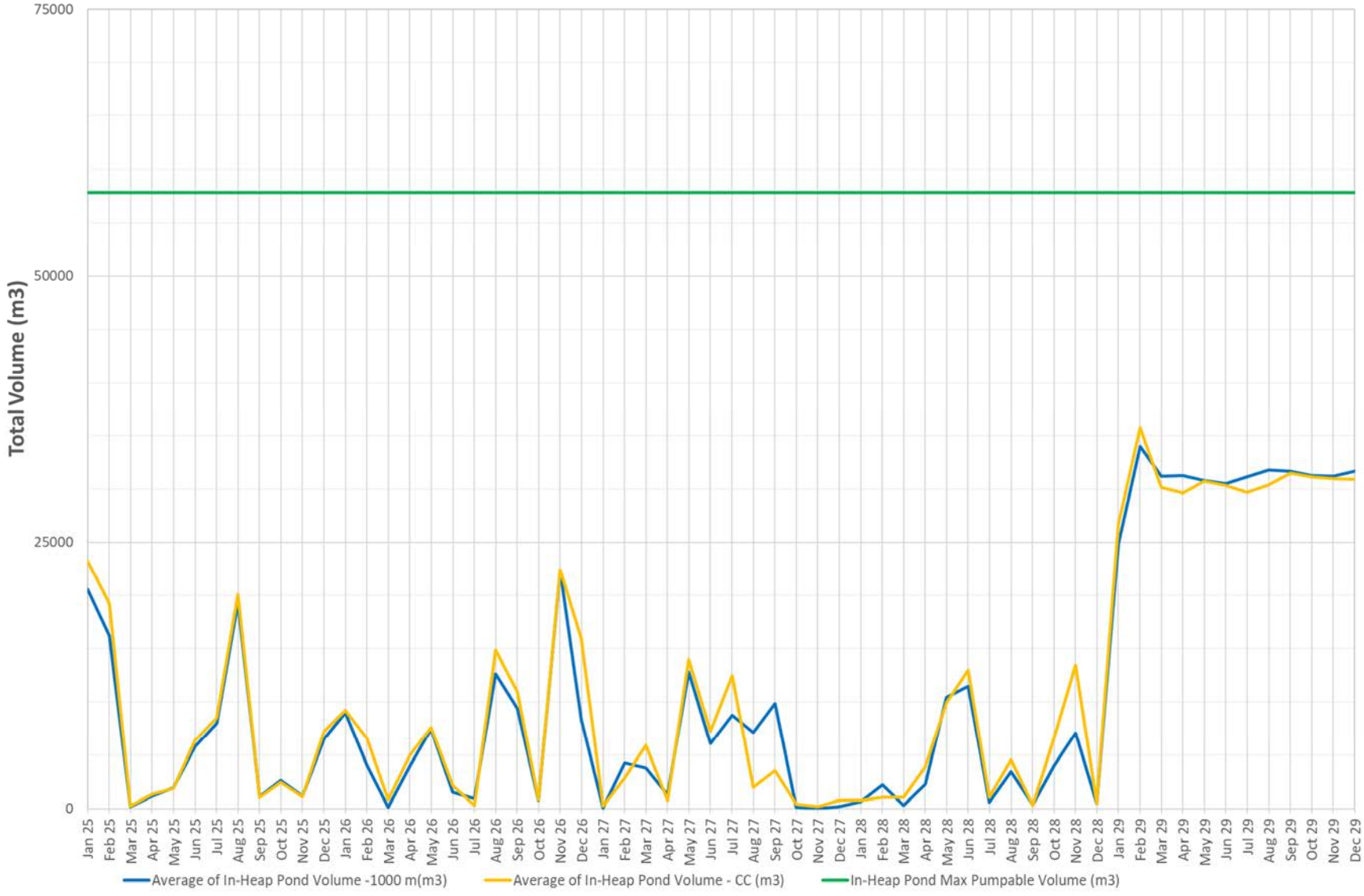

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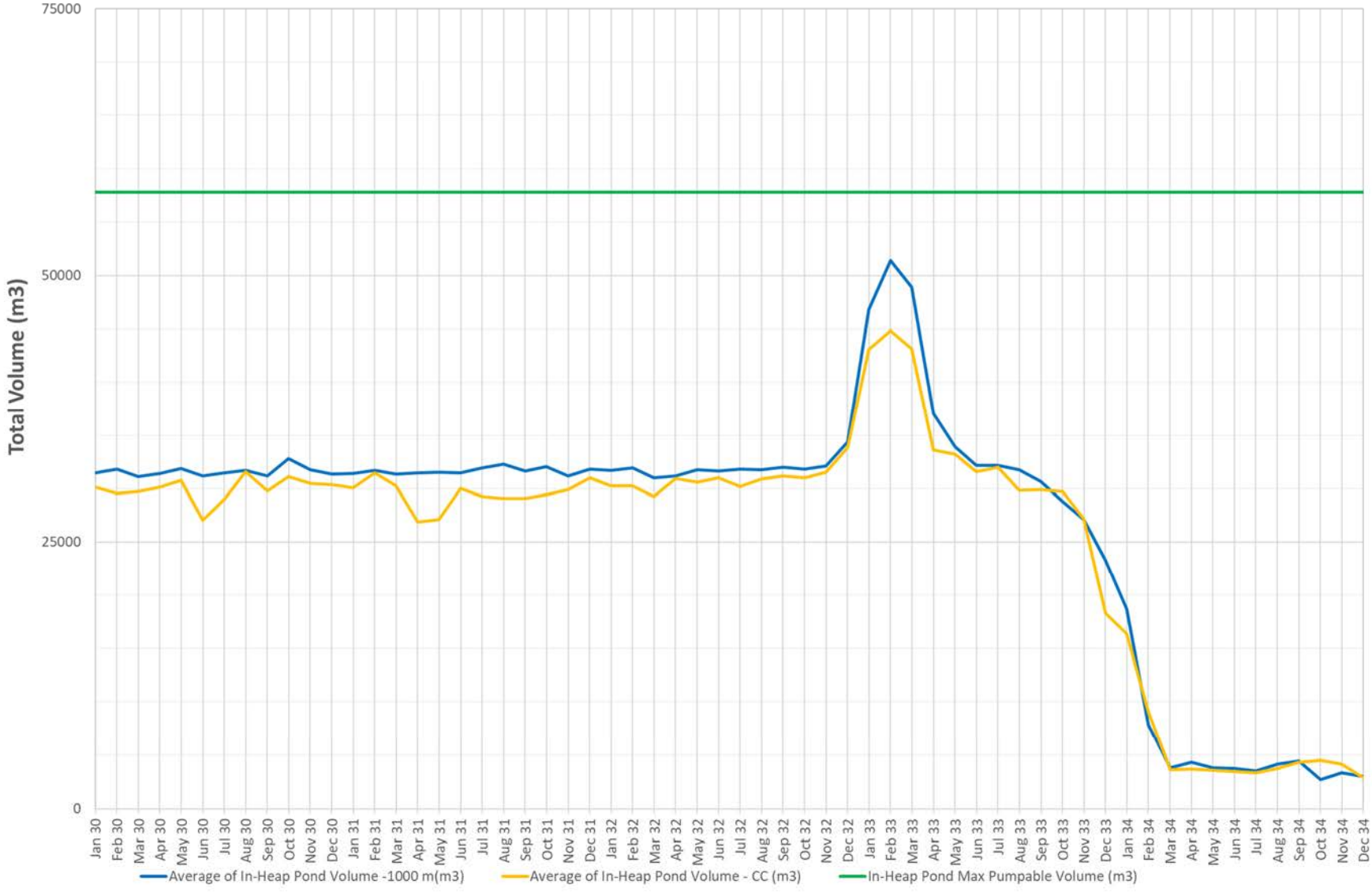

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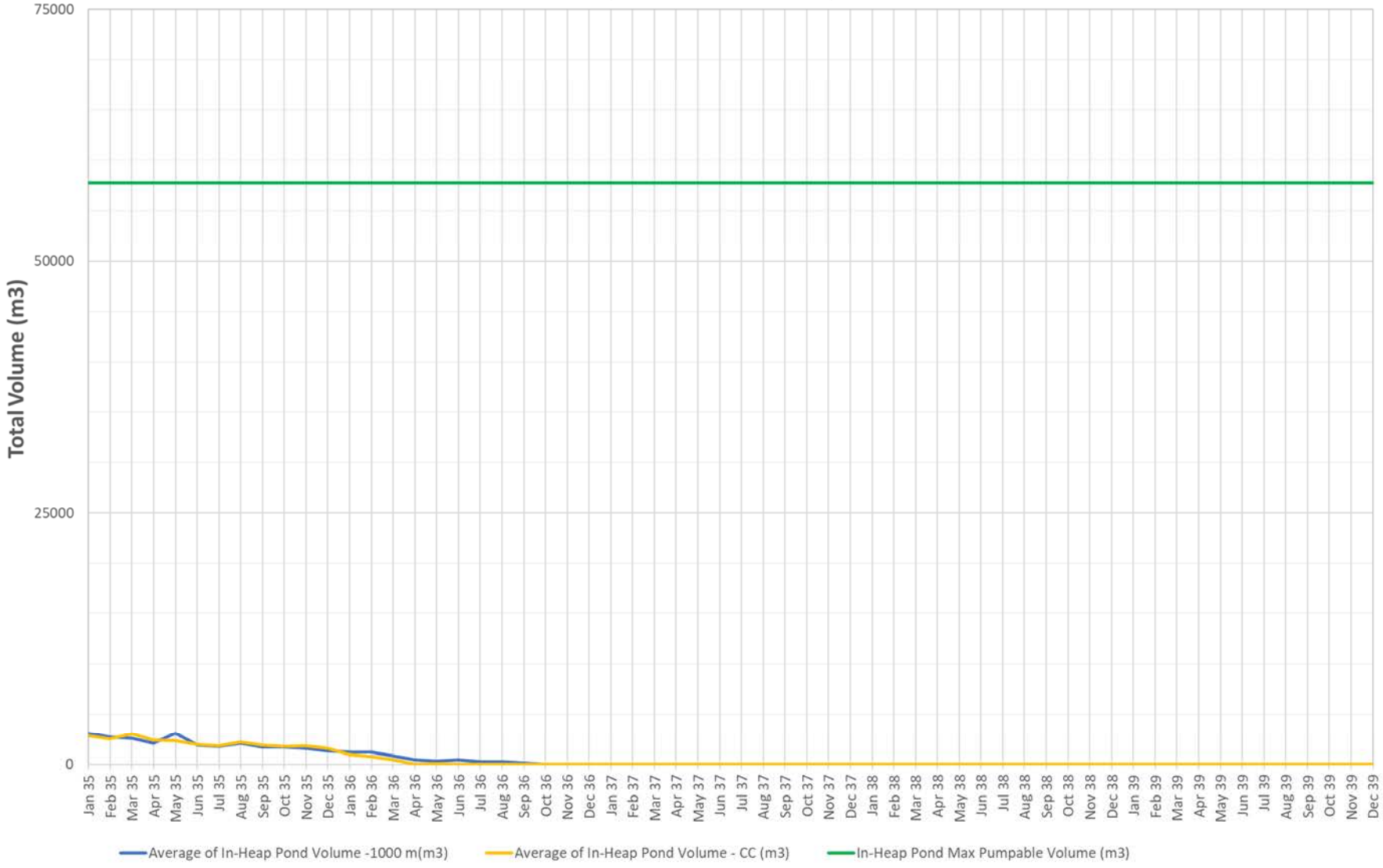

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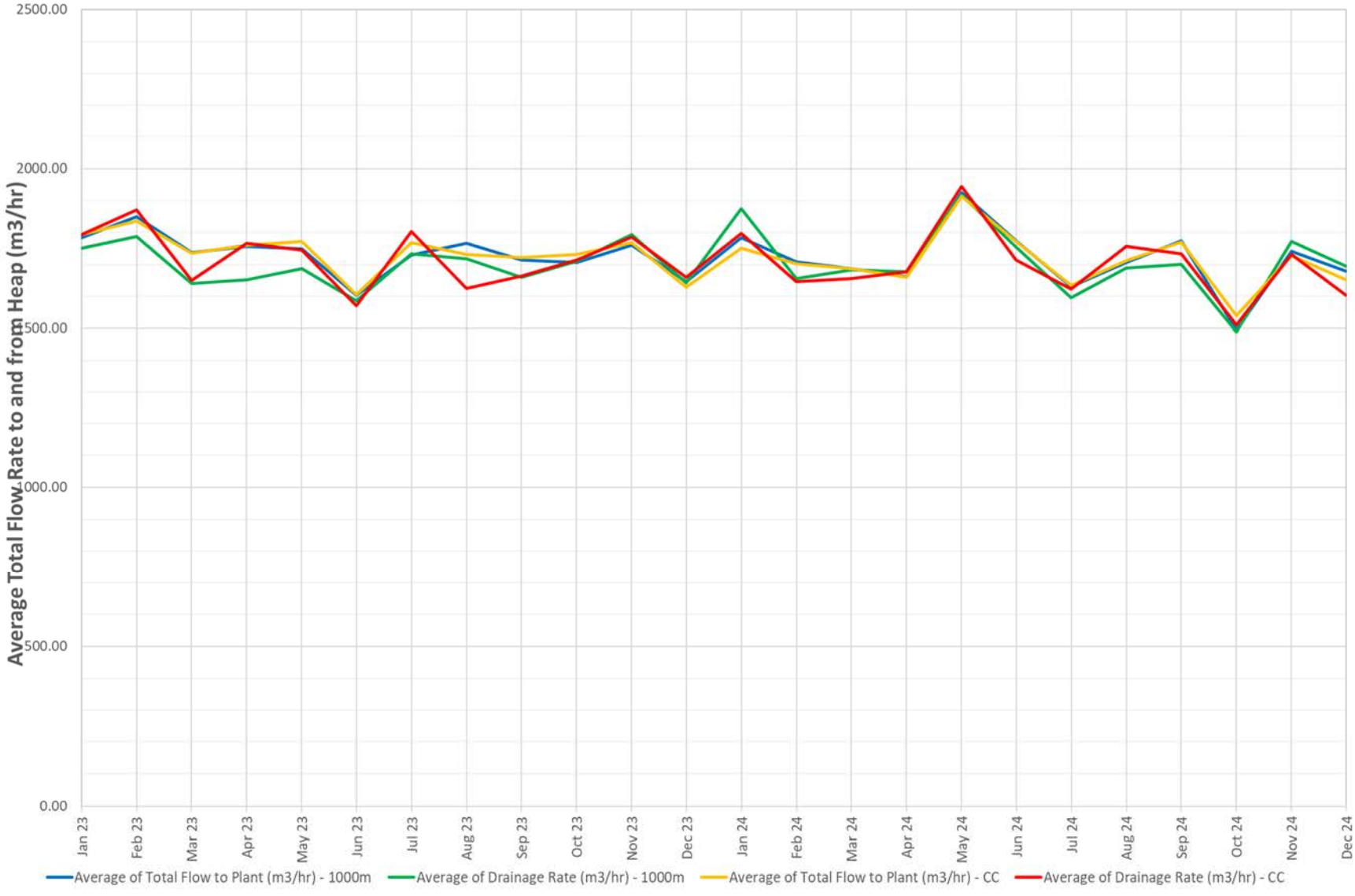

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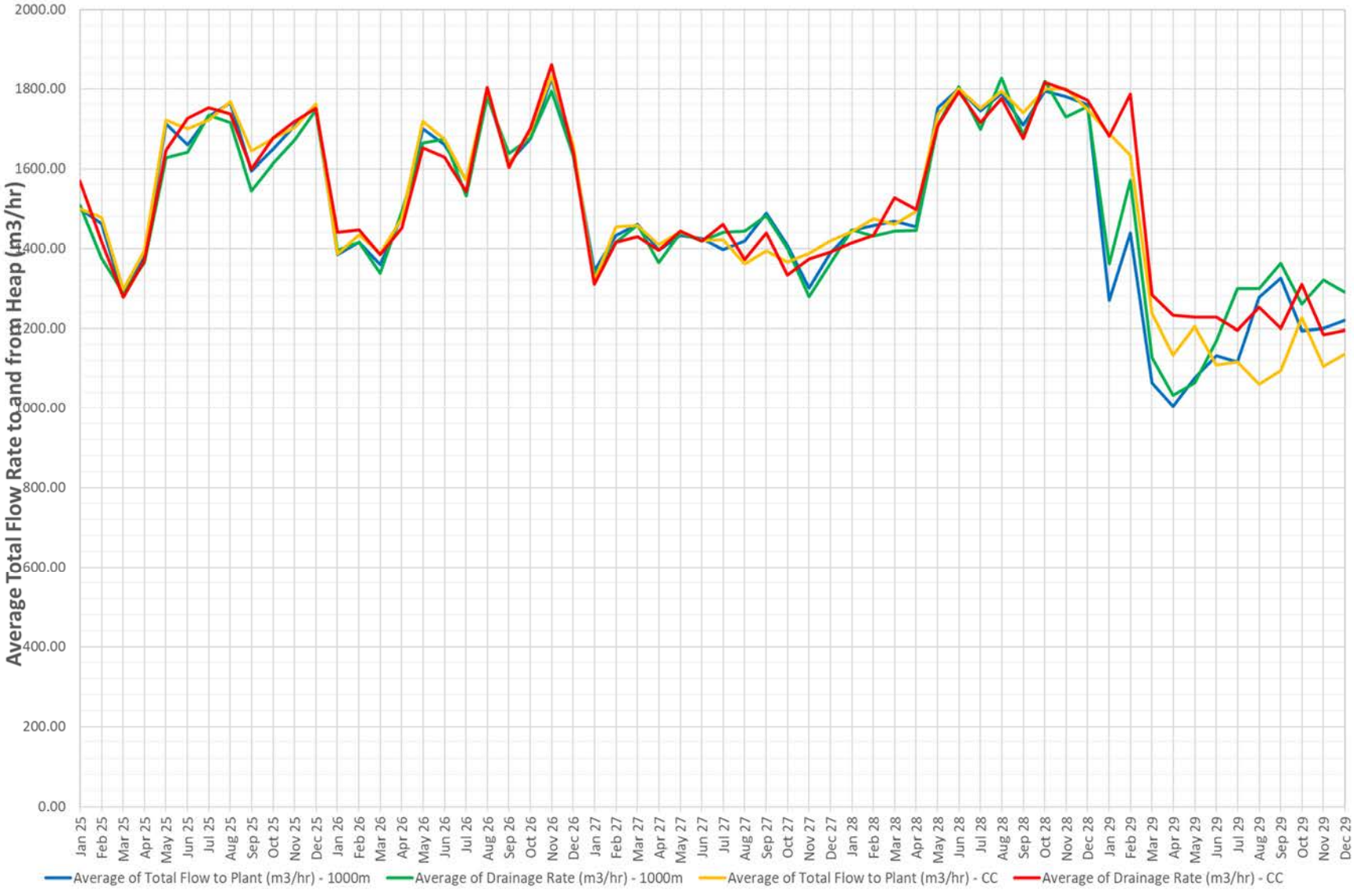

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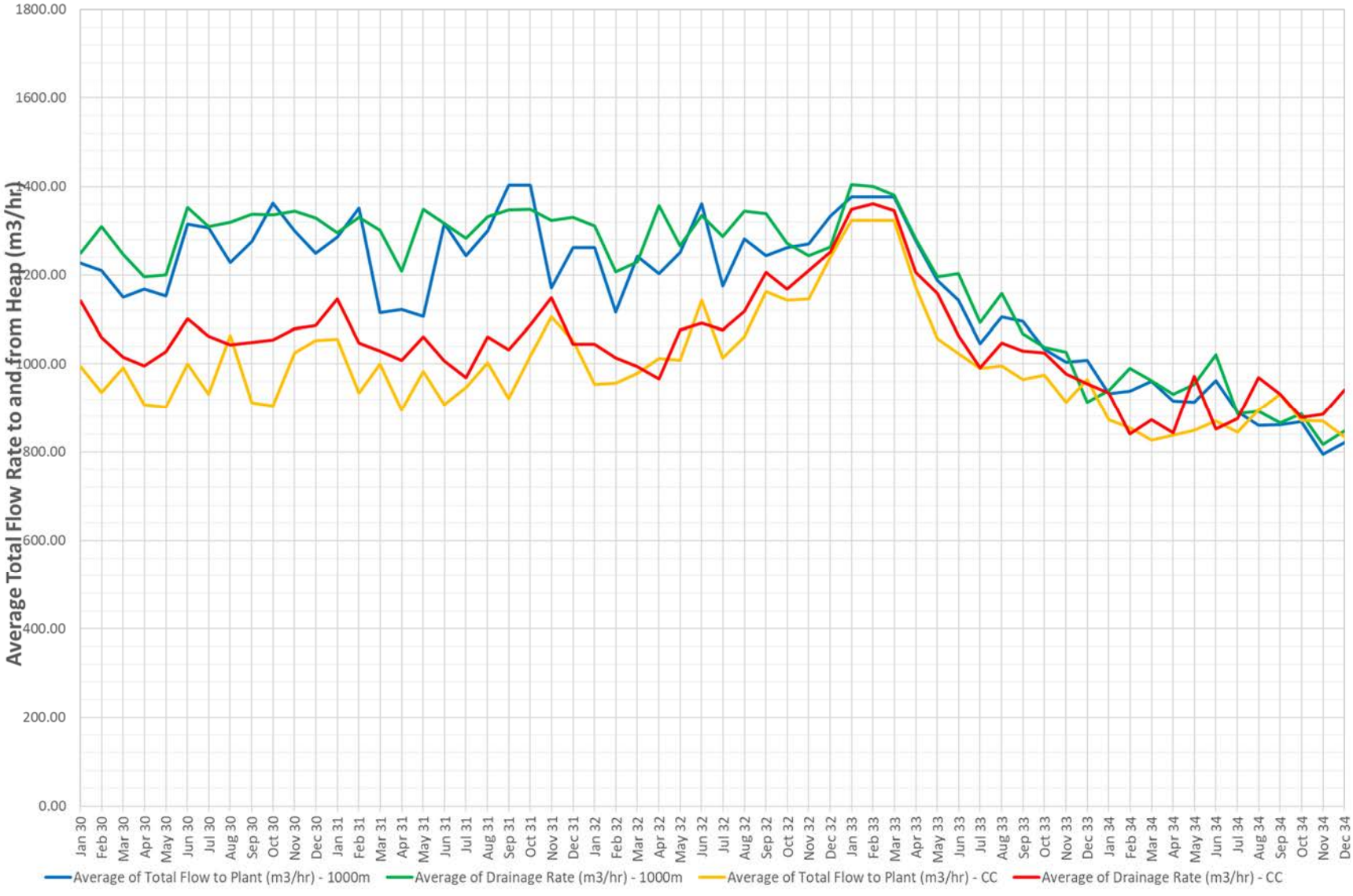

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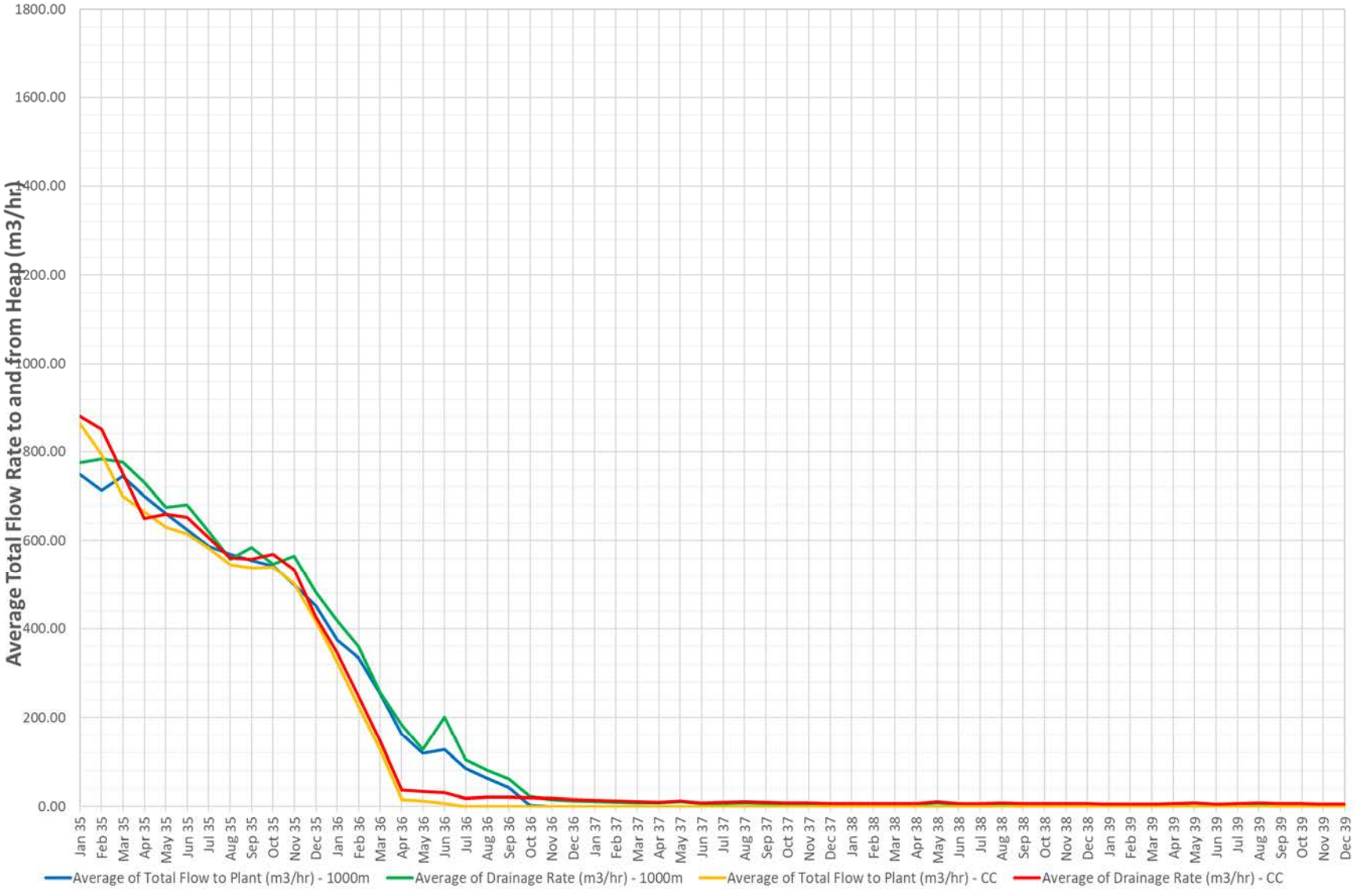

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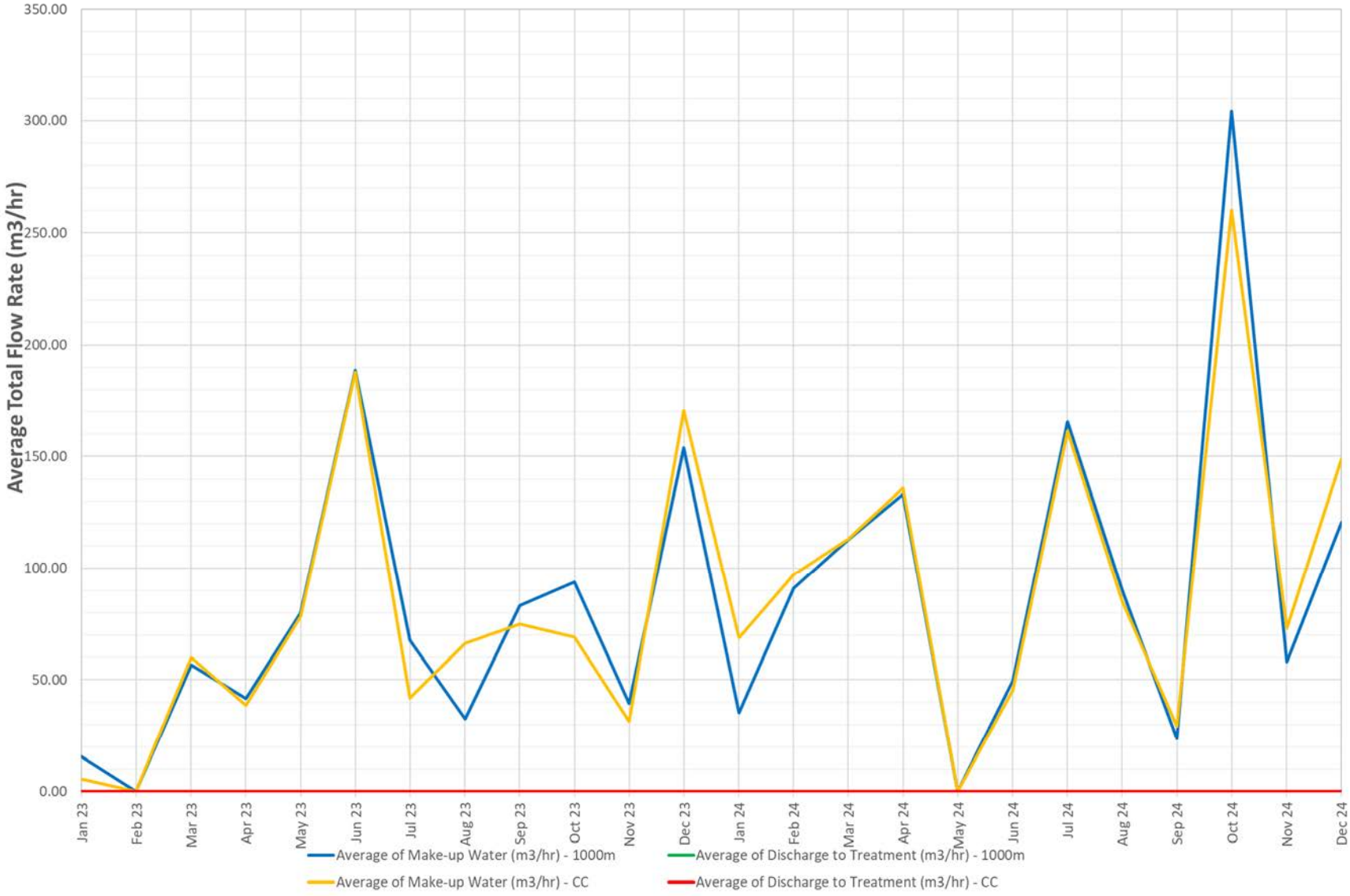

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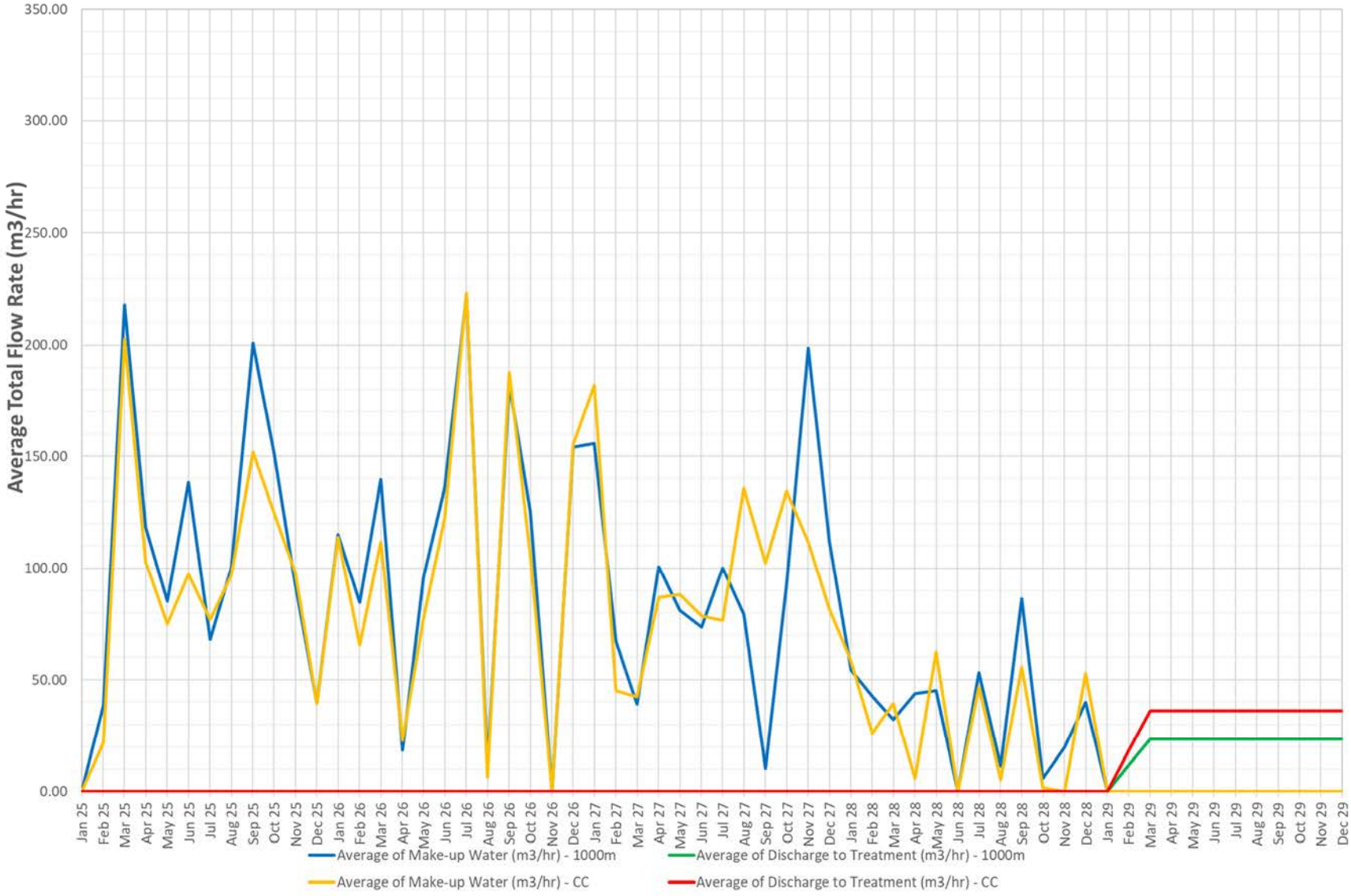

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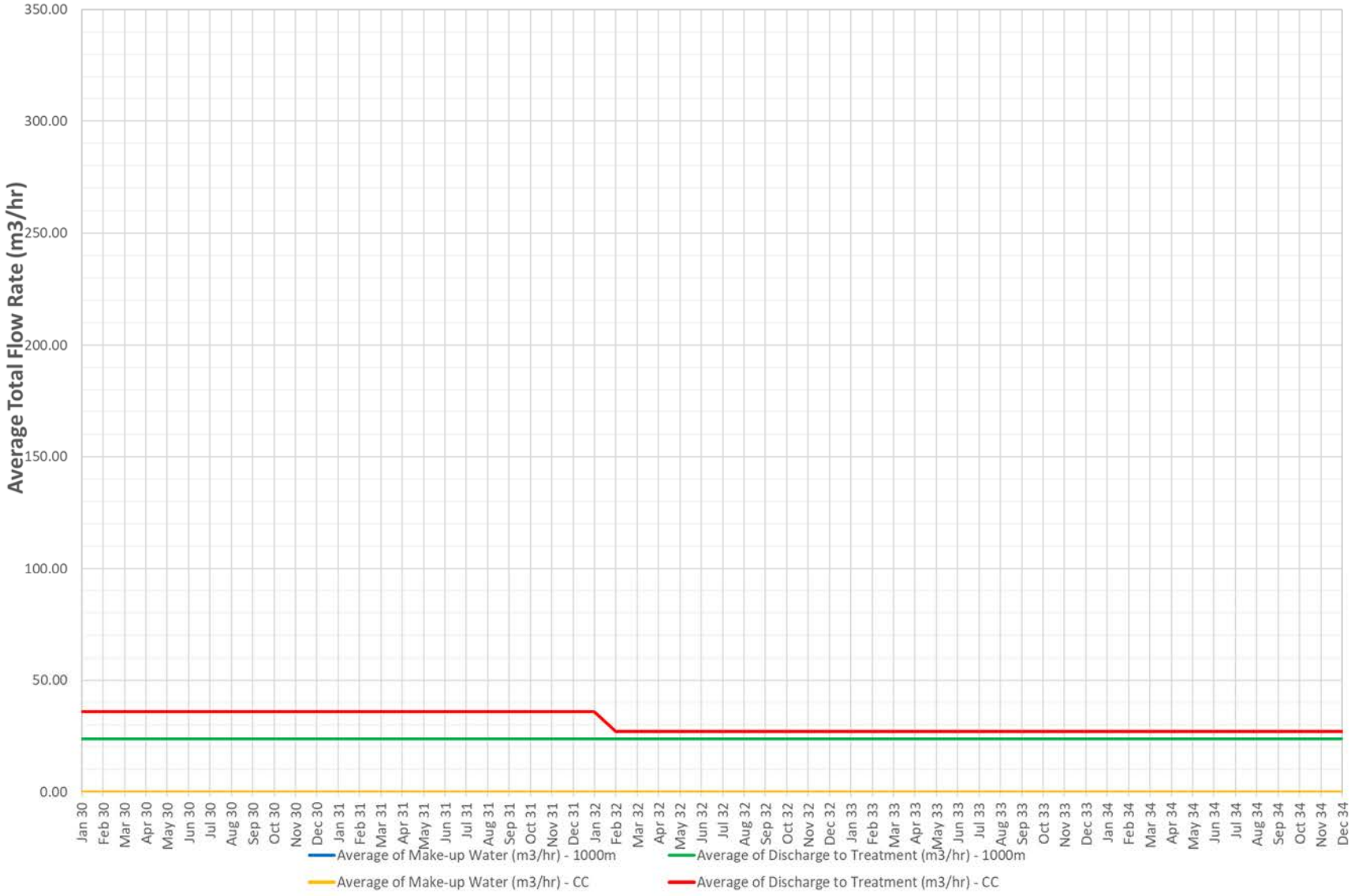

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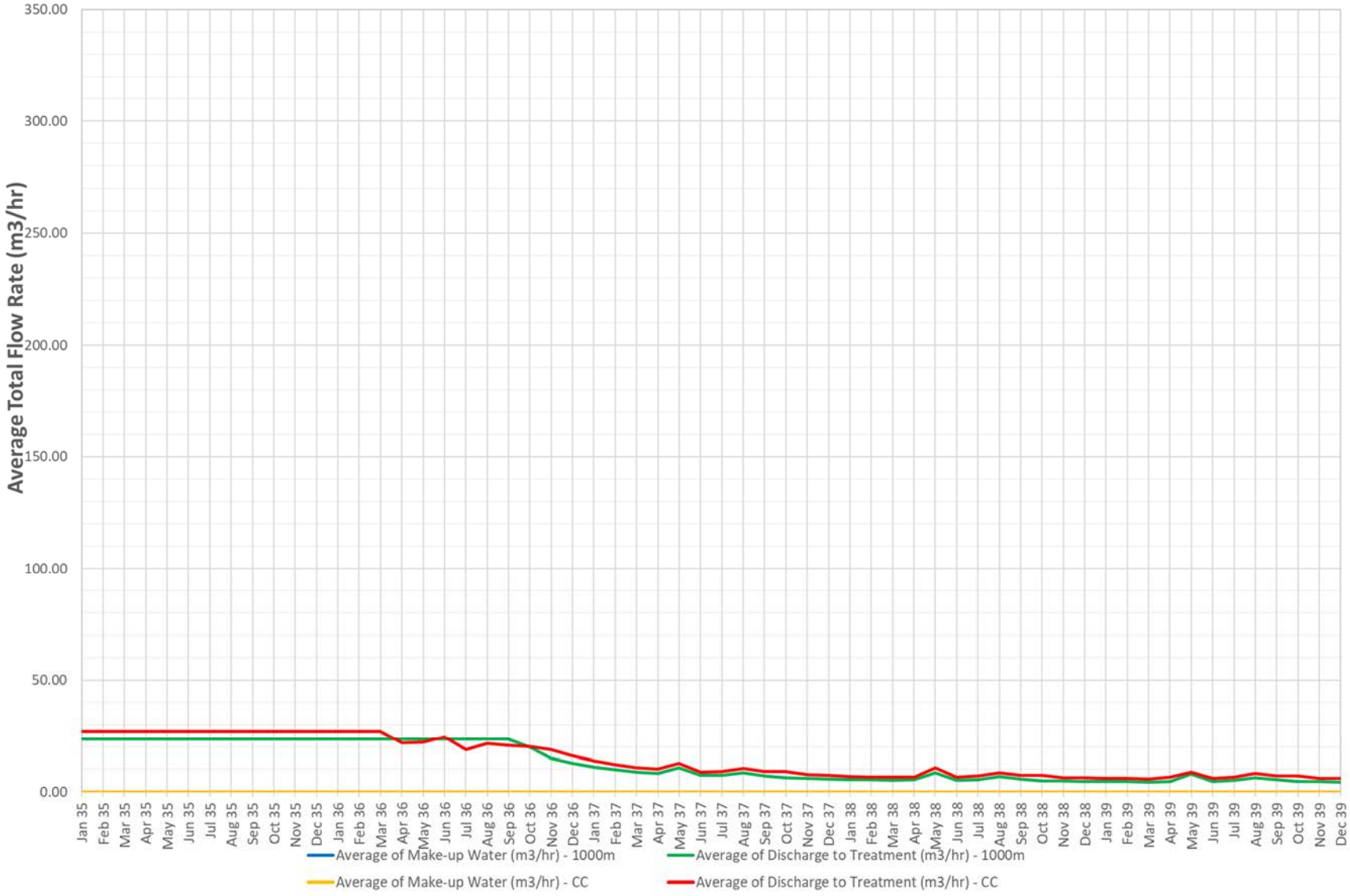

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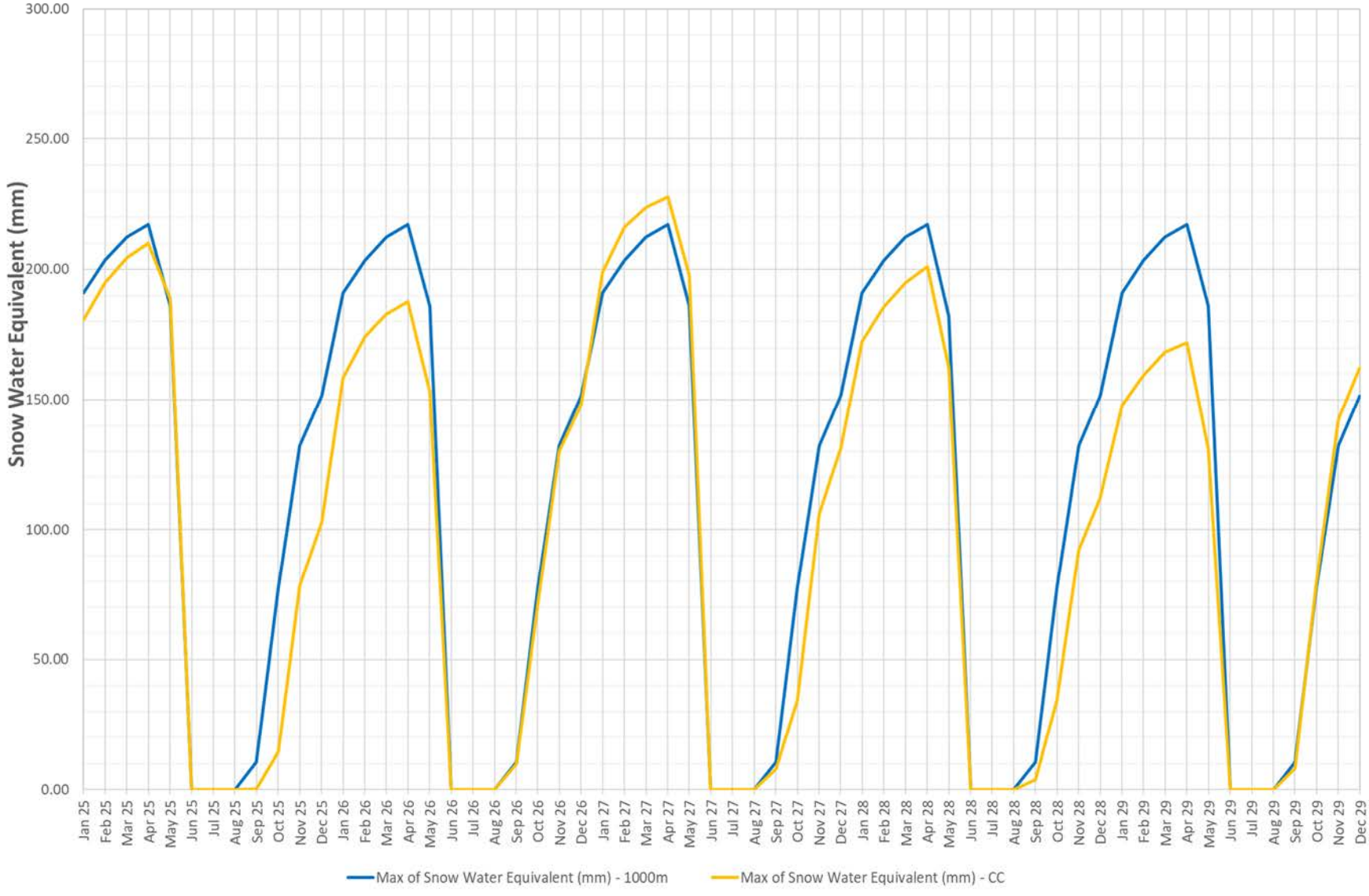

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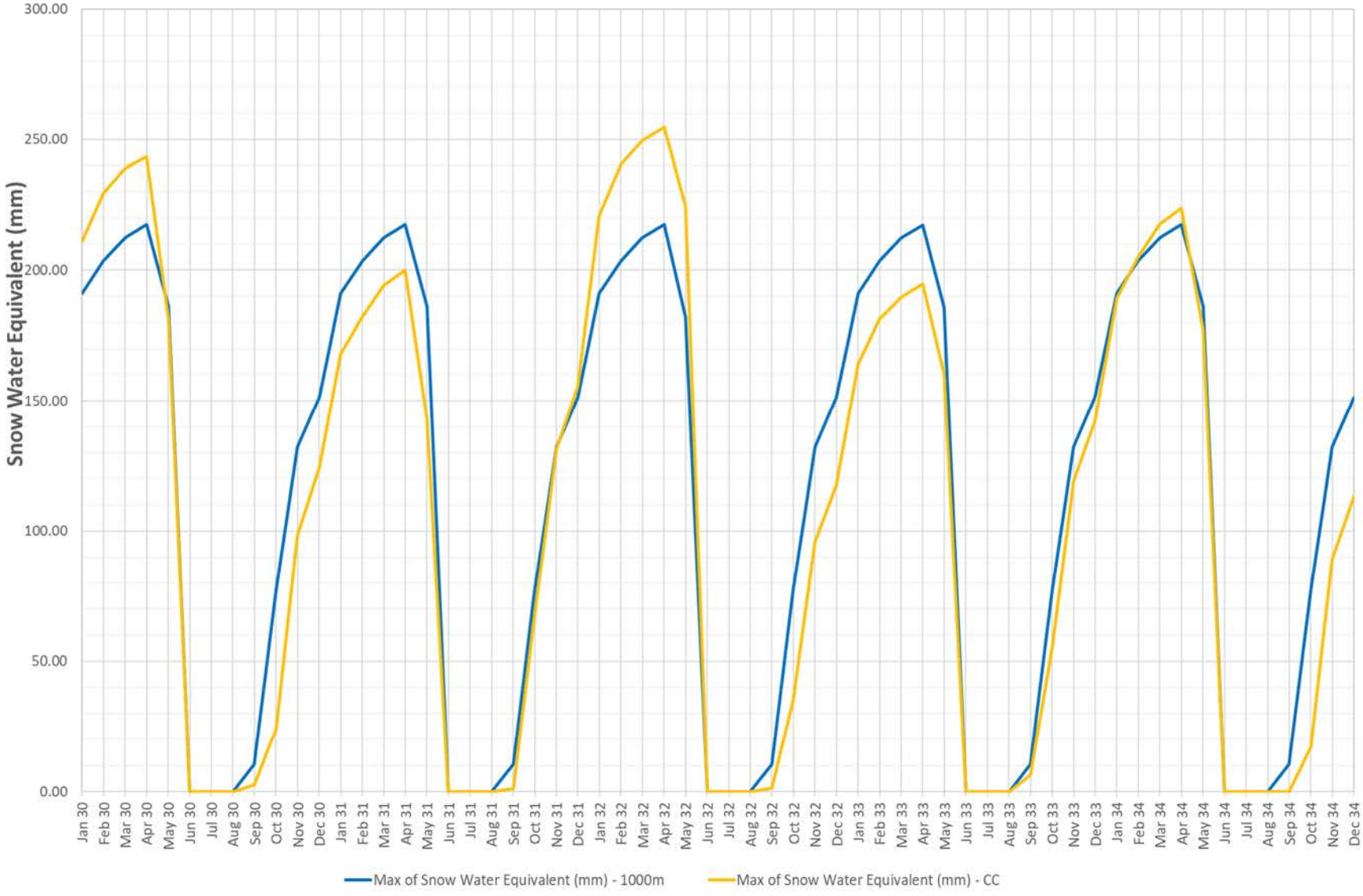

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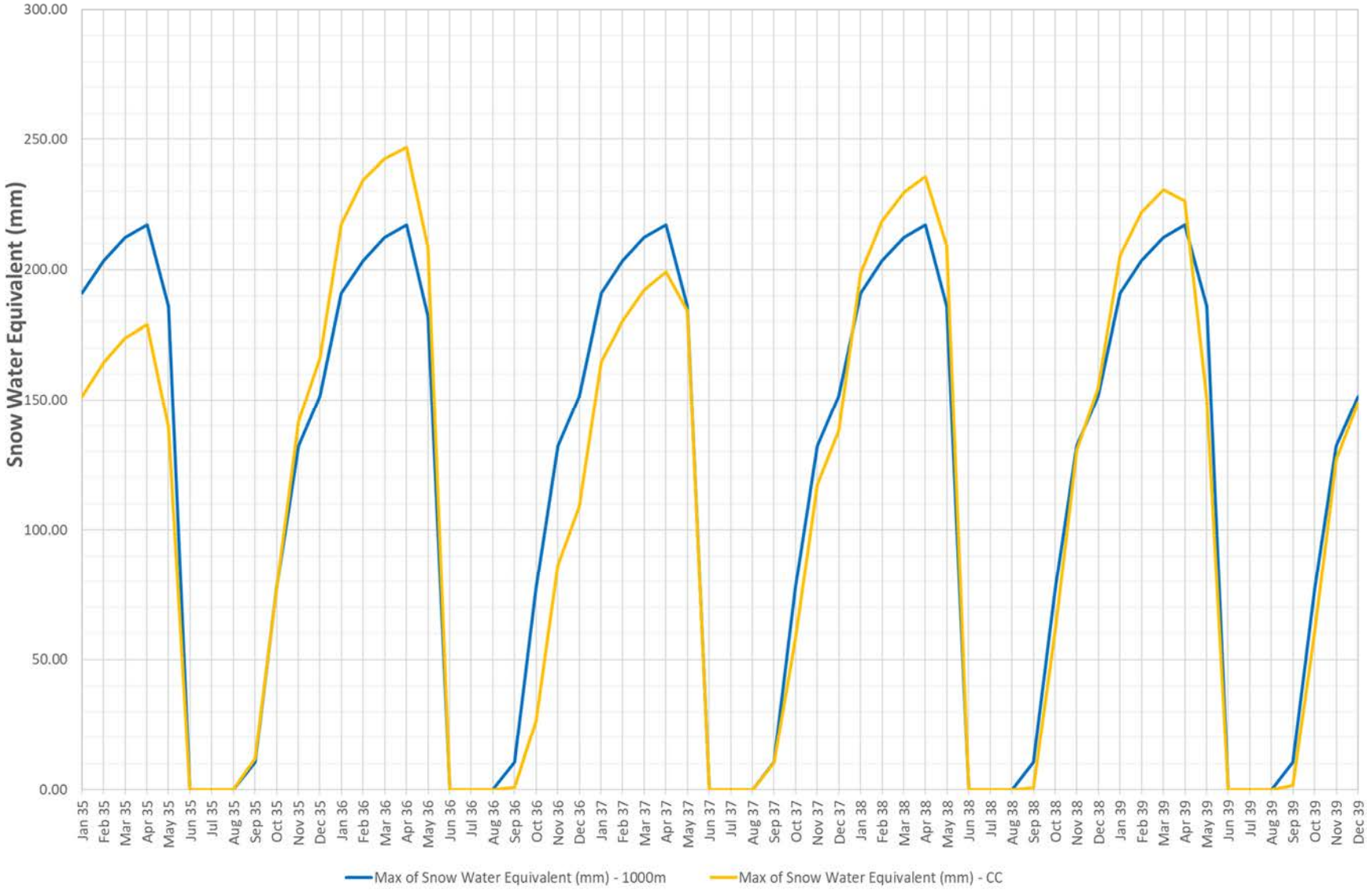

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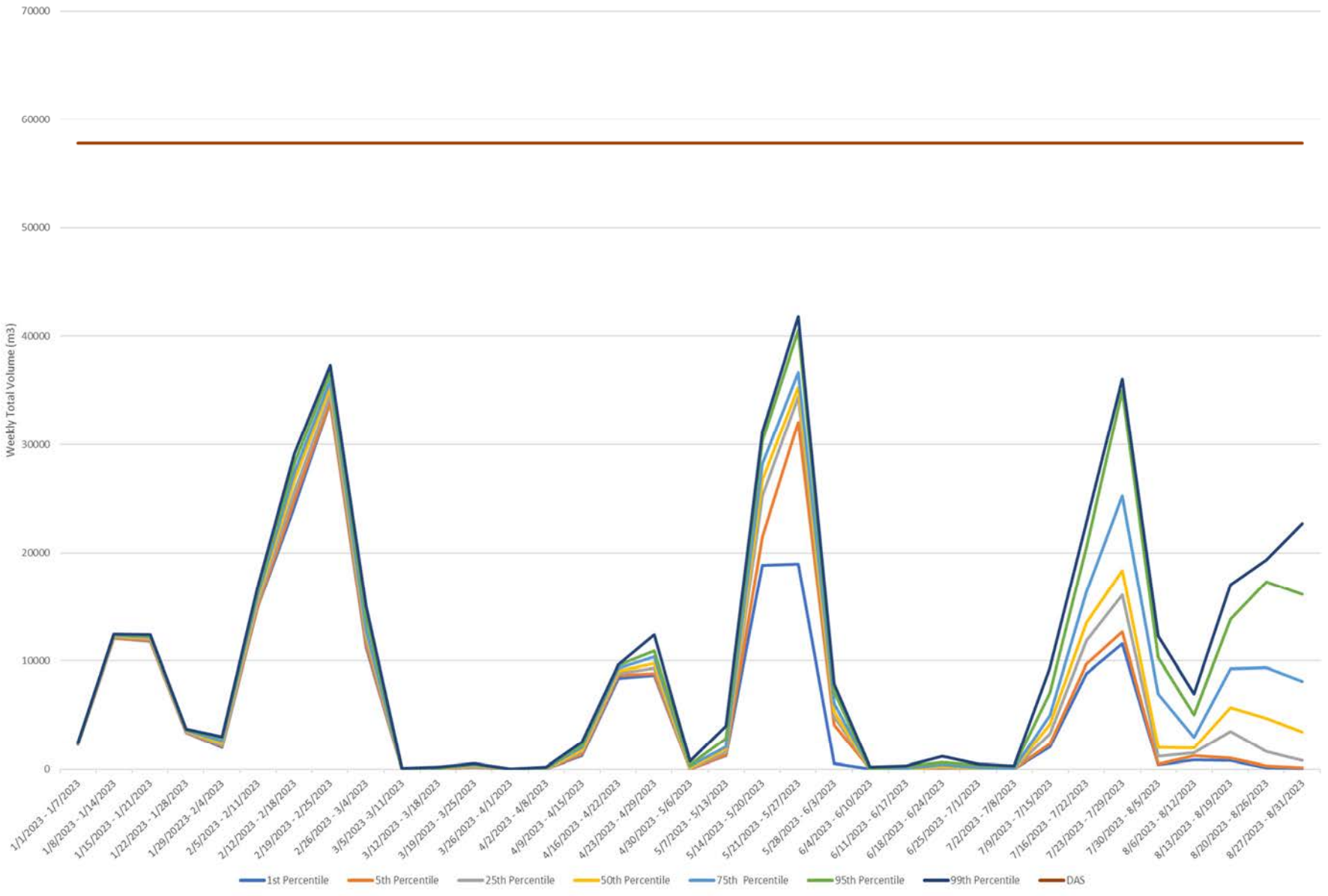

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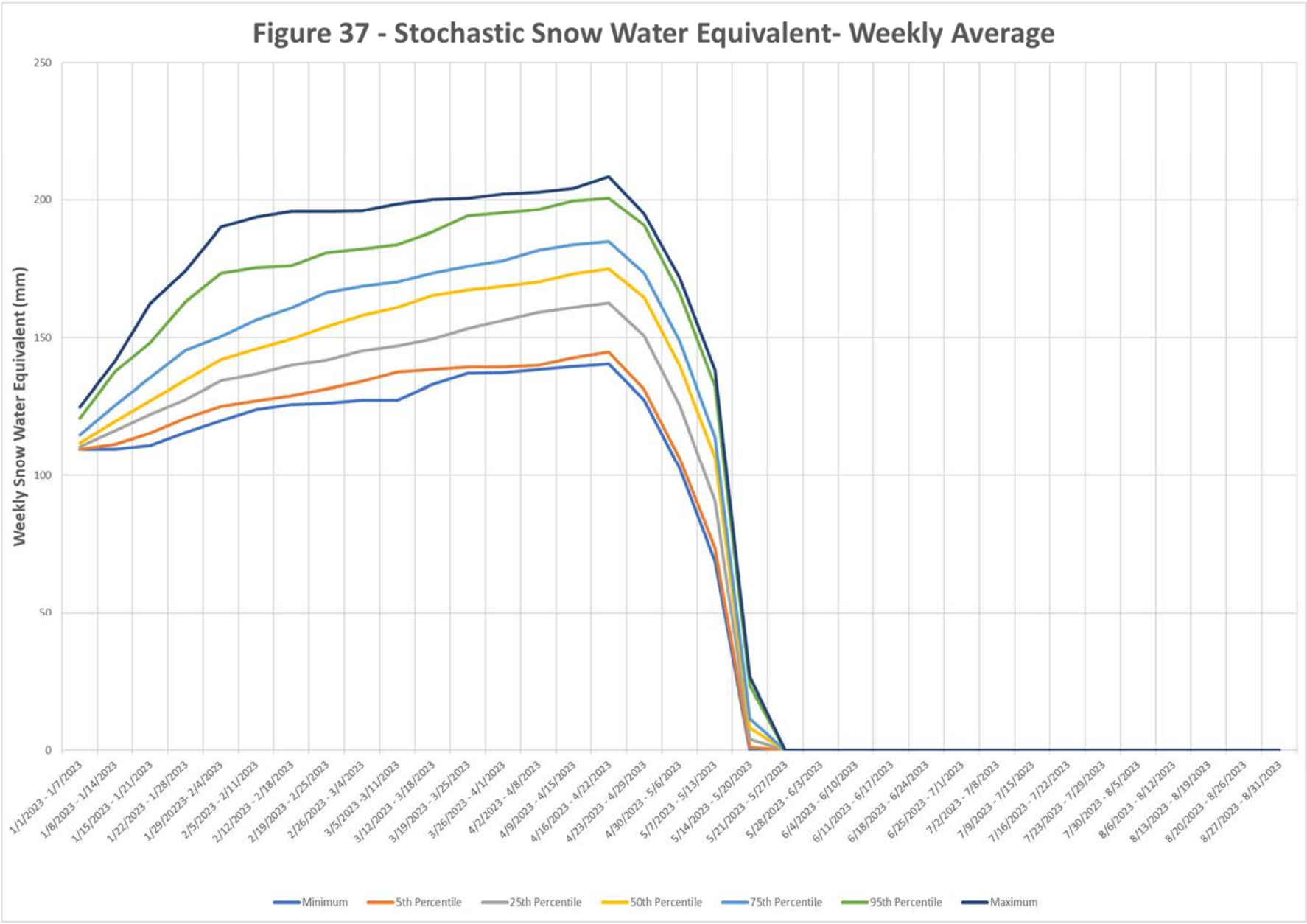

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Eagle Gold Project Phase 1 Environmental Effects Monitoring Interpretive Report

Prepared for:
Victoria Gold Corp.
Whitehorse, Yukon

Prepared by:
Minnow Environmental Inc.
Georgetown, Ontario

April 2022

Eagle Gold Project Phase 1
Environmental Effects Monitoring
Interpretive Report

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EXECUTIVE SUMMARY

Victoria Gold (Yukon) Corporation operates the Eagle Gold Project (the Project) in the Mayo Mining District of central Yukon, north-northeast of the Village of Mayo. The Project includes an open pit gold mine, material storage and stockpile management areas, and process facilities that include crushing, heap leaching, carbon adsorption, desorption, and recovery (ADR) for gold extraction that began in September 2019. The Project became subject to the Metal and Diamond Mining Effluent Regulations (MDMER) under the federal *Fisheries Act* on April 20th, 2019, as the result of the discharge of effluent to Haggart Creek. The MDMER outline requirements for routine effluent and water quality monitoring and for biological monitoring, collectively referred to as Environmental Effects Monitoring (EEM) studies. The objective of EEM is to determine whether mine effluent is causing an effect on the fish population, the use of fisheries resources (e.g., mercury accumulation in fish tissues), and/or fish habitat (benthic invertebrate communities).

A Study Design for the initial phase of biological EEM at the Project was submitted on April 20th, 2020, to Environment and Climate Change Canada (ECCC) which, following addressing action items as part of a Study Design addendum, was subsequently approved for implementation. The field component of the first phase of EEM biological study (referred to as the Phase 1 EEM) was executed at the Project in May (fish survey) and September (benthic and fish surveys) 2021 using the approach outlined in the approved study design and addendum documents. The field study focused on the evaluation of biological effects at an effluent-exposed area of Haggart Creek using an upgradient reference area (benthic survey) or Lynx Creek (fish survey) as reference areas for the basis for comparisons to determine potential effects associated with effluent discharge from the Project. Some temporal comparisons between effluent-exposed and reference areas were also performed to aid in data evaluation. In accordance with MDMER requirements, this Interpretive Report provides a summary of effluent and water quality monitoring data and the results of the Eagle Gold Project 1 EEM biological study.

Effluent quality from two final discharge points (LDSP and FDP5) consistently met all MDMER monthly mean and grab-sample concentration limits except for TSS concentrations in LDSP effluent discharged in April 2019 and FDP5 effluent discharged in April 2020. Final effluent from LDSP and FDP5 was without exception non-acutely lethal to rainbow trout and *Daphnia magna* over the duration of the Phase 1 EEM (i.e., 2019 to 2021). Effluent was discharged in only six months over the duration of the Phase 1 EEM between the two final discharge points (FDPs). Extrapolation of sublethal toxicity test results to the Haggart Creek receiver suggested no effects on fish, planktonic invertebrates, and representative aquatic plants and algae species were likely to result from the effluent discharges from 2019 to 2021.

Receiving environment water quality monitoring data showed routinely elevated concentrations of total arsenic, aluminum, copper, and iron in water at the effluent-exposed area compared to Canadian Water Quality Guidelines (CWQG), but concentrations of these metals were also elevated above CWQG at the reference area indicating naturally high concentrations of some elements in the system. Higher concentrations of metals in water appeared to be associated with high Total Suspended Solids (TSS) concentrations, indicating a potential causal link between elevated metal concentrations and surface runoff containing high TSS concentrations. Concentrations of TSS at the effluent-exposed area of Haggart Creek in the 2019 to 2021 Phase 1 EEM period compared to prior to mine operation suggested that the Project may have contributed to higher TSS concentrations in Haggart Creek. However, this temporal change may have also reflected an increased frequency of monitoring, including during high flow periods in spring and fall, since operations commenced compared to during baseline monitoring in which samples taken under high flow conditions were under-represented.

The benthic invertebrate community at the effluent-exposed area of Haggart Creek showed significantly lower benthic invertebrate density, significantly higher Simpson's Evenness, and significantly differing Bray-Curtis Index compared to the reference area in 2021. However, the occurrence of higher Simpson's Evenness at the effluent-exposed area and no significant difference in relative abundance of metal-sensitive groups between the effluent-exposed and reference areas of Haggart Creek indicated that the between-area differences in benthic invertebrate community traits were unrelated to metal concentrations originating from mine effluent. The benthic invertebrate community at the effluent-exposed area of Haggart Creek in 2021 was comparable to the community documented prior to commencement of mine operation, further indicating no adverse effluent-related influences on the benthic invertebrate community of Haggart Creek since the commencement of effluent discharge.

The fish community at the effluent-exposed area of Haggart Creek was comparable to the Lynx Creek reference area in 2021 in terms of species diversity and overall species relative abundance. No responses related to survival, growth, and relative liver size were indicated for slimy sculpin of either sex, and to reproduction in male and condition in female slimy sculpin, between Haggart Creek and the reference area in May 2021. Although male slimy sculpin showed significantly lower condition at Haggart Creek than at Lynx Creek, the magnitude of this difference was within the applicable critical effect size indicating that this difference was not ecologically meaningful. Similarly, despite significantly lower relative gonad size in female slimy sculpin at Haggart Creek than Lynx Creek, this difference reflected production of similar numbers of smaller-sized eggs in females residing within Haggart Creek. No effluent-related influences on reproduction or survival in early life stages, and no effects on fish energy storage (i.e., condition), were indicated for non-yearling arctic grayling at the Haggart Creek effluent-exposed area in September 2021.

Based on the prescribed frequency under the MDMER, and assuming a similar approach applied in this Phase 1 EEM will be implemented for the Phase 2 EEM study, the Study Design for the next phase of EEM biological sampling must be submitted to ECCC no later than six months prior to implementing field collections in May 2024. Under the EEM framework, the second phase of biological monitoring will require effects assessment to determine whether the occurrence of significantly differing benthic invertebrate density, Simpson's Evenness, and/or Bray-Curtis Index, and differences in fish health metrics (e.g., lower condition and relative gonad size in male and female slimy sculpin, respectively) between the effluent-exposed and reference areas are consistent over study phases. The corresponding Phase 2 EEM Interpretive Report must be submitted to ECCC on or before April 20th, 2025.

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ACRONYMS AND ABBREVIATIONS

ADR - Adsorption, Desorption, and Recovery
ANCOVA - Analysis of Covariance
ANOVA - Analysis of Variance
BCWQG - British Columbia Water Quality Guidelines
CPUE - Catch-per-Unit-Effort
CES - Critical Effect Size
CETIS - by Comprehensive Environmental Toxicity Information System
CWQG - Canadian Water Quality Guidelines
dbRDA - Distance Based Redundancy Analysis
DO - Dissolved Oxygen
DOC - Dissolved Organic Carbon
DQR - Data Quality Review
E – Simpson's Evenness Index
ECCC - Environment and Climate Change Canada
EEM - Environmental Effects Monitoring
EPT - Ephemeroptera, Plecoptera, and Trichoptera
FDP - Final Discharge Point
FFG - Functional Feeding Group
FL - Family Level
GPS - Global Positioning System
HLF - Heap Leach Facility
HPG - Habit Preference Group
LDSP - Lower Dublin South Pond
LPL - Lowest Practical Level
MDD - Minimum Detectable Difference
MDMER - Metal and Diamond Mining Effluent Regulations
MDL - Method Detection Limit
MOD - Magnitude of Difference
NAD 83 - North America Datum of 1983
QA/QC - Quality Assurance / Quality Control
SD - Standard Deviation
HLF- Heap Leach Facility
TDS - Total Dissolved Solids
TSS - Total Suspended Solids

VGC - Victoria Gold (Yukon) Corp.

WUL - Water Use Licence

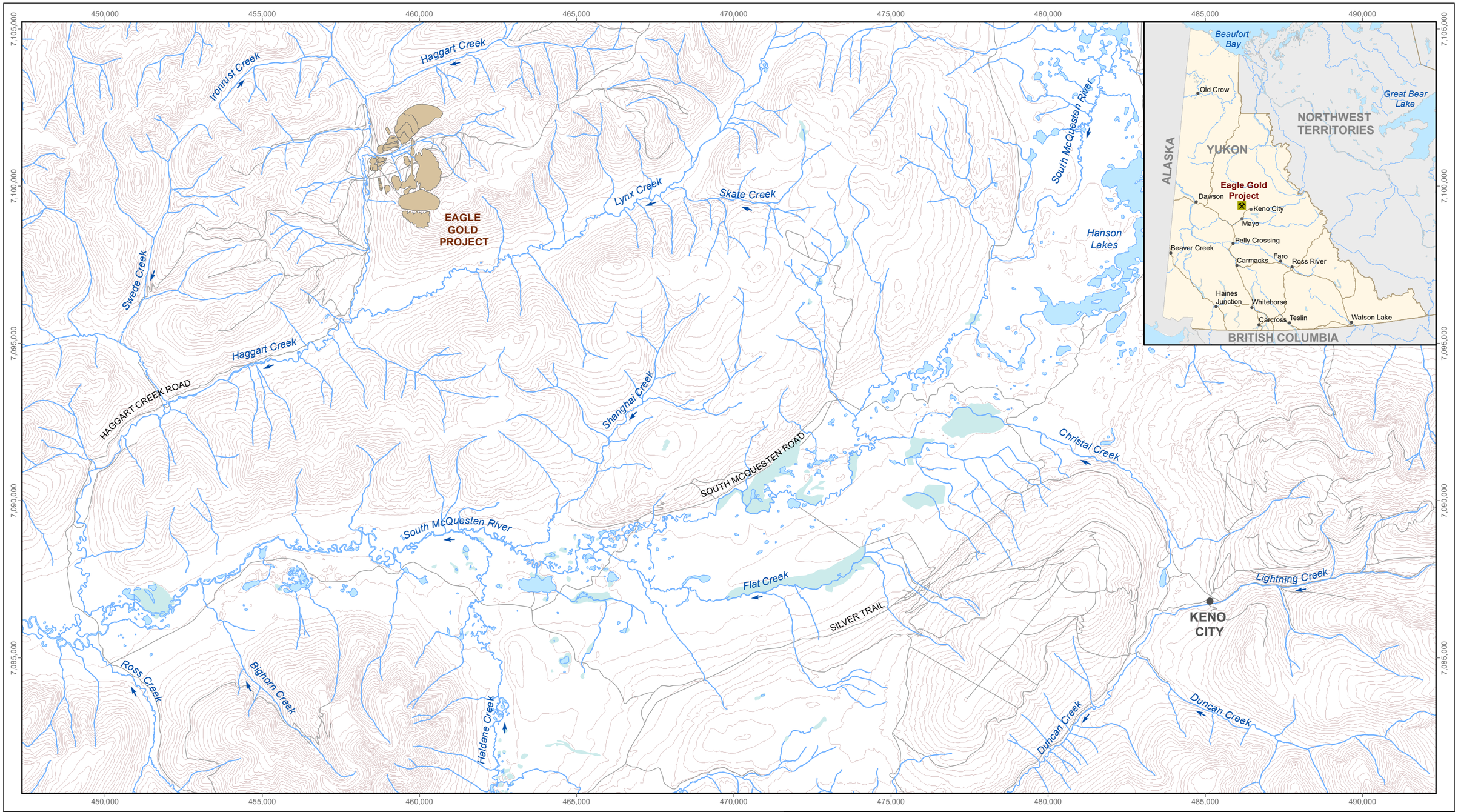
YOY - Young-of-the-Year

1 INTRODUCTION

Victoria Gold (Yukon) Corp. (VGC), a directly held, wholly owned subsidiary of Victoria Gold Corporation, operates the Eagle Gold Project in the Mayo Mining District of central Yukon, approximately 45 kilometres (85 kilometres by existing road access) north-northeast of the Village of Mayo (Figure 1.1). The Project includes an open pit gold mine, material storage and stockpile management areas, and process facilities that include crushing, heap leaching, carbon adsorption, desorption, and recovery (ADR) for gold extraction. Mine construction was completed in July 2019, and gold production began in September 2019 for a maximum ore production rate of 29,500 tonnes per day applicable to the Project. Ore processing at the Project includes a three-stage crushing and cyanide heap leaching process from which gold doré is produced using carbon ADR, electrowinning, and smelting processes.

Water management at the Project is operated in two discrete areas that are bisected by Dublin Gulch. The northern management area includes leak detection, monitoring, and recovery systems to ensure the containment of solution within the heap leach pad, a lined external Events Pond to contain potential excess solution from an In-Heap Pond (all of which operates as a closed system with no planned transfer to the Events Pond or release to the environment), and surface water management ditches and berms for roads, laydowns, and the ADR plant. An underdrain system installed underneath the heap leach pad is used to transfer contact solution back to the Heap Leach Facility (HLF) for production use. For the other major Project infrastructure (i.e., the open pit, waste rock dumps, crushing area) in the southern management area, various surface water interceptor/diversion ditches and sumps are utilized to direct contact and non-contact waters to appropriate locations. Contact water from these sources is directed to a lined collection pond, referred to as the Lower Dublin South Pond (LDSP), for temporary storage and recirculation within the HLF and gold extraction process as conditions allow. Following verification of compliance with effluent quality limits, effluent may be discharged from an LDSP final discharge point (FDP) to Haggart Creek via a constructed channel (Ditch C). From the point of effluent reception, Haggart Creek flows approximately 23 kilometres (km) southwest into South McQuesten River, which is located within the Stewart River sub-basin of the Yukon River watershed.

On April 20th, 2019, the Project became subject to the Metal and Diamond Mining Effluent Regulations (MDMER) under the federal *Fisheries Act* following discharge of effluent in excess of 50 cubic metres (m^3) in a single day from the LDSP FDP. The MDMER outline requirements for routine effluent and water quality monitoring and for biological monitoring, collectively referred to as Environmental Effects Monitoring (EEM) studies administered by Environment and Climate Change Canada (ECCC), as a condition governing the authority to



LEGEND

- Eagle Gold Project
- Wetland

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Kilometers

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W E
S

Projection: North American Datum 1983 UTM Zone 8V, 8W

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Location of the Eagle Gold Project

Date: April 2022
Project 217202.0046

minnow environmental inc.

Figure 1.1

Document Path: C:\Users\MLaPalme\Trinity Consultants, Inc\Victoria Gold - 217202.0046 - Phase 1 EEM Implementation\b - GIS\1-Report\21-46 Figure 1.1 Location.mxd

discharge effluent. The objective of EEM is to determine whether mine effluent is causing an effect on the fish population, human use of fisheries resources (e.g., mercury accumulation in fish tissues) and/or benthic invertebrate communities. A study design for the biological component of the first EEM phase (herein referred to as the Phase 1 EEM) was submitted to ECCC in April 2020 within one year of the Eagle Gold Project becoming subject to the regulations (Minnow 2020). Upon review of this Study Design, five action items were identified by ECCC in a letter dated November 10th, 2020 (ECCC 2020). The action items included providing greater detail on water treatment processes and associated final discharge points, details regarding effluent mixing, and providing further clarification regarding the fish population survey, benthic invertebrate community survey sampling locations, and whether sediment sampling was required (Appendix A). An addendum to the Study Design that included a detailed response to address each of these action items was submitted to ECCC on December 1st, 2020 (VGC 2020; Appendix A). Subsequent approval of the Study Design (and associated addendum) was received verbally from ECCC during a teleconference meeting held on December 21st, 2020. Based upon the approved study design and study design addendum, the Phase 1 EEM biological study for the Eagle Gold Project included:

1. a standard control-impact benthic invertebrate community survey;
2. a standard control-impact fish population (health) survey targeting slimy sculpin using a traditional (lethal) sampling approach and arctic grayling using a non-lethal sampling approach; and,
3. supporting water quality sampling.

Mercury and selenium concentrations in Eagle Gold Project effluent were consistently below thresholds that trigger implementation of a fish tissue mercury and fish tissue selenium survey, respectively, since becoming subject to the MDMER. Therefore, inclusion of a fish tissue survey was not a regulatory requirement as part of the Eagle Gold Project Phase 1 EEM biological study (Minnow 2020). In accordance with the MDMER requirements, this Interpretive Report provides a summary of effluent and water quality monitoring data and the methods, results, and conclusions of the Eagle Gold Project Phase 1 EEM biological study.

2 METHODS

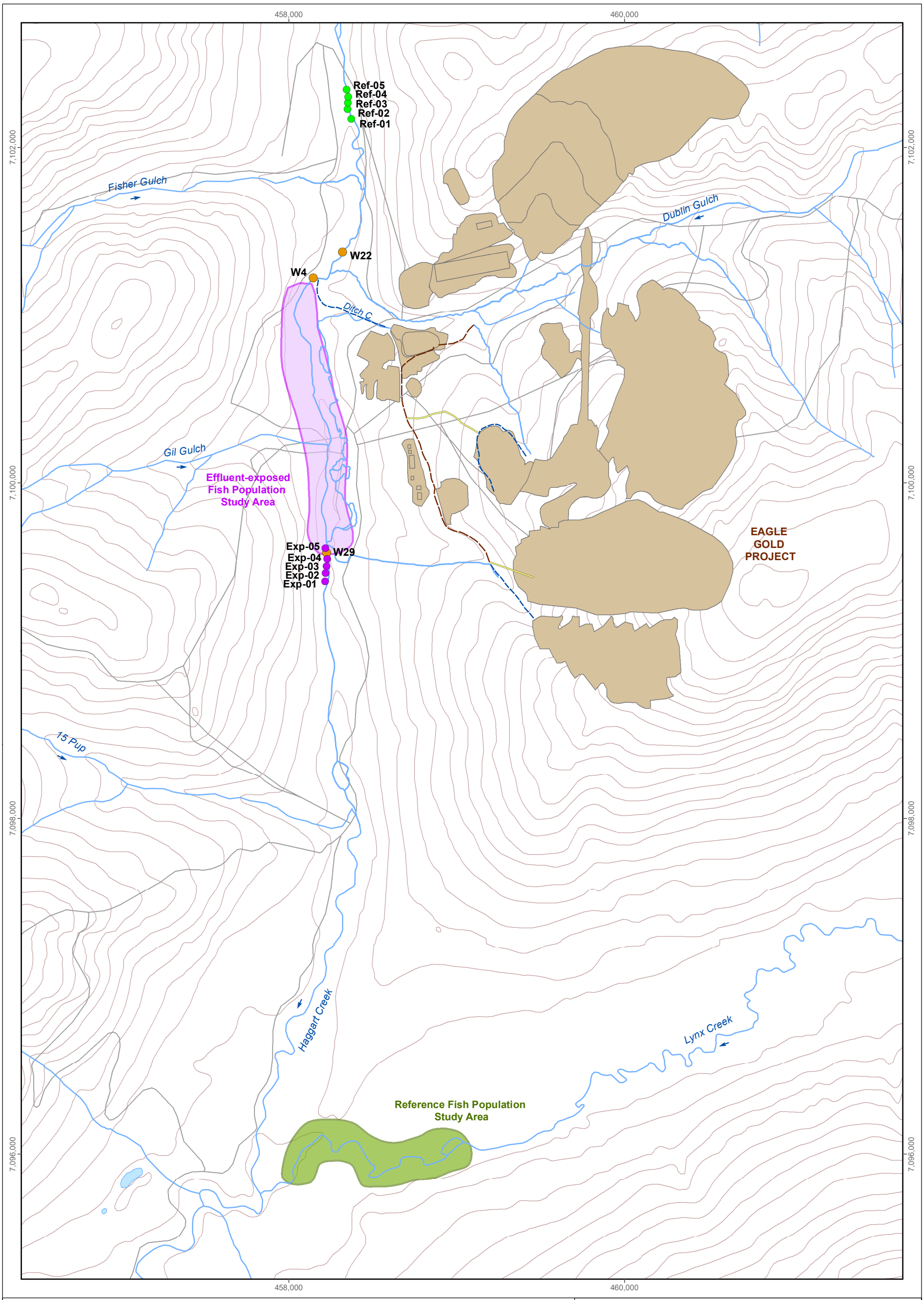
2.1 Overview

The EEM program consists of effluent and receiving environment water quality monitoring studies and biological monitoring studies (Government of Canada 2022). Effluent studies, including routine monitoring of Eagle Gold Project effluent for deleterious substances, effluent characterization, and effluent sublethal toxicity testing, as well as receiving environment water quality monitoring in Haggart Creek, were conducted for the 2019 to 2021 Phase 1 EEM period by VGC personnel in accordance with MDMER requirements (Government of Canada 2022). The Phase 1 EEM biological studies included a standard benthic invertebrate community survey and fish population surveys targeting slimy sculpin and arctic grayling. The biological study components were supported by field measurements and collection of receiving environment water quality data at the same time and study areas used for biological sampling, and general observations to assist with data interpretation. The study areas used for the benthic invertebrate community survey included an effluent-exposed area located downstream of potential effluent discharge (Ditch C) on Haggart Creek, and a reference area located on Haggart Creek well upstream of mine operations (Figure 2.1). The study areas used for the fish population surveys included the same effluent-exposed area of Haggart Creek indicated above, but rather than using upper Haggart Creek, reference area fish sampling was conducted within lower Lynx Creek (Figure 2.1).[1]

Fieldwork was conducted over two separate sampling events, including a spring sampling event (lethal fish survey) and fall sampling event (benthic invertebrate community survey and non-lethal fish survey) implemented from May 20th to 24th and September 1st to 5th, respectively, in 2021. The fieldwork was completed by Minnow Environmental Inc. (Minnow) with support from Ensero Solutions.[2] Each EEM biological study component incorporated a data quality program to provide checks for sample collection and analysis, and to allow for data quality to be assessed in the context of the study objectives.

[1] Upper Haggart Creek, upstream of Ditch C, was not selected as a reference area for the fish population survey due to insufficient area between the effluent-exposed and reference study areas (i.e., unknown site fidelity and associated exposure time to reflect ambient local conditions on fish health) and relatively low numbers of the sentinel species at upper Haggart Creek in past studies. The use of Lynx Creek as a reference area for the fish population survey avoided these issues and is consistent with the sampling areas used for the territorial Water Use Licence monitoring of fish/fish habitat. Metal concentrations in water and sediment at Lynx Creek were generally below applicable guidelines (except naturally high arsenic concentrations) and were indicative of no substantial anthropogenic influences (Minnow 2020).

[2] For simplicity, personnel referred to with the use of the term Minnow throughout the remainder of this document includes personnel from Minnow and/or Ensero Solutions.



LEGEND

- Water Monitoring Station
- **Benthic Station**
  - Exposed
  - Reference
- **Fish Population Study Area**
  - Effluent-exposed
  - Reference
- Collection Ditch
- Collection Ditch and Pipeline
- Pipeline
- Mine Infrastructure

Benthic and Fish Population Study Areas for the Phase 1 EEM Biological Study

0 0.35 0.7 1.4
km

N
W E
S

Projection: North American Datum 1983 UTM Zone 8V, 8W
Reproduced under licence from Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada.

Date: March 2022
Project 217202.0046

minnow environmental inc.

Figure 2.1

Document Path: C:\Users\MLaPalme\Trinity Consultants, Inc\Victoria Gold - 217202.0046 - Phase 1 EEM Implementation\b - GIS\1-Report\21-46 Figure 2.1 Proposed Benthic and Fish Population Study Areas.mxd

2.2 Effluent and Water Quality Monitoring

2.2.1 Overview

Effluent monitoring (effluent volume, quality, and acute/sublethal toxicity) and receiving environment water quality monitoring was conducted for the Eagle Gold Project effluent discharges in accordance with MDMER requirements (Government of Canada 2022). As part of these requirements, VGC provides an annual effluent and water quality monitoring report to ECCC by March 31st of the following year that includes sampling locations, dates, methods, and results together with information on quality assurance and quality control (QA/QC) for this sampling (Government of Canada 2022). Only a summary of routine effluent and water quality monitoring data need be included in the biological monitoring report, and therefore the following paragraphs provide a brief overview of the effluent and water quality monitoring and analysis methods. Receiving environment water quality sampling was also completed at the time of the benthic invertebrate community and fish population surveys, and thus detailed methods pertaining to the collection and analyses of these samples is provided in the applicable sub-sections below.

2.2.2 Effluent Volume and Quality

Effluent quality monitoring included routine MDMER monitoring (volume, deleterious substances, and acute toxicity), effluent characterization, and effluent sublethal toxicity testing. The volume of treated effluent discharged to Haggart Creek is monitored continuously in units of cubic metres (m^3) discharged daily from an FDP location during periods of effluent discharge. Deleterious substances (ammonia, arsenic, copper, lead, nickel, zinc, total suspended solids, total cyanide, radium-226), temperature (field), and pH were monitored weekly during periods of effluent discharge. Effluent characterization, including analysis of conductivity (field), hardness, alkalinity, ammonia, chloride, nitrate, sulphate, and total metals/metalloids[3], was conducted once per calendar quarter during periods of effluent discharge in accordance with MDMER requirements. For each deleterious substance and effluent characterization parameter, monthly means were calculated and compared to applicable MDMER monthly limits, and annual means were calculated to facilitate analysis of changes in effluent quality over time. Mercury and selenium concentrations in mine effluent were compared to the EEM fish tissue survey triggers based on individual values, annual means, and laboratory method detection limits (MDL) as specified under the MDMER (Schedule 5, Part 2, Sections 9(1)[c] and 9(1)[d]) to verify that a fish tissue survey was not required for the Phase 1 EEM biological study.

[3] The list of total metals/metalloids analyzed for effluent characterization included aluminum, cadmium, chromium, cobalt, iron, manganese, mercury, molybdenum, phosphorus, selenium, thallium, and uranium.

Acute lethality testing was conducted monthly, and sublethal toxicity testing (required once per year unless more than 30 days of consecutive discharge occurs) was conducted once or twice per calendar year, using effluent collected at final discharge points LDSP and FDP5 during periods of effluent discharge over the Phase 1 EEM period (i.e., 2019 to 2021). Final effluent samples for acute and sublethal toxicity testing were collected into plastic containers provided by the toxicity laboratory, which were then labelled and, for samples subject to sublethal toxicity testing, packaged with ice packs. The effluent samples were subsequently shipped to an accredited toxicity laboratory where they typically arrived within 48 hours of collection. Acute toxicity tests were conducted using rainbow trout (*Oncorhynchus mykiss*) in accordance with MDMER requirements and procedures (Environment Canada 2000a; Government of Canada 2022) and using the planktonic invertebrate *Daphnia magna* based on Environment Canada (2000b) protocols.

Sublethal toxicity testing was conducted using fathead minnow (*Pimephales promelas*; 7-day survival and growth test), a cladoceran invertebrate (*Ceriodaphnia dubia*; 7-day survival and reproduction test), duckweed (*Lemna minor*; 7-day growth inhibition test), and a green algae (*Pseudokirchneriella subcapitata*; 3-day growth inhibition test) using standard test methods (i.e., Environment Canada 2007a,b,c; 2011) from 2020 to 2021. For fathead minnow and *C. dubia* chronic toxicity tests, an LC_{50} (i.e., lethal concentration to 50% of test organisms) was calculated from the mortality data. Chronic toxicity test IC_{25} (representing the concentration at which a 25% inhibition was observed relative to laboratory controls) was calculated from the corresponding growth or reproduction data. The IC_{25} data were derived by the toxicity laboratory using non-linear regression models or linear interpolation models, as appropriate, aided by Comprehensive Environmental Toxicity Information System (CETIS) software (Tidepool Scientific Software, McKinleyville, CA). Effluent acute lethality and sublethal toxicity test results were reported to ECCC as part of VGC quarterly/annual reporting requirements for the Eagle Gold Project and have been summarized for discussion in this Phase 1 EEM report.

2.2.3 Receiving Environment Water Quality

Receiving environment water quality monitoring samples were collected by VGC personnel during periods of effluent discharge adhering to applicable MDMER frequency requirements at two designated MDMER-EEM monitoring stations located on Haggart Creek. The EEM receiving environment water sampling is conducted at an effluent-exposed station located downstream of the Ditch C confluence (Station W4) and at a reference station located upstream of the Ditch C confluence (Station W22) on Haggart Creek (Figure 2.1). In accordance with the MDMER, the routine receiving environment water samples were collected during periods of effluent discharge not less than 30 days between sampling events. Receiving environment water

quality sampling was also conducted by Minnow personnel at the Haggart Creek effluent-exposed area and reference area during the fall benthic invertebrate community/arctic grayling fish population surveys and at the Haggart Creek effluent-exposed area and Lynx Creek reference area during the spring slimy sculpin fish population survey. A field duplicate sample was collected at the time of each fish population survey and benthic invertebrate community survey to evaluate data quality (Appendix B).

Receiving environment water quality sampling included *in situ* measurements and chemical analyses. During biological monitoring, *in situ* water temperature, dissolved oxygen (DO), pH, and specific conductance (i.e., temperature standardized measurement of conductivity) were taken near the bottom of the water column at all fish population study areas and benthic invertebrate community (benthic) stations. These measurements were made using a calibrated YSI 556 MDS meter equipped with a YSI 6820 Sonde (YSI Inc., Yellow Springs, OH). Additional supporting information, including observations of water colour and clarity, were also recorded at each benthic station during EEM biological sampling. The data analysis for *in situ* water quality measurements collected at benthic stations included statistical comparisons between the Haggart Creek effluent-exposed and reference study areas. Raw data and log-transformed data were assessed for normality and homogeneity of variance prior to conducting the statistical comparisons between study areas. For data sets that were normally distributed and showed equal variance (assessed using Levene's test), Student's t-tests were conducted using appropriate data sets (i.e., normal distribution based on untransformed [default] or log-transformed data). In instances in which normal distributed data exhibited unequal variance for the untransformed or log-transformed data, Student's t-tests assuming unequal variance were used for the pair-wise comparisons. In instances where normality could not be achieved through data transformation, Mann-Whitney U-tests were conducted on rank-transformed data to test for differences between study areas. Significant differences were assessed at a p-value of ≤ 0.1. The *in situ* water quality statistical tests were conducted using R programming (R Foundation for Statistical Computing, Vienna, Austria). In addition to these statistical comparisons, dissolved oxygen and pH data were compared to applicable Canadian Water Quality Guidelines for the protection of aquatic life (CWQG; CCME 2022).

Receiving environment water chemistry samples were collected directly into pre-labeled sample bottles pre-dosed with required chemical preservatives, or into empty, pre-labeled sample bottles for those not requiring preservation at each study area during the spring and fall sampling events. The water quality samples were placed in coolers and maintained at cool temperatures during shipment to the analytical laboratory. Receiving environment surface water samples collected at the time of the Phase 1 EEM biological study were shipped on ice to ALS Environmental (Burnaby, BC) for analyses including electrical conductivity, hardness, alkalinity, total cyanide,

total suspended solids (TSS), nutrients [ammonia, nitrate, phosphorus], chloride, sulphate, and total metals (including aluminum, arsenic, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, thallium, uranium, and zinc) as required for EEM, and other parameters to meet territorial requirements (total dissolved solids [TDS], dissolved organic carbon [DOC], and dissolved metals) using standard analytical methods and applying QA/QC checks to ensure the quality of the data. The QA/QC for water sampling included the collection and analysis of field duplicates collected during each of the spring and fall field studies, as well as assessment of laboratory duplicates.

Upon receipt of the water chemistry analytical data associated with the biological field study, a Data Quality Review (DQR) was implemented examining data completeness and field precision (Appendix B). The water chemistry data were compared between effluent-exposed and reference stations, to applicable water quality guidelines, and to data collected historically. For routine data collected by VGC personnel, mean and standard deviation values were calculated for each parameter by station for each month and annually for the period from 2019 through 2021. To simplify the discussion of results, the factor of elevation in parameter concentrations was calculated as the concentration at the effluent-exposed area divided by the concentration at the reference area based on annual means and, for water quality data collected during the biological study, individual samples. Water quality guidelines used for the EEM study primarily included the federal CWQG (CCME 2022), but British Columbia Water Quality Guidelines (BCWQG; BCMOECCS 2019) were applied to those parameters with no CWQG or where more current and scientifically supported guidelines were available. For those objectives or guidelines that are hardness dependent, hardness was used to calculate the water quality criterion for the specific parameter based on individual samples, monthly means, or annual means as appropriate. Water chemistry temporal comparisons were conducted using annual means for key parameters (i.e., parameters with concentrations that were elevated at the effluent-exposed area compared to the reference area, parameters identified as site-specific analytes of concern, and/or parameters with concentrations above CWQG) using visual evaluation of plots to identify potential changes in water quality over time.

2.3 Benthic Invertebrate Community Survey

2.3.1 General Design

The Eagle Gold Project Phase 1 EEM benthic invertebrate community (benthic) survey employed a control-impact design implemented at two areas of Haggart Creek including an effluent-exposed area and an upstream reference area (Figure 2.1). Five benthic stations were sampled at each study area to provide adequate statistical power to detect differences in benthic metric endpoints of ± two reference area standard deviations (SD_{REF}) at an α and β of 0.10, which

is consistent with recommendations for EEM (Environment Canada 2012). The benthic survey focused on the collection of samples from erosional habitat characterized by riffle stream morphology and cobble substrate. Sampling stations at the effluent-exposed and reference areas were separated from one another by a minimum distance of at least three bankfull widths. Habitat features including water depth, water velocity, and physical properties of the substrate were standardized among stations and between areas, to the degree feasible, to minimize natural habitat influences as a confounding factor contributing to benthic invertebrate community differences between study areas.

2.3.2 Sample Collection and Laboratory Processing

Benthic samples were collected using a Hess sampler (0.1 m^2 sampling area) equipped with 500 µm mesh. Shallow (i.e., less than 0.4 m) riffle-run habitat characterized by cobble substrate was targeted for benthic sampling. At each station, one sample representing a composite of three sub-samples (i.e., 0.3 m^2 total area) was collected to ensure a representative sample. Each sub-sample was collected by carefully placing the sampler on undisturbed substrate and subsequently scrubbing all coarse material within the sampler area (to a depth of approximately 10 cm) while allowing the current to carry all dislodged organisms into the sampler net. After all substrate within the sampler was completely scrubbed, the sampler was moved to the next sub-sample location and this procedure was repeated. Following collection of the third sub-sample using the above procedure, all material and organisms retained in the collection net were carefully transferred into pre-labeled wide-mouth plastic jars. As a precautionary measure, internal sample labels were also used to ensure correct sample identification at the lab. Supporting information collected at each station included measurement of sampling depth (cm), water velocity (m/s), and *in situ* water quality at the sediment-water interface (see Section 2.2.3). General habitat notes (e.g., stream morphology, aquatic and riparian vegetation, fish habitat functional cover structure, surrounding land use, etc.) and global positioning system (GPS) geographic coordinates (recorded in latitude and longitude decimal degrees and based on the North America Datum of 1983 [NAD 83]) were also recorded at each benthic station to aid in interpretation of the data.

All benthic samples were preserved to a level of 10% buffered formalin in ambient water following collection. At the conclusion of the field study, the benthic samples were submitted to Zeas Inc. (Nobleton, ON) for analysis following standard sorting methods and incorporating recommended Environment Canada (2012) QA/QC procedures for assessing sub-sampling error and sorting recovery checks (Appendix C). Upon arrival at the laboratory, a biological stain was added to each benthic sample to facilitate greater sorting accuracy. The samples were washed free of formalin in a 500 µm sieve and the remaining sample material was then examined under

a stereomicroscope at a magnification of at least ten times by a technician. All benthic invertebrates were removed from the sample debris and placed into vials containing a 70% ethanol solution according to major taxonomic groups (e.g., phyla, orders). A senior taxonomist later enumerated and identified the benthic organisms to the lowest practical level (typically to genus or species) using up-to-date taxonomic keys. Following identification, representative specimens of each taxon were preserved in a 75% ethanol-3% glycerol solution in separately labelled vials to initiate a voucher collection for the benthic survey component of the Eagle Gold Project EEM and serve as a basis for future taxonomic reference.

2.3.3 Data Analysis

Upon receipt of the analytical data, a DQR was completed including an examination of data completeness, laboratory accuracy, and laboratory precision (Appendix C). Following the DQR, analysis of benthic invertebrate community data was completed at both family level (FL) and lowest practical level (LPL) of taxonomic identification. Although FL taxonomy is recommended for EEM (Environment Canada 2012), LPL taxonomy has been used to provide more comprehensive evaluation of benthic data in studies conducted as part of territorial Water Use Licence (WUL) requirements and thus metrics were assessed at LPL taxonomy to potentially aid in the evaluation of effects in this EEM study. Lowest practical level benthic invertebrate community data can contain a mixture of taxonomic levels (e.g., species, family, order, and class), which can affect the calculation of metrics such as taxonomic richness, Simpson's Evenness, and Bray-Curtis. To address 'ambiguous' taxa, a decision key was applied to the benthic data to reassign taxon abundance across levels of discrete taxa while conserving the proportional abundances within the higher taxon levels for those metrics to which multivariate calculations are required.

Benthic invertebrate communities were assessed using invertebrate abundance (or "density"; average number of organisms per m^2), mean taxonomic richness (number of taxa), Simpson's Evenness Index (E), and the Bray-Curtis Index of Dissimilarity as required under the MDMER (Table 2.1; Government of Canada 2022). Simpson's E was calculated using the formula provided by Environment Canada (2012). Bray-Curtis Index was computed using procedures recommended by ECCC for EEM studies (i.e., Borcard and Legendre 2013). Richness, Simpson's E, and Bray-Curtis Index were calculated separately using FL and LPL taxonomy. Additional comparisons were conducted using percent composition of dominant/indicator taxa, functional feeding groups (FFG), and habit preference groups (HPG; calculated based on the density of each taxonomic group relative to the total number of organisms in the sample). Dominant/indicator taxon groups were defined as those groups representing, on average, greater than 5% of total organism abundance for a study area or any

groups considered to be important indicators of environmental stress. The FFG and HPG, the latter also referred to as mode of existence, were assigned based on Pennak (1989), Mandaville (2002), and/or Merritt et al. (2008) designations for each taxon.

Table 2.1: Required and Supporting Endpoints Examined for the Eagle Gold Project Phase 1 EEM Benthic Invertebrate Community Survey

Response	Endpoint	Critical Effect Size
Effects on Benthic Invertebrates [a]	Organism density (number of invertebrates·m^2)	±2 standard deviations of the reference mean
	Taxonomic richness (family level taxonomy)	±2 standard deviations of the reference mean
	Simpson's Evenness (family-level taxonomy)	±2 standard deviations of the reference mean
	Bray-Curtis Index (family-level taxonomy)	-
Supporting Response Variables [b]	Richness (lowest-practical level taxonomy)	-
	Simpson's E (lowest-practical-level taxonomy)	-
	Bray-Curtis Index (lowest-practical-level taxonomy)	
	Dominant taxonomic group relative abundance	-
	Functional feeding group (FFG) relative abundance	-
	Habit preference group (HPG) relative abundance	-

[a] Endpoints to be used for determining "effects" as designated by statistically significant differences between effluent-exposed and reference areas (Environment Canada 2012)

[b] These analyses are for informational purposes and significant differences between exposure and reference areas are not necessarily used to designate an effect (Environment Canada 2012).

All required and supplementary endpoints, except Bray-Curtis Index, were summarized by separately reporting sample size, mean, standard deviation, standard error, minimum, median, and maximum for each study area. For these endpoints, statistical comparisons were conducted between the effluent-exposed and reference areas using a two-sample t-test and alpha (α) set to 0.1 only after testing of the raw data for normality and homogeneity of variance to ensure test assumptions would be met. For non-normal data, $\log_{10}$ or $\log_{10}[x+1]$ transformations were performed (the latter for data sets in instances where proportions were represented by zero values) and re-tested for normality. The transformation that resulted in normal distributed data with the highest p-value from a Shapiro-Wilk test was applied to the data for the two-sample t-tests. Normal data (either untransformed or transformed) that did not meet the assumption of homogeneity of variance (Levene's test; $\alpha = 0.05$) were subject to a two-sample t-test assuming unequal variance. In instances where normality could not be achieved through

data transformation, Mann-Whitney U-tests were conducted on rank-transformed data to assess for differences in applicable endpoints between study areas. All statistical comparisons were conducted using R statistical software.

The Bray-Curtis Index was calculated and assessed statistically between study areas using procedures recommended by ECCC for EEM studies (i.e., Borcard and Legendre 2013) which include the use of Mantel and distance-based Redundancy Analysis (dbRDA) calculated on ln(x+1) transformed densities. Prior to analysis, the homogeneity of group dispersion was evaluated using a betadisper test based on a PERMDISP2 procedure (Anderson 2006). If the variances were considered heterogeneous, only a dbRDA test was performed as it is considered more robust to deviations of multivariate homogeneity. If the variances were considered homogeneous, Mantel and dbRDA tests were both used to determine potential differences in community structure between study areas. All analyses were conducted using custom R scripts and functions provided by ECCC (i.e., Borcard and Legendre 2013).

An effect on the benthic invertebrate community was defined as a statistically significant difference in an endpoint between the effluent-exposed area and the reference area at an alpha level of 0.10 (Environment Canada 2012). The magnitude of effect for all benthic invertebrate community effect indicators that differed significantly between study areas was calculated for the effluent-exposed area based on the formula provided in the MDMER (Government of Canada 2022). For effect indicators of density, richness, and Simpson's E, the derived magnitude of difference (MOD) was compared to critical effect sizes (CES) applicable to the benthic invertebrate community endpoints that are presented in the MDMER (i.e., ±2 SD_{REF}). The CES was used to define ecologically relevant 'effects', which are analogous to differences beyond those expected to occur naturally between two areas that have not been influenced by anthropogenic inputs (i.e., between pristine reference areas; see Munkittrick et al. 2009; Environment Canada 2012).

2.4 Fish Population Survey

2.4.1 General Design

The fish population survey employed both traditional (lethal) and non-lethal sampling designs to evaluate fish health endpoints at the Haggart Creek effluent-exposed area using Lynx Creek as a comparable reference area under a control-impact approach (Figure 2.1). The Phase 1 EEM fish population survey targeted slimy sculpin (*Cottus cognatus*) for lethal sampling and arctic grayling (*Thymallus arcticus*) for non-lethal sampling as these were the most abundant fish species captured at both study areas historically. The fish population survey was scheduled for May 2021 to correspond with the seasonal timing in which sufficient development of reproductive

organs was likely in slimy sculpin thus allowing the evaluation of all required EEM effect indicators, including reproduction, for this species. Twenty sexually mature male and twenty sexually mature female slimy sculpin were separately targeted for collection from each study area. Despite seven days of fishing effort, minimum sample size requirements were not achieved for mature males or female slimy sculpin at either study area (see Section 6.2). However, because sufficient fishing effort had been applied, and following consultation with ECCC, sampling was ceased without achieving the target sample sizes for slimy sculpin.[4]

Arctic grayling captured at Haggart Creek and Lynx Creek in past studies had primarily been represented by young-of-the-year (YOY) individuals (i.e., >95% of sampled individuals) and very few adults. Therefore, low numbers of adult arctic grayling coupled with a low residency time expected for these fish within either study area (Pendray 1983) were factors contributing to the application of a non-lethal approach targeting YOY or juvenile arctic grayling for the Eagle Gold Project Phase 1 EEM. During the May 2021 field study, no arctic grayling were captured at either study area and therefore, following consultation with ECCC, VGC elected to implement a non-lethal fish population survey for this species in fall (September) 2021, at the same time as the benthic survey.[4,5]

2.4.2 Sample Collection and Field Processing

At each of the Haggart Creek effluent-exposed and Lynx Creek reference area, a minimum of twenty (20) sexually mature male and twenty (20) sexually mature female slimy sculpin were targeted for the lethal survey in May 2021, and one hundred (100) non-YOY arctic grayling were targeted for the non-lethal survey in September 2021. Sampling for slimy sculpin and arctic grayling was primarily conducted using an electrofishing team consisting of a backpack electrofisher operator and a single netter. 'Open' station sampling was conducted in an upstream direction at each study area. All fish captured at each open station were placed into buckets containing aerated water. At the conclusion of electrofishing sampling at each station, total shocking effort (i.e., electrofishing seconds) was recorded to allow calculation of time-standardized catch, station upstream and downstream boundaries were georeferenced using a handheld GPS unit, and habitat notes pertinent to the fish population survey were recorded. Slimy sculpin were also sampled using standard cylindrical minnow traps (42 cm [16.5"]

[4] High water levels and highly turbid conditions associated with freshet-like flows contributing to poor mobility of the sampling crew due to low visibility and unsafe footing resulted in poor fishing success at the time of the spring (May) survey.

[5] Historical fish surveys at the Eagle Gold Project conducted in late summer/early fall had shown low numbers of arctic grayling present at this time of the year. The occurrence of few arctic grayling in May at both study areas potentially reflected few fish migrating to the areas sampled following the overwintering period. Water temperature migration triggers also potentially contributed to lack of arctic grayling observed at both Haggart and Lynx creeks in May.

length, 0.6 cm [0.25”] mesh, 2.5 cm [1.0”] diameter openings) deployed singly as bottom sets baited with dry cat food for overnight durations. Upon retrieval of each minnow trap, all captured fish were identified to species and enumerated. All non-target fish, including slimy sculpin deemed not to be adults, were released alive at the capture location. Sentinel fish were retained in pails containing aerated water before processing using lethal sampling procedures (described below). Supporting information recorded for each minnow trap set included sampling effort (set duration based on deployment and retrieval date and time), water depth, GPS latitude-longitude coordinates, and habitat descriptions (e.g., substrate, cover).

All retained slimy sculpin were transported to a dedicated field laboratory for measurements, general observations, and collection of fish tissue samples required for EEM (Environment Canada 2012). Slimy sculpin used for assessment of lethal endpoints were sacrificed following anaesthetization in a dilute eugenol solution and a decisive blow to the head prior to processing. The external condition of each fish was then evaluated, with any abnormalities recorded on laboratory bench sheets. For each fish, total length was measured to the nearest tenth of a millimetre using digital calipers, and fresh body weight was measured to the nearest milligram (0.001 g) using an Ohaus Model 123 Scout-Pro balance (Ohaus Corp., Pine Brook, NJ) with a surrounding draft shield. The fish were then opened and the sex and/or sexual maturity was determined. Whole gonads and livers were removed from all sexually-mature fish, with each organ weighed to the nearest milligram (0.001 g) using the same balance as above. Following weighing, whole ovaries from each sexually-mature female were placed in individually labelled sampling jars and preserved with a 10% buffered formalin solution for subsequent fecundity and egg size determination at a separate external laboratory. During processing, fish were also inspected for any internal abnormalities (e.g., parasites, lesions, tumours etc.) and appropriate descriptions were recorded for each individual. Finally, the slimy sculpin carcasses were placed individually into sealable plastic bags labelled with study area and fish identification, and frozen for later removal of, and age determination using, appropriate calcified structures (otoliths, with pectoral fin rays and scales used for backup) at a separate external laboratory.

For arctic grayling retained for non-lethal sampling, individuals were processed on the shoreline at each study area shortly following collection. For each individual, the external condition was assessed, fork and total length was measured to the nearest millimetre using a standard measuring board, and fresh body weight was measured to the nearest milligram using an analytical balance with ± one percent precision that has been outfitted with a surrounding draft shield or appropriately sized spring scales for fish less than or greater than approximately 200 grams, respectively. A subset of individuals spanning the size range of captured fish at each study area had scales removed for subsequent age determination (i.e., approximately 10% of the

total number of fish sampled from each study area). Scales removed from fish in the field were placed in individually labelled envelopes, allowed to air dry, and upon return from the field, submitted for age determination. Immediately following the non-invasive measurements indicated above, fins of arctic grayling were partially clipped to allow identification in the event of re-capture, and then the fish were placed into a bucket containing aerated water. Upon recovery to an upright, alert position, the arctic grayling were released to the study area at which they were collected.

Upon completion of the field program, slimy sculpin ovary samples were shipped to Zeas Inc. (Nobleton, ON) for determination of fecundity and egg weight. At the laboratory, each ovary sample was drained into a 180-µm sieve and rinsed with clean water to remove the preservative. The sample was then transferred to a plastic weigh-boat and weighed to the nearest milligram to determine the total weight of the preserved gonad sample. The number of eggs from three ovarian sub-samples (separated from the original sample and weighed) was enumerated with the aid of a stereo-microscope. The remainder of each sample was re-preserved in a 10% formalin solution and archived. For a minimum of ten percent of the total number of processed ovarian samples, egg sub-samples were recounted to verify the precision of fecundity estimates for QA/QC purposes (Appendix D). The total number of eggs in each ovarian sub-sample was calculated as follows:

$$preserved\ gonad\ sample\ fecundity = \frac{total\ weight\ of\ preserved\ gonad\ sample}{weight\ of\ subsample}\ x\ number\ of\ eggs\ in\ subsample$$

The fecundity estimates for each sub-sample sample were then averaged. The whole gonad fecundity was then estimated as follows:

$$total\ \ fecundity\ \ = \frac{total\ \ weight\ \ of\ whole\ \ fresh\ \ gonad}{total\ \ weight\ \ of\ fresh\ \ gonad\ \ sample}\ x\ average\ \ \ preserved\ \ \ sample\ \ fecundity$$

Individual egg weights for each female were calculated as follows:

$$individual\ \ \ egg\ \ weight\ \ = \frac{weight\ \ of\ unpreserve\ \ d\ gonad}{total\ \ fecundity}$$

Aging samples were shipped frozen to North Shore Environmental Services (NSES; Thunder Bay, ON) for otolith removal and age structure processing at the completion of the field program. Slimy sculpin pectoral fin rays were available as backup aging structures. Otoliths were prepared for aging using a “crack and burn” method. If fin rays were used, each was cleaned, embedded in epoxy resin and, after the epoxy hardened, sectioned using a Buehler Isomet (Lake Bluff, IL) diamond saw set at low speed. Scales were cleaned and the pressed within an epoxy resin to make an impression. Each otolith, fin ray, or scale impression sample was then mounted on a glass slide using a mounting medium and examined under a stereomicroscope using transmitted light to determine fish age. For each structure, the age and edge condition were recorded along

with a confidence rating for the age determination. Aging QA/QC included independent aging by a second qualified technician conducted 'blind' from the initial age estimate (Appendix D).

2.4.3 Data Analysis

2.4.3.1 Fish Community

Fish community sampling data were tabulated and catch-per-unit-effort (CPUE) was calculated separately for the Haggart Creek effluent-exposed and Lynx Creek reference study areas. Electrofishing CPUE was calculated as the number of fish captured per electrofishing minute. Minnow trapping CPUE was calculated as the number of fish captured per trap per day (24 hours). Analysis of the fish community sampling data included comparisons of total number of fish captured and total CPUE between study areas. In addition, temporal comparison of fish assemblage and relative abundance (i.e., CPUE) were conducted to evaluate potential changes in fish community features from 2021 to those observed historically.

2.4.3.2 Slimy Sculpin Population

Data quality reviews (DQRs) for the slimy sculpin fecundity and age data were conducted to ensure the data were of acceptable quality for analysis (Appendix D). Following the DQR, fish population endpoints representing four response categories (survival, growth, reproduction, and energy storage; Table 2.2) were evaluated separately for male and female slimy sculpin. Summary statistics including sample size, mean, standard deviation, standard error, minimum, median, and maximum and sample size were calculated by study area and fish sex for all age, growth, reproduction, and energy storage health endpoints. The statistical analyses of datasets from the lethal fish survey were consistent with the procedures outlined in applicable technical guidance (Environment Canada 2012). Study area differences in mean age, body weight, and fork length were compared separately by sex using Student's t-tests or, for data that significantly violated the assumptions of normality, using non-parametric Mann-Whitney U-tests. Age frequency distributions were compared using a non-parametric two-sample Kolmogorov-Smirnov test. All other effect endpoints were preferably compared using Analysis of Covariance (ANCOVA; Table 2.2).

Prior to conducting the ANCOVA tests, scatter plots of all variable and covariate combinations were examined to identify outliers, leverage values, or other unusual data. The scatter plots were also examined to ensure there was adequate overlap between data from effluent-exposed and reference areas, and that there was a linear relationship between the response variable and the covariate. In order to verify the existence of a linear relationship, each relationship was tested using linear regression analysis by area and evaluated at an alpha level of 0.05. If it was

Table 2.2: EEM Endpoints Examined for the Eagle Gold Project Phase 1 EEM Lethal and Non-Lethal Fish Population Surveys

Survey Type	Response		Endpoint	Statistical Procedure[c,d,e]	Applicable Critical Effect Size
Lethal (Traditional) Survey	Effects on Fish[a]	Survival	Age	ANOVA	± 25%
			Age-frequency distribution	K-S Test	-
		Growth	Size-at-age (body weight against age)	ANCOVA	± 25%
		Reproduction	Relative gonad size (gonad weight against body weight)	ANCOVA	± 25%
		Energy Storage	Condition (body weight against length)	ANCOVA	± 10%
			Relative liver size (liver weight against body weight)	ANCOVA	± 25%
	Supporting Response Variables[b]	Growth	Length	ANOVA	-
			Body weight (whole)	ANOVA	-
			Size-at-age (weight against age)	ANCOVA	-
		Reproduction	Relative fecundity (no. of eggs/female against body weight)	ANCOVA	-
			Relative egg size (mean egg weight against body weight)	ANCOVA	-
Non-Lethal Survey	Effects on Fish[a]	Survival	Length-frequency distribution	K-S Test	-
		Growth	Body weight (whole)	ANOVA	± 25%
			Length	ANOVA	± 25%
		Reproduction	Relative abundance of YOY (% composition)	K-S Test	-
		Energy Storage	Condition (body weight against length)	ANCOVA	± 10%

[a] Endpoints used for determining "effects" as designated by statistically significant differences between exposure and reference areas (Government of Canada 2022).

[b] These analyses are for informational purposes and significant differences between exposure and reference areas are not necessarily used to designate an effect (Environment Canada 2012).

[c] ANOVA (Analysis of Variance) used except for non-parametric data, where Mann Whitney U-test may have been used.

[d] ANCOVA (Analysis of Covariance). For the ANCOVA analyses, the first term in parentheses is the endpoint (dependent variable Y) that is analyzed for an effluent effect. The second term in parentheses is the covariate, X (age, weight, or length).

[e] K-S Test (Kolmogorov-Smirnov test).

determined that there was no significant linear regression relationship between the response variable and covariate for the effluent-exposed and/or reference areas, then ANCOVA was not performed.

Once it was determined that ANCOVA could be used for statistical analysis of the data, the first step in the ANCOVA analysis was to test whether the slopes of the regression lines for the reference and effluent-exposed areas were equal. This was accomplished by including an interaction term (dependent × covariate) in the ANCOVA model and evaluating if the interaction term was significantly different, in which case the regression slopes would not be equal between areas and the resulting ANCOVA would provide spurious results. In such cases, two methodologies were employed to assess whether a full ANCOVA could proceed. In order of preference these were 1) removal of influential points using Cook's distance and re-assessment of equality of slopes, and 2) Coefficients of Determination that considered slopes equal regardless of an interaction effect (Environment Canada 2012). For the Coefficients of Determination, the full ANCOVA was completed to test for main effects, and if the r2 value of both the parallel regression model (interaction term) and full regression model were greater than 0.8 and within 0.02 units in value, the full ANCOVA model was considered valid (Environment Canada 2012). If both methods proved unacceptable, the magnitude of effect calculation was estimated at both the minimum and maximum overlap of covariate variables between areas (Environment Canada 2012). This results in a statistically significant interaction effect (slopes are not equal), but the calculation of the MOD at the minimum and maximum values of covariate overlap is not assigned statistical difference as it would for a full ANCOVA model. If the interaction term was not significant (i.e., homogeneous slopes between the two populations), then the full ANCOVA model was run without the interaction term to test for differences in adjusted means between the two populations. The adjusted mean was then used as an estimate of the population mean based on the value of the covariate in the ANCOVA model.

For endpoints showing significant differences between study areas, the MOD between reference and exposure areas was calculated as described by Environment Canada (2012) using mean (Student's t-tests), adjusted mean (ANCOVA with no significant interaction), or predicted values (ANCOVA with significant interaction). The anti-log of the mean, adjusted mean, or predicted value was used in the equations for endpoints that were log10-transformed. In addition, the MOD for ANCOVA with a significant interaction was calculated for each of the minimum and maximum values of the covariate. If there was no significant difference indicated between areas, the minimum detectable effect size was calculated as a percent difference from the reference mean for analysis of variance (ANOVA) or adjusted reference mean for ANCOVA at alpha = beta = 0.10 using the square root of the mean square error (generated during either the ANOVA or ANCOVA procedures) as a measure of variability in the sample population based on formula

provided by Environment Canada (2012). If outliers or leverage values were observed in a data set(s) upon examination of scatter plots and residuals, then the values were removed and ANOVA or ANCOVA tests were repeated for the reduced data set, with both sets of results then reported. Similar to the CES applied to the benthic invertebrate community survey, a fish population survey effect size of ±25% was applied to general endpoints of survival, growth, reproduction, and relative liver size, and an effect size of ±10% was applied to condition, for defining ecologically relevant differences consistent with those indicated within the MDMER (Table 2.2; Munkittrick et al. 2009; Government of Canada 2022).

Finally, *a priori* power analyses were completed to determine appropriate sample sizes for future fish population surveys as recommended by Environment Canada (2012). These analyses were completed based on the mean square error values generated during Analysis of Variance (ANOVA)/Student's t-test or ANCOVA procedures and were calculated with α and β set equally at 0.10. Two main assumptions underlie the power analyses that were conducted. The first assumption was that the fish caught in each of the effluent-exposed and reference areas were representative of the population at large (i.e., similar distribution and variance with respect to the parameters examined). The second assumption was that the characteristics of the populations would not change substantially prior to the next EEM study. The power analysis results were reported as the minimum sample size (number of fish/area) required to detect a given MOD (effect size) between the effluent-exposed and reference area populations for each endpoint. The magnitude of the difference was presented as a percentage of the reference mean for each endpoint as measured during the fish population study.

2.4.3.3 Arctic Grayling (Non-Lethal Fish Population Survey)

Initial data analysis for the arctic grayling non-lethal survey included the plotting of size frequency distributions so that, together with appropriate aging data, YOY individuals could be distinguished from the non-YOY individuals. Fish health endpoints of fork length, fresh body weight, and Fulton's condition factor (body weight / fork length^3 x 10^5) were summarized by separately reporting mean, median, minimum, maximum, standard deviation, standard error, and sample size for each applicable size class (i.e., YOY and non-YOY) for each study area. The recorded endpoints were used as the basis for health endpoints (Table 2.2) according to the procedures outlined for a non-lethal small-bodied fish assessment (Environment Canada 2012).

Length-frequency distributions, based on measurements of fork length for arctic grayling were compared using a non-parametric two-sample K-S test using the combined YOY and non-YOY data set. Mean length and body weight were compared for the arctic grayling YOY between the effluent-exposed and reference study areas using Student's t-tests, with the data inspected for normality and homogeneity of variance before applying parametric statistical procedures.

In cases where data did not meet test assumptions despite log transformation, non-parametric Mann-Whitney U-tests were performed to test for significant differences between areas. Body weight at fork length was compared using ANCOVA based on the same transformations, scatter plot evaluations, and tests as described above for slimy sculpin. Similarly, the magnitude of any differences and the minimum detectable effect sizes were calculated, and together with CES, compared as described above for slimy sculpin. Finally, the arctic grayling data were subject to *a priori* power analyses to determine appropriate sample sizes for future fish surveys as described previously.

3 EFFLUENT QUALITY AND SUBLETHAL TOXICITY

3.1 Effluent Volume and Quality

Effluent was discharged from two of the five FDP registered under the MDMER for the Eagle Gold Project, including LDSP and FDP5, over the duration of the Phase 1 EEM (i.e., 2019 to 2021). Effluent discharged from the LDSP FDP occurred as short-term intermittent deposits that totaled four days in April 2019, thirty non-consecutive days from mid-August to mid-September in 2020, and twelve and nine days in July and November 2021, respectively (Figure 3.1; Appendix Table B.1). The total monthly volume of effluent discharged from the LDSP FDP ranged from 15,415 to 107,903 cubic metres (m^3) in those months in which effluent was discharged over the period from 2019 to 2021 (Figure 3.1; Appendix Table B.1). Effluent was discharged from FDP5 for a total duration of only nine days in April 2020, the resulting total monthly volume of discharge of which was 43,130 m^3 (Appendix Table B.1). Final effluent discharged from LDSP FDP and FDP5 met all MDMER monthly mean concentration effluent limits from 2019 to 2021 except for TSS concentrations in effluent from the LDSP FDP in April 2019 and from FDP5 in April 2020 (Table 3.1; Appendix Tables B.2 to B.4). Concentrations of TSS in effluent from the LDSP FDP in April 2019 were above the MDMER grab sample effluent limit of 30 mg/L in one of the three samples taken in April 2019, whereas TSS concentrations in effluent from FDP5 in April 2020 were above the grab sample effluent limit in all three of the samples taken (Appendix Tables B.2 to B.5). Final effluent discharges from LDSP and FDP5 were monitored as per required MDMER frequencies and were without exception non-lethal to rainbow trout (*Oncorhynchus mykiss*) and the invertebrate *Daphnia magna* in all testing conducted from 2019 to 2021 (Table 3.1; Appendix Tables B.2 to B.4).

Review of effluent characterization data indicated that annual mean concentrations of mercury in effluent from the LDSP FDP and FDP5 over the three years of the Phase 1 EEM period were well below the 0.10 µg/L concentration limit that triggers implementation of an EEM fish tissue mercury survey (Table 3.1; Appendix Table B.6).[6] Similarly, grab sample and annual mean concentrations of selenium in effluent discharged from the LDSP FDP and FDP5 from 2019 to 2021 were consistently below the 10 µg/L and 5 µg/L concentration limits, respectively, used to

[6] Method detection limits used for the determination of mercury concentrations in the LDSP FDP and FDP5 effluents in the Phase 1 EEM period were also considerably lower than the 0.10 µg/L minimum specified in the MDMER as a trigger for potentially implementing a fish tissue mercury survey.

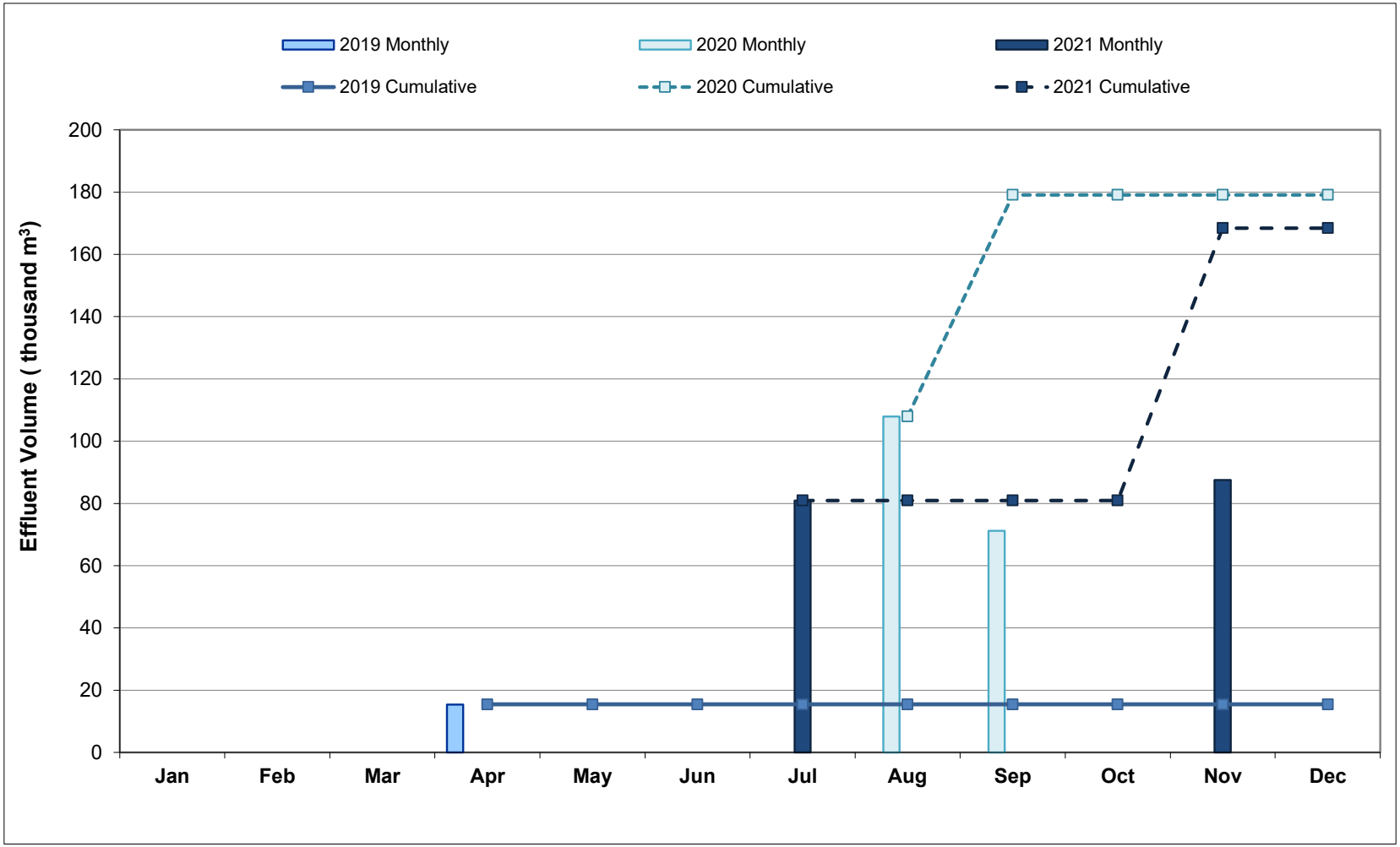


Figure 3.1: Total Monthly and Cumulative Effluent Discharge From the LDSP Effluent Discharge, 2019 to 2021

Table 3.1: Summary of Deleterious Substance and Effluent Characterization Monitoring Data at LDSP FDP for Years Applicable to the Eagle Gold Project Phase 1 EEM Biological Study

	Analyte	Units	MDMER Monthly Mean Limit [a]	2019	2020			2021	
				April	July	August	September	July	November
Deleterious Substances [a]	Volume	m^3	-	15,415	-	107,903	71,209	80,933	875,000
	pH (field)	pH units	6.0 - 9.5	8.05	8.12	8.09	8.10	8.21	8.29
	Total Suspended Solids	mg/L	15	38	<3.0	4.6	3.8	4.5	8.4
	Cyanide: Total	mg/L	0.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Arsenic (As)	mg/L	0.30	0.077	0.029	0.031	0.033	0.028	0.052
	Copper (Cu)	mg/L	0.30	0.0064	0.0034	0.0027	0.0024	0.0021	0.0016
	Lead (Pb)	mg/L	0.10	0.0064	0.0025	0.0010	0.0006	0.0005	0.0011
	Nickel (Ni)	mg/L	0.50	0.0046	0.0016	0.0020	0.0018	0.0016	0.0015
	Zinc (Zn)	mg/L	0.50	0.010	0.0037	0.0032	0.0031	<0.0030	<0.0030
	Radium-226	Bq/L	0.37	<0.0068	0.0036	0.0178	<0.0069	<0.0072	<0.0067
Acute Toxicity	Rainbow trout [c]	Pass/Fail	NL	NL	NL	NL	NL	-	NL
	Daphnia magna [c]	Pass/Fail	NL	NL	NL	NL	NL	-	NL
Effluent Characterization [b]	Specific Conductance	µS/cm	-	518	319	307	353	320	432
	Hardness	mg/L	-	238	147	146	171	161	213
	Alkalinity	mg/L	-	145	85	84	95	98	145
	Un-ionized Ammonia	mg/L	-	<0.00012	-	<0.0010	<0.0010	0.0012	0.00065
	Ammonia (NH_3)	mg/L	-	<0.0051	0.017	0.019	0.031	0.018	0.018
	Nitrate (NO_3)	mg/L	-	0.12	0.08	0.10	0.13	0.28	0.66
	Phosphorus	mg/L	-	0.046	0.0065	0.0058	0.0045	0.0075	0.0089
	Sulphate (SO_4)	mg/L	-	105	67	64	75	64	75
	Chloride	mg/L	-	17	4.1	4.0	3.6	4.2	8.6
	Aluminum (Al)	mg/L	-	1.8	0.1	0.2	0.1	0.1	0.2
	Cadmium (Cd)	mg/L	-	0.00010	0.000030	0.000035	0.000040	0.000034	0.000034
	Chromium (Cr)	mg/L	-	0.0027	0.00017	0.00032	0.00022	<0.00050	<0.00050
	Cobalt (Co)	mg/L	-	0.0014	0.00023	0.00027	0.00024	0.00028	0.00089
	Iron (Fe)	mg/L	-	2.6	0.16	0.27	0.15	0.15	0.27
	Manganese (Mn)	mg/L	-	0.12	0.020	0.015	0.028	0.010	0.033
	Mercury (Hg)	µg/L	0.10	0.000014	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
	Molybdenum (Mo)	mg/L	-	0.0014	0.0017	0.0015	0.0018	0.0023	0.0020
	Selenium (Se)	mg/L	0.010	0.00052	0.00034	0.00039	0.00048	0.00044	0.00069
	Thallium (Tl)	mg/L	-	0.000039	<0.000010	0.000011	0.000010	0.000011	0.000011
	Uranium (U)	mg/L	-	0.0061	0.0027	0.0027	0.0034	0.0037	0.0070

Indicates monthly mean value that exceeds applicable limit for deleterious substances and/or pH*or* sample concentration that exceeded fish usability assessment trigger value (mercury only)*or* acute toxicity test failure based on individual test result.

[a] Deleterious substances and effluent limits as defined under Schedule 4 of the MDMER (Government of Canada 2021) except mercury and selenium, where the limit provided is the grab concentration trigger for conducting a fish tissue survey as part of EEM.

[b] Required effluent characterization and site-specific parameters as defined under Schedule 5 of the MDMER (Government of Canada 2021).

[c] Indicates that all acute toxicity tests must 'pass' test criteria (i.e., an effluent at 100% concentration that kills less than 50% of test organisms over a 96-hour [rainbow trout] or 48-hour [D. *magna*] period). "NL" refers to a non-lethal 'pass' test result, "L" refers to a lethal 'failure' test result.

trigger an EEM fish tissue selenium survey under the MDMER (Table 3.1; Appendix Table B.6).[7]

3.2 Effluent Sublethal Toxicity

Sublethal toxicity testing conducted using the LDSP FDP effluent in 2020 indicated no effects on fathead minnow (*Pimephales promelas*) survival and growth, *Ceriodaphnia dubia* survival and reproduction, duckweed (*Lemna minor*) growth, or on green alga (*Pseudokirchneriella subcapitata*) growth (Table 3.2). Although the LDSP FDP effluent in 2021 resulted in no sublethal effects on fathead minnow survival and growth or on green alga growth, reproductive inhibition in *C. dubia* occurred at an effluent effect concentration of 50%, and growth inhibition in *L. minor* (number of fronds) occurred at an effluent effect concentration of 42% for the sample collected in July (Table 3.2). Final effluent sampled at FDP5 in April 2020 resulted in no sublethal toxicity on fathead minnow survival and growth, *C. dubia* survival, and green alga growth (Table 3.2). However, reproductive inhibition of *C. dubia* was indicated at an effluent effect concentration of 28%, and growth inhibition in *L. minor* (number of fronds) was shown at an effluent effect concentration of 75%.

A tracer-based effluent plume delineation study has not been conducted at the Eagle Gold Project for either of the LDSP FDP or FDP5 effluents. Effluent concentrations in Haggart Creek, extrapolated from laboratory specific conductance data for the LDSP FDP effluent and Haggart Creek effluent receiver monitoring stations (i.e., effluent-exposed Station W4 and reference Station and W22) for dates in which effluent was being discharged, were highly variable within the immediate effluent-exposed area, ranging from 0% to 57% over the Eagle Gold Project Phase 1 EEM period. The high variability in effluent concentrations at effluent-exposed Station W4 likely reflect incomplete mixing at this location, which had been identified previously (VGC 2020). The FDP5 discharge occurs as an exfiltration sump that deposits effluent overland, potentially reaching Haggart Creek as a non-point discharge following sub-surface infiltration through alluvium and placer deposits. As a result, no extrapolation of effluent sublethal toxicity test results for predicting potential effects to biota within Haggart Creek was conducted for LDSP FDP and FDP5 data collected over the 2019 to 2021 Phase 1 EEM period.

[7] Individual grab sample data for the LDSP FDP and FDP5 effluent are not provided in this document. Method detection limits used for the determination of selenium concentrations in the LDSP FDP and FDP5 effluents in the first three years of the current Phase 1 EEM period were also lower than the 5 µg/L minimum specified in the MDMER as a trigger for potentially implementing a fish tissue selenium survey.

Table 3.2: Sublethal Toxicity Test Results[a] using Eagle Gold Project Final Discharge (LSDP and FDP5) Effluent, 2019 to 2021

Location	Year	Sample Date	Fathead Minnow		*Ceriodaphnia dubia*		*Lemna minor*	*Pseudokirchneriella subcapitata*
			Survival LC_{50}	Growth IC_{25}	Survival LC_{50}	Reproduction IC_{25}	Frond Increase IC_{25}	Growth IC_{25}
LDSP FDP	2020	10-Aug-20	> 100	> 100	> 100	> 100	> 97	> 95
	2021	12-Jul-21	>100	> 100	> 100	49.6 (20.9 - 72.9)	42.1 (14.8 - 60.0)	> 95
FDP5	2021	21-Apr-20	> 100	> 100	> 100	28.4 (13.7 - 42.6)	75.4 (8.4 - n/a)	> 95

[a] LC_{50} is the effluent concentration causing 50% mortality among tested organisms; IC_{25} is the effluent concentration causing a 25% inhibition/reduction in endpoint compared to the control group for the organism tested.

4 RECEIVING ENVIRONMENT WATER QUALITY

Water temperatures at the time of the spring and fall EEM biological fieldwork were comparable between the effluent-exposed area and reference areas for each respective field study (Figure 4.1). Dissolved oxygen (DO) concentrations (mg/L) were above the CWQG lowest acceptable concentration for early life stages of cold-water biota (i.e., 9.5 mg/L) at the time of biological sampling in September 2021 at the Haggart Creek effluent-exposed area (Figure 4.1). Despite significantly lower DO concentrations at the effluent-exposed area than at the reference area of Haggart Creek in September 2021, the incremental difference in DO concentration between areas was minor (i.e., 0.6 mg/L) and thus was unlikely to be ecologically meaningful (Figure 4.1; Appendix Table B.9). Aqueous pH at the effluent-exposed area of Haggart Creek was consistently within CWQG limits from 2019 to 2021, and also did not differ significantly with pH at the Haggart Creek reference area at the time of the September 2021 EEM fieldwork (Figure 4.1; Appendix Tables B.9, and B.11). Specific conductance showed no consistent direction of change between the Haggart Creek effluent-exposed and reference stations based on annual averages and sampling at the time of the fall EEM biological fieldwork, nor between the Haggart Creek effluent-exposed and Lynx Creek reference areas between the spring and fall EEM biological fieldwork (Figure 4.1; Appendix Table B.7 to B.11). The absence of consistent spatial differences in specific conductance between the effluent-exposed area and applicable reference areas was consistent with short, intermittent release of effluent from the LDSP FDP and/or FDP5 from 2019 to 2021 (Section 3.1) and, for Station W4, potential incomplete mixing of effluent at the location of sampling (VGC 2020).

At the time of EEM biological sampling in May 2021, concentrations of total aluminum, arsenic, copper, and iron in water at the Haggart Creek effluent-exposed area were elevated compared to respective CWQG (Table 4.1). However, similar concentrations of these and all other parameters were observed at the Lynx Creek reference area indicating no marked influences of the Eagle Gold Project on water quality of Haggart Creek (Table 4.1). During EEM biological sampling conducted in September 2021, in addition to the parameters indicated above, total lead concentrations were above CWQG at the effluent-exposed area of Haggart Creek. However, unlike during the spring, total concentrations of each of aluminum, arsenic, copper, iron, and lead, in addition to total concentrations of manganese and molybdenum, were higher at the effluent-exposed area compared to the Haggart Creek upstream reference area and/or Lynx Creek reference area (Table 4.1). Regardless of study area, higher metal concentrations in water appeared to be associated with greater concentrations of TSS (Table 4.1), suggesting that metals were likely adsorbed to/composed the suspended particulate matter in the water column and was thus unlikely to be biologically available. Concentrations of TSS were particularly elevated at the

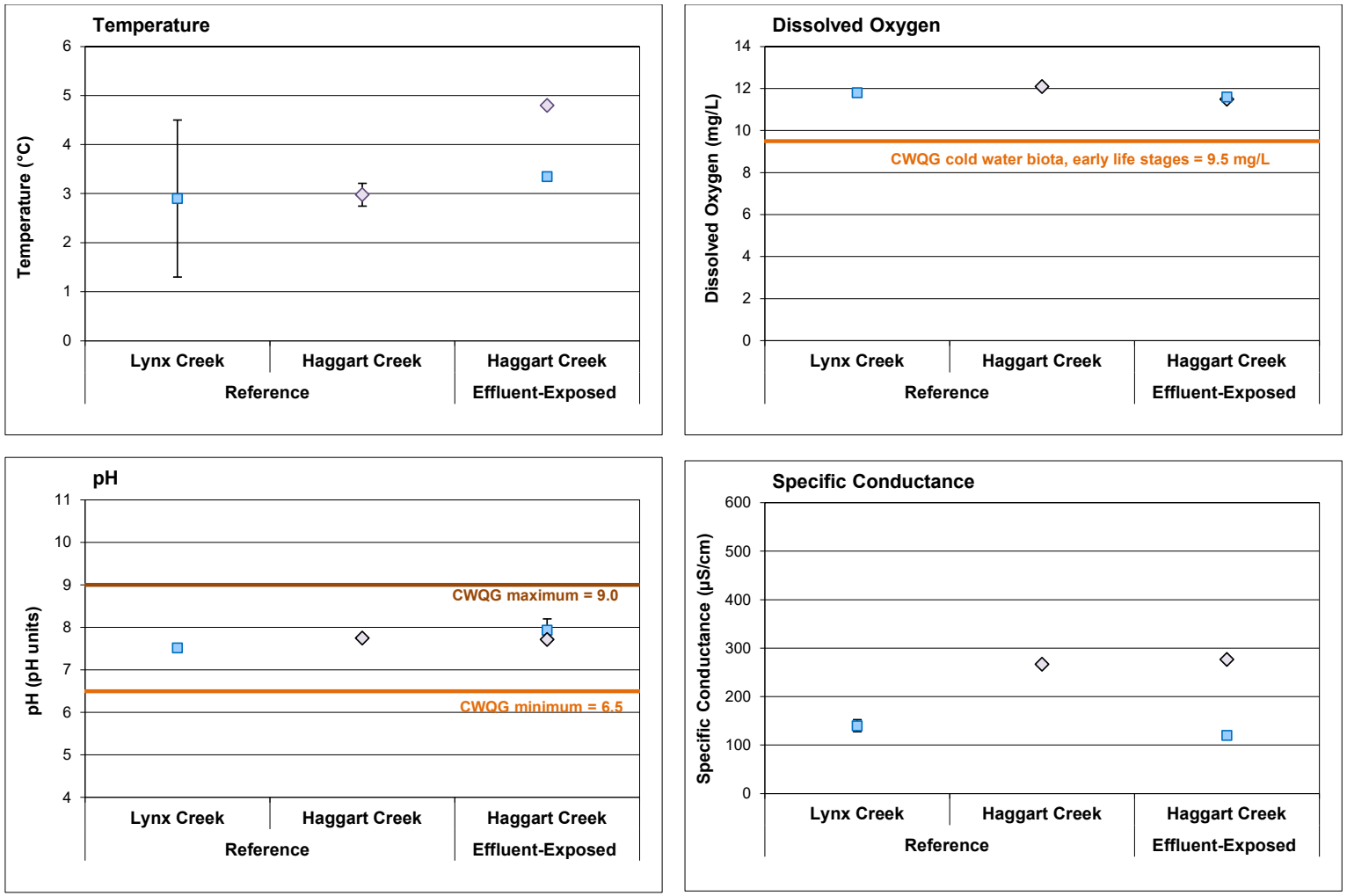


Figure 4.1: *In Situ* Water Quality Variables (mean ± SE) Measured at Lynx Creek and Haggart Creek, May and September 2021

Notes: Square symbols represent May 2021 sampling and diamond symbols represent September 2021 sampling. CWQG = Canadian Water Quality Guidelines (CCME 2022).

Table 4.1: Water Chemistry at Haggart Creek Reference and Effluent-Exposed Stations at the Time of EEM Biological Sampling, May and September 2021

	Parameters	Units	CCME[a]	May		September		
				Lynx Creek (Reference)	Haggart Creek (Effluent-exposed)	Haggart Creek (Reference)	Lynx Creek (Reference)	Haggart Creek (Effluent-exposed)
Field Measure	Temperature (field)	°C	-	2.9	3.4	3.0	-	4.8
	pH (field)[b]	pH units	6.5 to 9.0	7.52	7.94	7.75	8.22	7.72
	Specific Conductance	µS/cm	-	138	117	270	324	268
Non-metals	Alkalinity	mg/L (as $CaCO_3$)	-	46	36	80	109	82
	Ammonia (NH_4^+)[c]	mg/L	0.855	<0.0050	0.0058	<0.0050	0.0056	<0.0050
	Un-ionized Ammonia	ug/L	19	0.017	0.055	0.030	0.104	0.032
	Cyanide (total)	mg/L	-	-	-	<0.0050	<0.0050	<0.0050
	Hardness	mg/L (as $CaCO_3$)	-	66	58	132	159	138
	Nitrate (NO_3)	mg/L	3	0.049	0.041	0.085	0.087	0.068
	Phosphorus (P)	mg/L	0.030	0.032	0.018	<0.0020	0.007	0.029
	Chloride (Cl)	mg/L	120	<0.50	<0.50	<0.50	<0.50	<0.50
	Sulphate (SO_4)	mg/L	-	23	22	57	67	59
	Total Suspended Solids	mg/L	-	14	7.9	4.3	4.3	41
	Radium-226	Bq/L	-	-	-	-	-	-
Total Metals	Aluminum (Al)[d]	mg/L	0.10	0.37	0.36	0.064	0.051	1.1
	Arsenic (As)	mg/L	0.005	0.006	0.006	0.001	0.007	0.013
	Cadmium (Cd)[e]	mg/L	0.00017	0.000051	0.000027	0.000013	0.000019	0.000037
	Chromium (Cr)[f]	mg/L	0.0089	0.00085	0.00060	<0.00050	<0.00050	0.0020
	Cobalt (Co)	mg/L	-	0.00037	0.00038	0.00022	<0.00010	0.0011
	Copper (Cu)[e]	mg/L	0.002	0.003	0.002	0.001	0.001	0.003
	Iron (Fe)	mg/L	0.30	0.70	0.62	0.22	0.13	2.3
	Lead (Pb)[e]	mg/L	0.0010	0.0005	0.0005	0.0001	0.0001	0.0017
	Manganese (Mn)	mg/L	-	0.032	0.037	0.052	0.015	0.087
	Mercury (Hg)	mg/L	0.000026	0.0000080	0.0000091	<0.0000050	<0.0000050	0.0000055
	Molybdenum (Mo)	mg/L	0.073	0.00049	0.00019	0.000071	0.00081	0.00037
	Nickel (Ni)[e]	mg/L	0.025	0.0023	0.0022	0.0013	0.00093	0.0031
	Selenium (Se)	mg/L	0.0010	0.00035	0.00010	0.00017	0.00038	0.00017
	Thallium (Tl)	mg/L	0.00080	<0.000010	<0.000010	<0.000010	<0.000010	0.000029
	Uranium (U)	mg/L	0.015	0.00029	0.00035	0.00065	0.00082	0.00094
	Zinc (Zn)	mg/L	0.030	0.005	0.004	<0.0030	<0.0030	0.007

Indicates value that was above applicable PWQO.

[a] CCME (Canadian Council of Ministers of the Environment; 1999).

[b] Laboratory pH presented for Lynx Creek in September because field pH was not available.

[c] Guideline based on lowest temperature (7.53 °C) and highest pH (8.17) at the exposed areas.

[d] Guideline based on the highest pH at the exposed areas (8.17).

[e] Guideline based on the lowest hardness concentration at the exposed areas (105 mg/L).

[f] Yukon Contaminated Sites Regulation (CSR), (Yukon Government 2012).

Haggart Creek effluent-exposed area compared to the reference areas at the time of the September 2021 benthic invertebrate community survey, but because effluent was not being released at this time, the source of TSS concentrations to Haggart Creek at the effluent-exposed area was unrelated to mine effluent from an FDP.

Average water chemistry at the time of the EEM biological fieldwork in 2021 was within the range of historical values shown in 2019 and 2020 at effluent-exposed Station W4, as well as for reference Station W22 within Haggart Creek (compare Tables 4.1 and 4.2; Appendix Table B.12). At the Haggart Creek effluent-exposed station, average total concentrations of aluminum, arsenic, copper, iron, and lead, were routinely elevated above CWQG and, in addition to average total concentrations of chromium and molybdenum, to concentrations at the Haggart Creek reference station from 2019 to 2021 (Table 4.2; Appendix Table B.10 and B.11). Higher average annual TSS concentrations also occurred at the effluent-exposed areas of Haggart Creek compared to the upstream reference area that, as discussed previously, potentially accounted for higher total metal concentrations in water collected downstream of the mine operation (Table 4.2). In addition, average concentrations of TSS and total aluminum, arsenic, copper, and iron were elevated at the Haggart Creek effluent-exposed area during the Phase 1 EEM period compared to respective average concentrations from 2007 to 2016, prior to the commencement of mine operations (Appendix Table B.12), which suggested a mine-related source of TSS to Haggart Creek. This temporal interpretation of the data may be confounded by increased frequency of monitoring following the commencement of effluent discharge from the Project compared to prior to mine operation when less frequent monitoring was conducted, including in periods of naturally higher flow in the receiver, potentially biasing the temporal analyses.

Table 4.2: Annual Average Water Chemistry at Haggart Creek Reference and Effluent-Exposed Stations, 2019 to 2021

	Parameter	Units	CCME[a]	Haggart Creek (Reference Station W22)			Haggart Creek (Effluent-Exposed Station W4)		
				2019	2020	2021	2019	2020	2021
Field Measure	pH (lab)	pH units	6.5 to 9.0	8.13	7.93	8.11	8.14	7.95	7.62
	Specific Conductance	µS/cm	-	349	268	317	410	213	317
Non-metals	Alkalinity	mg/L (as $CaCO_3$)	-	106	74	96	119	111	94
	Ammonia (NH_4^+)[b]	mg/L	0.86	<0.0050	<0.0060	0.0060	0.0054	0.0107	0.0067
	Un-ionized Ammonia	mg/L	0.019	-	0.0010	0.00010	-	<0.0010	<0.0010
	Cyanide (total)	mg/L	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050
	Hardness	mg/L (as $CaCO_3$)	-	181	131	156	201	123	150
	Nitrate (NO_3)	mg/L	3.0	0.11	0.08	0.09	0.11	0.09	0.16
	Phosphorus (P)	mg/L	-	0.005	0.007	0.002	0.029	0.036	0.012
	Chloride (Cl)	mg/L	120	<0.50	<0.99	<0.50	5.6	1.4	1.7
	Sulphate (SO_4)	mg/L	-	83	57	74	89	51	67
	Total Suspended Solids	mg/L	-	7	9	2	34	82	17
	Radium-226	Bq/L	-	-	<0.0072	<0.007	-	<0.0084	<0.0072
Metals	Aluminum (Al)[c]	mg/L	0.10	0.11	0.09	0.03	1.16	1.01	0.30
	Arsenic (As)	mg/L	0.005	0.002	0.001	0.001	0.041	0.038	0.019
	Cadmium (Cd)[d]	mg/L	0.00017	0.000033	0.000017	0.000010	0.000055	0.000050	0.000024
	Chromium (Cr)[e]	mg/L	0.0089	0.00021	0.00016	<0.00050	0.0018	0.0018	<0.00085
	Cobalt (Co)	mg/L	-	0.00038	0.00023	0.00013	0.0011	0.0012	0.00041
	Copper (Cu)[d]	mg/L	0.0025	0.001	0.001	0.001	0.004	0.004	0.002
	Iron (Fe)	mg/L	0.30	0.403	0.248	0.082	1.873	2.193	0.572
	Lead (Pb)[b]	mg/L	0.0034	0.00029	0.00020	<0.000050	0.00348	0.00421	0.00127
	Manganese (Mn)	mg/L	-	0.095	0.043	0.037	0.103	0.070	0.034
	Mercury (Hg)	mg/L	0.000026	<0.0000050	<0.0000052	<0.0000050	0.0000073	<0.0000095	<0.0000050
	Molybdenum (Mo)	mg/L	0.073	<0.000050	0.00011	0.000068	0.00052	0.00060	0.00098
	Nickel (Ni)[d]	mg/L	0.099	0.002	0.002	0.001	0.004	0.004	0.002
	Selenium (Se)	mg/L	0.0010	0.00023	0.00016	0.00019	0.00030	0.00023	0.00027
	Thallium (Tl)	mg/L	0.00080	<0.000010	<0.000010	<0.000010	0.000030	0.000033	<0.000014
	Uranium (U)	mg/L	0.015	0.001	0.001	0.001	0.003	0.001	0.002
	Zinc (Zn)	mg/L	-	0.005	<0.0035	<0.0030	0.009	0.009	0.004

Indicates concentration that exceeded applicable Water Quality Guideline.

[a] CCME (Canadian Council of Ministers of the Environment; 1999).

[b] Guideline based on the lowest temperature (7.53 °C) and highest pH (8.17) at the exposed areas.

[c] Guideline based on the highest pH at the exposed areas (8.17).

[d] Guideline based on the lowest hardness concentration at the exposed areas (105 mg/L).

[e] Yukon Contaminated Sites Regulation (CSR), (Yukon Government 2012).

5 BENTHIC INVERTEBRATE COMMUNITY SURVEY

Benthic invertebrate density was significantly lower downstream of the effluent discharge in Haggart Creek compared to the upstream reference area, but no significant difference in richness was indicated between these study areas whether assessed using Family Level (FL) or Lowest Practical Level (LPL) taxonomic resolution (Table 5.1; Figure 5.1; Appendix Table C.4). Significantly higher Simpson's Evenness was indicated at the effluent-exposed area compared to reference area in Haggart Creek, the magnitude of difference in which was outside of the CES of ±2 SD_{REF} based on calculation of evenness at both FL and LPL taxonomic resolution (Table 5.1; Figure 5.1; Appendix Table C.4). The occurrence of higher evenness at the effluent-exposed area indicated more even distribution of individuals across taxa compared to the reference area, which is not usually associated with an adverse response to benthic invertebrate communities related to mine activity. Bray-Curtis Index was significantly different between the effluent-exposed and reference areas of Haggart Creek based on calculations conducted using both FL and LPL taxonomic resolution, which suggested that differences in benthic invertebrate community structure occurred between study areas (Appendix Table C.5).

The benthic invertebrate community at the effluent-exposed area of Haggart Creek showed significantly lower relative abundance of Oligochaeta (aquatic worms) but significantly higher relative abundance of Trichoptera (caddisflies) and Chironomidae (non-biting midges) compared to the upstream reference area (Table 5.1; Figure 5.2). No significant differences in the relative abundance of Ephemeroptera (mayflies) and Plecoptera (stoneflies) dominant taxonomic groups were indicated between the effluent-exposed and reference areas of Haggart Creek (Figure 5.2). Because Ephemeroptera, Plecoptera, and Trichoptera (collectively referred to as EPT) are considered metal-sensitive (Ward 1992; Rosenberg and Resh 1993; Mebane et al. 2020), the lack of significant differences in the relative abundance of Ephemeroptera and Plecoptera and significantly higher relative abundance of Trichoptera at the effluent-exposed area versus the reference area indicated that differences in the community structure between study areas were unrelated to different exposure to metal concentrations and mine effluent. Oligochaeta exhibit a burrowing habit that requires the presence of habitat containing fine-grained substrate, and therefore the occurrence of significantly lower relative abundance of this group at the effluent-exposed area compared to the reference area suggested slightly differing habitat, and specifically the occurrence of substrate with larger interstitial grain size, at the effluent-exposed area. Therefore, the differences in benthic invertebrate community structure between the effluent-exposed and reference areas of Haggart Creek suggested by differing Bray-Curtis Index was likely related to the presence of slightly larger interstitial substrate size at the effluent-exposed area.

Table 5.1: Benthic Invertebrate Community[a] Statistical Comparison Results between the Haggart Creek Effluent-Exposed and Lynx Creek Reference Study Areas, Eagle Gold Project Phase 1 EEM, September 2021

Metric	Two Sample Comparison				Summary Statistics (n = 5 per study area)						
	Statistical Test [b]	Data Transform-ation	p-value	Magnitude of Difference [c] (No. of SD_{REF})	Study Area	Mean	Standard Deviation	Standard Error	Minimum	Median	Maximum
Density (Individuals/m^2)	tequal	none	0.003	-2.1	Reference	1,864	365	163	1,433	1,860	2,247
					Effluent-exposed	1,088	187	84	860	1,080	1,360
FL Richness (Number of Taxa)	tequal	none	0.752	not applicable	Reference	18.8	2.5	1.1	15.0	19.0	21.0
					Effluent-exposed	18.4	1.1	0.5	17.0	18.0	20.0
FL Simpson's Evenness	tequal	none	0.004	5.0	Reference	0.234	0.035	0.016	0.200	0.225	0.290
					Effluent-exposed	0.409	0.091	0.041	0.273	0.414	0.504
Oligochaeta (% of community)	tequal	log_{10}	0.004	-3.0	Reference	50.6	8.3	3.7	43.0	48.1	60.4
					Effluent-exposed	25.8	11.3	5.0	11.6	24.0	42.6
Ephemeroptera (% of community)	tequal	none	0.938	not applicable	Reference	17.7	5.2	2.3	11.8	18.6	23.3
					Effluent-exposed	17.4	6.0	2.7	10.1	16.7	26.4
Plecoptera (% of community)	tequal	none	0.139	not applicable	Reference	19.3	2.9	1.3	16.3	19.3	22.8
					Effluent-exposed	25.0	7.2	3.2	17.3	23.1	33.3
Trichoptera (% of community)	tequal	none	<0.001	5.0	Reference	3.3	0.8	0.4	2.7	2.9	4.5
					Effluent-exposed	7.3	1.3	0.6	6.4	7.0	9.5
EPT (% of community)	tequal	log_{10}	0.054	1.3	Reference	40.3	7.2	3.2	32.0	39.8	48.8
					Effluent-exposed	49.7	5.6	2.5	41.4	48.8	55.4
Chironomidae (% of community)	tequal	none	<0.001	14.1	Reference	1.1	0.4	0.2	0.6	1.1	1.7
					Effluent-exposed	7.1	4.4	2.0	2.9	5.4	12.7

Grey shading indicates significant difference between study areas based on a p-value less than 0.10.
Blue shading indicates significant difference between study areas that was also outside of a Critical Effect Size of ±2 SD_{REF}.
Green shading indicates significant difference between study areas that was also outside of an Effect Size of ±2 SD_{REF}.

[a] Benthic metrics calculated using Family-Level (FL) taxonomy. Comparisons for metrics calculated using Lowest-Practical-Level Taxonomy are provided in Appendix C.
[b] Statistical tests include Student's t-test assuming equal variance (tequal), Student's t-test assuming unequal variance (tunequal), or Mann-Whitney U-test (M-W).
[c] Magnitude calculated by comparing the difference between the reference area and effluent-exposed area means divided by the reference area standard deviation.

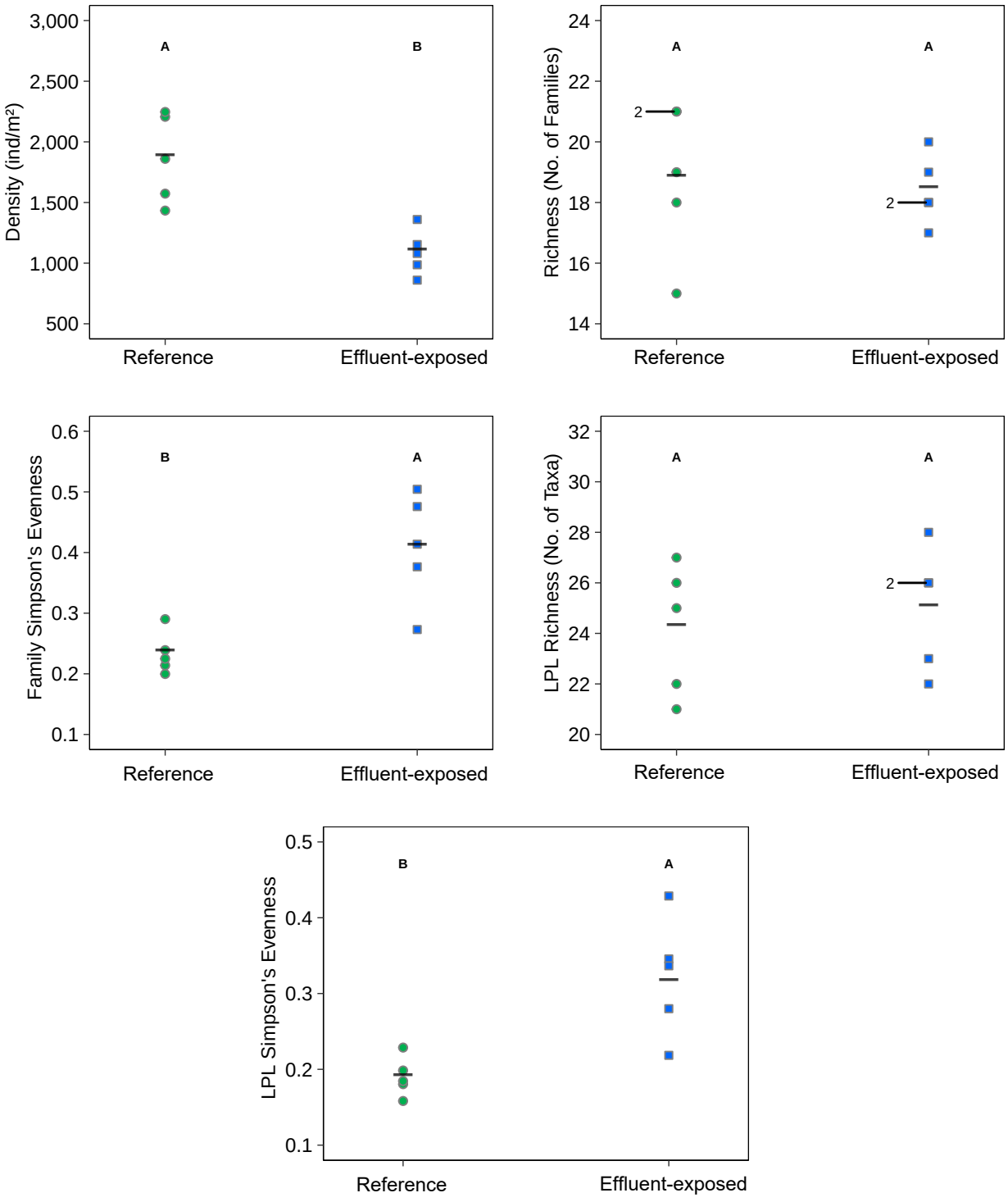


Figure 5.1: Benthic Invertebrate Community Primary Metric Comparisons for Effluent-Exposed and Reference Areas, Eagle Gold Project Phase 1 EEM, 2021

Notes: Green-coloured symbols represent reference and blue-coloured symbols represent effluent-exposed stations. Areas that don't share a letter are significantly different (p−value = 0.1). Numbers to the right of observations indicate the number of overlapping observations at that value. Black bars represent measures of central tendency used in comparision.

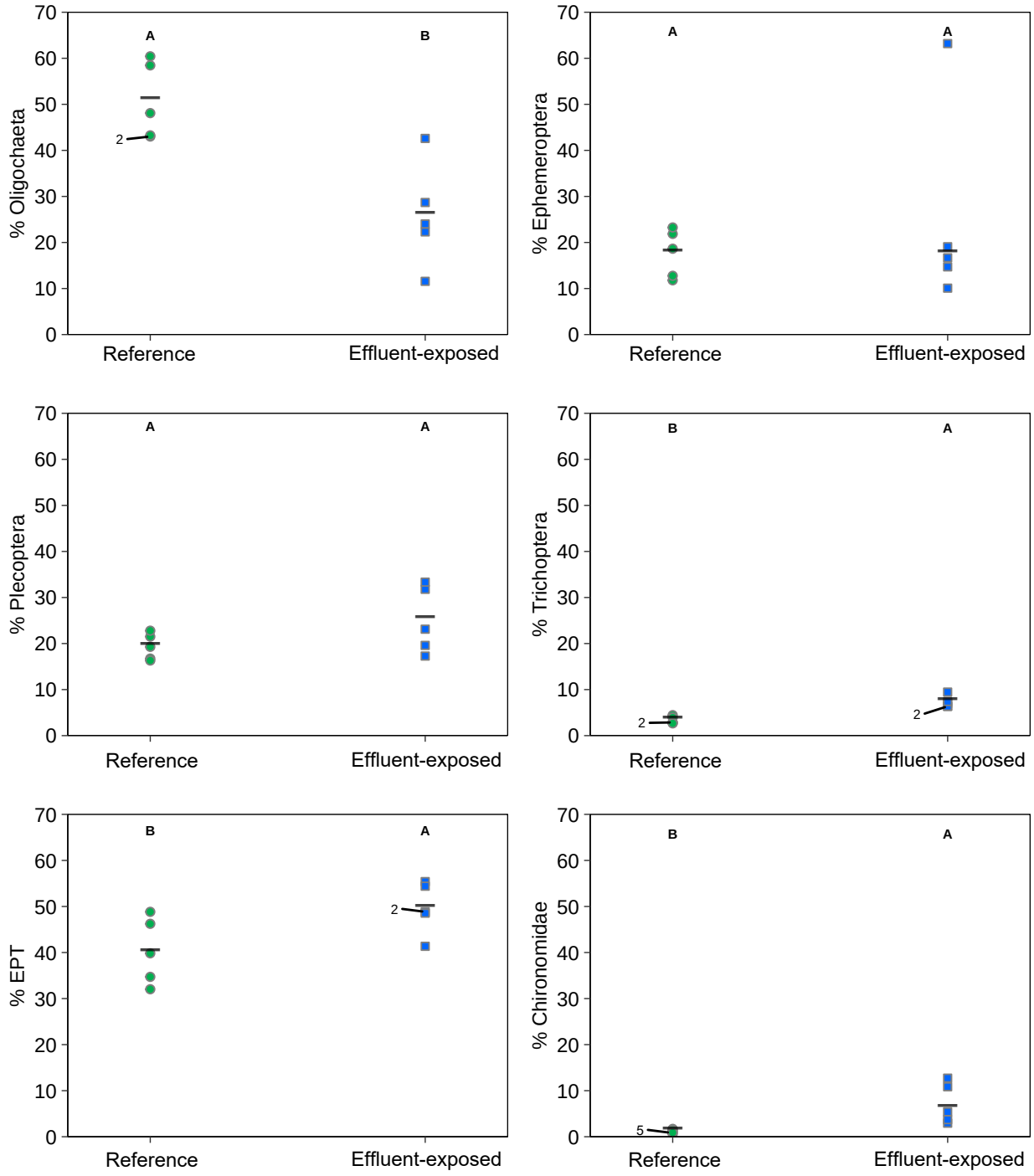


Figure 5.2: Benthic Invertebrate Community Percent Group Comparisons for Reference and Exposed Areas, Haggart Creek, Victoria Gold EEM, 2021

Notes: Green represent reference areas and blue represents exposed areas. Areas that don't share a letter are significantly different (p−value = 0.1). Numbers to the right of observations indicate the number of overlapping observations at that value. Black bars represent measures of central tendency used in comparison.

Benthic invertebrate density at the effluent-exposed area of Haggart Creek in September 2021 was in the lower range of those reported prior to commencement of the mine effluent discharge in 2019 (Appendix Table C.6). However, benthic invertebrate density at the Haggart Creek reference area in 2021 also was in the lower range of density reported historically at this study area (Appendix Table C.6), suggesting that lower density at the effluent-exposed area in 2021 reflected natural phenomena. Richness (FL) and relative abundance of Oligochaeta, Ephemeroptera, Plecoptera, and Trichoptera dominant taxonomic groups at the effluent-exposed area of Haggart Creek in September 2021 were comparable to respective values shown in 2017 and 2018, prior to the discharge of effluent from the Eagle Gold Project (Appendix Table C.6). Therefore, no changes in benthic invertebrate density, richness, or community structure were indicated at the effluent-exposed area of Haggart Creek in 2021 compared to periods prior to the initial discharge of effluent from the mine.

6 FISH POPULATION SURVEY

6.1 Fish Community

In May 2021, slimy sculpin (*Cottus cognatus*) was the only fish species captured at the effluent-exposed area of Haggart Creek and at the Lynx Creek reference area (Table 6.1). At Haggart Creek, most slimy sculpin were caught using backpack electrofishing whereas at Lynx Creek, similar numbers of slimy sculpin were captured by backpack electrofishing and minnow trapping collection techniques (Table 6.1; Appendix Tables D.1 to D.3). No arctic grayling (*Thymallus arcticus*) were captured at either Haggart Creek or Lynx Creek in May 2021 using backpack electrofishing or minnow trapping methods (Appendix Tables D.1 to D.3). High flows near or above stream bankfull height coupled with turbid water conditions reduced visibility and the mobility of technicians, limiting the ability of technicians to sample all available habitat/locations for personal safety reasons during the May field study. In addition, water temperature migration triggers for arctic grayling and barriers to migration presented by ice may have contributed to the absence of this species from Haggart and Lynx creeks at the time of the spring field program. These factors potentially contributed to lower numbers of fish and/or fish species captured at each of Haggart Creek, and Lynx Creek in May compared to historical studies completed in late summer and early fall (Appendix Table D.18).

In September 2021, the fish community at the near-field effluent-exposed area of Haggart Creek included arctic grayling and slimy sculpin, reflecting the same fish species captured at the Lynx Creek reference area (Table 6.1). Higher and lower densities of arctic grayling and slimy sculpin, respectively, were suggested at Haggart Creek compared to Lynx Creek at the time of the September 2021 field study based on comparison of CPUE (Table 6.1). The fish species assemblage at the effluent-exposed near-field area of Haggart Creek in September 2021 was comparable to studies conducted in late summer/early fall from 2017 to 2019 (Appendix Table D.18). The density of arctic grayling at the near-field area of Haggart Creek was higher in fall 2021 than during these previous studies, whereas the density of slimy sculpin was comparable between fall 2021 and late summer/fall from 2017 to 2019 based on inferences using electrofishing CPUE (Appendix Table D.18).

Overall, sampling for the EEM fish population survey indicated usage of the Haggart Creek near-field effluent-exposed area and Lynx Creek reference area by the same fish species. In addition, no effluent-related influences on arctic grayling or slimy sculpin densities were suggested at Haggart Creek based on evaluation of electrofishing CPUE relative to the Lynx Creek reference area and information collected at the Haggart Creek effluent-exposed area prior to the 2019 discharge of mine effluent from the Eagle Gold Project.

Table 6.1: Fish Catch and Community Summary from Backpack Electrofishing, Seine Netting, and Minnow Trapping Conducted at Haggart Creek and Lynx Creek, Eagle Gold Project Phase 1 EEM, May and September 2021

Station	Capture Method		May	September		Total No. of Species
			Slimy Sculpin	Slimy Sculpin	Arctic Grayling	
Lynx Creek (Reference)	Minnow Trapping	No. Caught	23	not applicable	not applicable	2
		CPUE	0.62			
	Electrofishing	No. Caught	15	254	42	
		CPUE	1.33	1.5	0.25	
Haggart Creek (Effluent-exposed)	Minnow Trapping	No. Caught	1	not applicable	not applicable	2
		CPUE	0.10			
	Seine Net	No. Caught	0	not applicable	not applicable	
		CPUE	0			
	Electrofishing	No. Caught	78	31	103	
		CPUE	2.28	0.24	0.80	

Notes: CPUE = catch per unit effort. Minnow Trapping CPUE = No. fish/trap/day (24 hours); Electrofishing CPUE = No. fish/electrofishing minute; and Seine Net CPUE = No. fish/100m^2.

6.2 Slimy Sculpin Population Evaluation

6.2.1 Males

A total of nine and fourteen male slimy sculpin were collected at the Haggart Creek near-field effluent-exposed and Lynx Creek reference study areas, respectively, for the assessment of EEM lethal survey endpoints (Appendix Table D.7) which was below the sample size targets indicated in the study design. As a result of the small sample sizes, greater uncertainty exists regarding the outcome of comparisons for EEM fish population survey effect indicators, specifically those comparisons that showed no significant differences between study areas but had Minimum Detectable Difference (MDD) greater than applicable CES (Environment Canada 2012).[8] .

The age distribution of male slimy sculpin did not differ significantly between the effluent-exposed and reference study areas, and no significant difference in mean age were indicated for male slimy sculpin between the Haggart Creek effluent-exposed area and Lynx Creek reference area (Figure 6.1; Table 6.2; Appendix Table D.7). Body size and growth (body weight-at-age) of male slimy sculpin did not differ significantly between effluent-exposed and reference areas (Table 6.2; Figure 6.2; Appendix Table D.7). Therefore, no differences in responses related to survival and growth were indicated for male slimy sculpin between the effluent-exposed and reference study areas. Comparison of relative gonad size in male slimy sculpin indicated a significant interaction between populations sampled at the effluent-exposed versus reference study areas. Although larger and smaller relative gonad sizes were suggested in smaller and larger males, respectively, at the effluent-exposed area, review of the plotted data indicated reasonable overlap in data points between the effluent-exposed area and the reference area (Figure 6.2) that in turn, suggested that the differences in relative gonad size were not ecologically meaningful. Therefore, no ecologically meaningful differences in male slimy sculpin energy usage were indicated between the Haggart Creek and Lynx Creek study areas in 2021.

Male slimy sculpin relative liver size (i.e., liver weight-at-body weight) did not differ significantly in populations sampled between Haggart Creek and Lynx Creek (Table 6.2; Figure 6.2; Appendix Table D.7). Although condition (i.e., body weight-at-length) was significantly lower in male slimy sculpin sampled from the effluent-exposed area compared to the reference area, the magnitude of this difference was within applicable CES indicating that the difference in condition between areas was not likely ecologically meaningful (Table 6.2; Figure 6.2; Appendix Table D.7). No external or internal abnormalities were observed for any of the male slimy sculpin sampled at

[8] Endpoints of weight-at-age, relative gonad weight, and relative liver weight showed Minimum Detectable Difference between the effluent-exposed and reference study areas outside of the applicable CES of ±25%, suggesting greater uncertainty regarding statistical outcomes for these endpoints due to the small sample sizes.

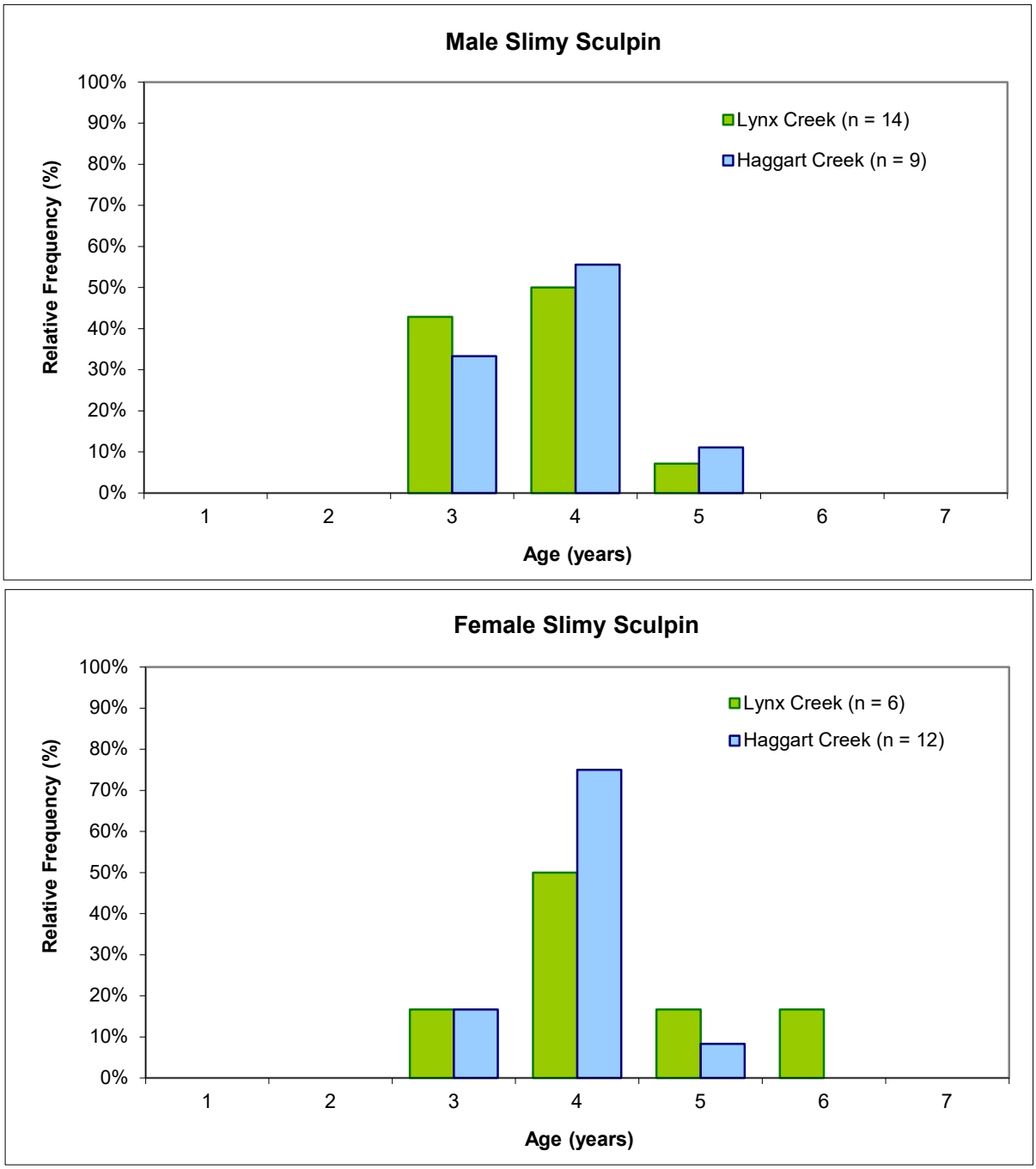


Figure 6.1: Relative Age Distributions of Male and Female Slimy Sculpin Captured for the Fish Population Survey

Table 6.2: Summary of Slimy Sculpin Endpoint Statistical Comparison Results between Haggart Creek Effluent-Exposed and Lynx Creek Reference Study Areas, Eagle Gold Project Phase 1 EEM, May 2021

Endpoint[a]	Statistically Significant Differences Observed?[b]	
	Males	Females
Survival (Age)*	No	No
Survival (Age Frequency Distribution)*	No	No
Growth (Body Weight-at-age)*	No[c]	No
Reproduction (Gonad Weight-at-body weight)*	No	**Yes[d] (-1.7%/-28%)**
Reproduction (Fecundity-at-body weight)	not applicable	No
Reproduction (Egg Size)	not applicable	**Yes (-22%)**
Energy Storage (Liver weight-at-body weight)*	No	No
Energy Storage (Body weight-at-length)*	**Yes (-8.7%)**	No

Notes: Bolded values are significantly different compared to reference areas.

[a] Endpoints denoted with an asterisk represent primary EEM endpoints used for the determination of "effects" for a lethal fish population study.

[b] Significant difference indication (yes/no) is presented with the magnitude of difference compared to the reference area (in parentheses).

[c] The covariate was non-significant and a t-test was conducted just on body weight.

[d] There was an interaction between slopes so analysis was conducted on the lower/higher end of the slope. Both magnitude of differences were presented.

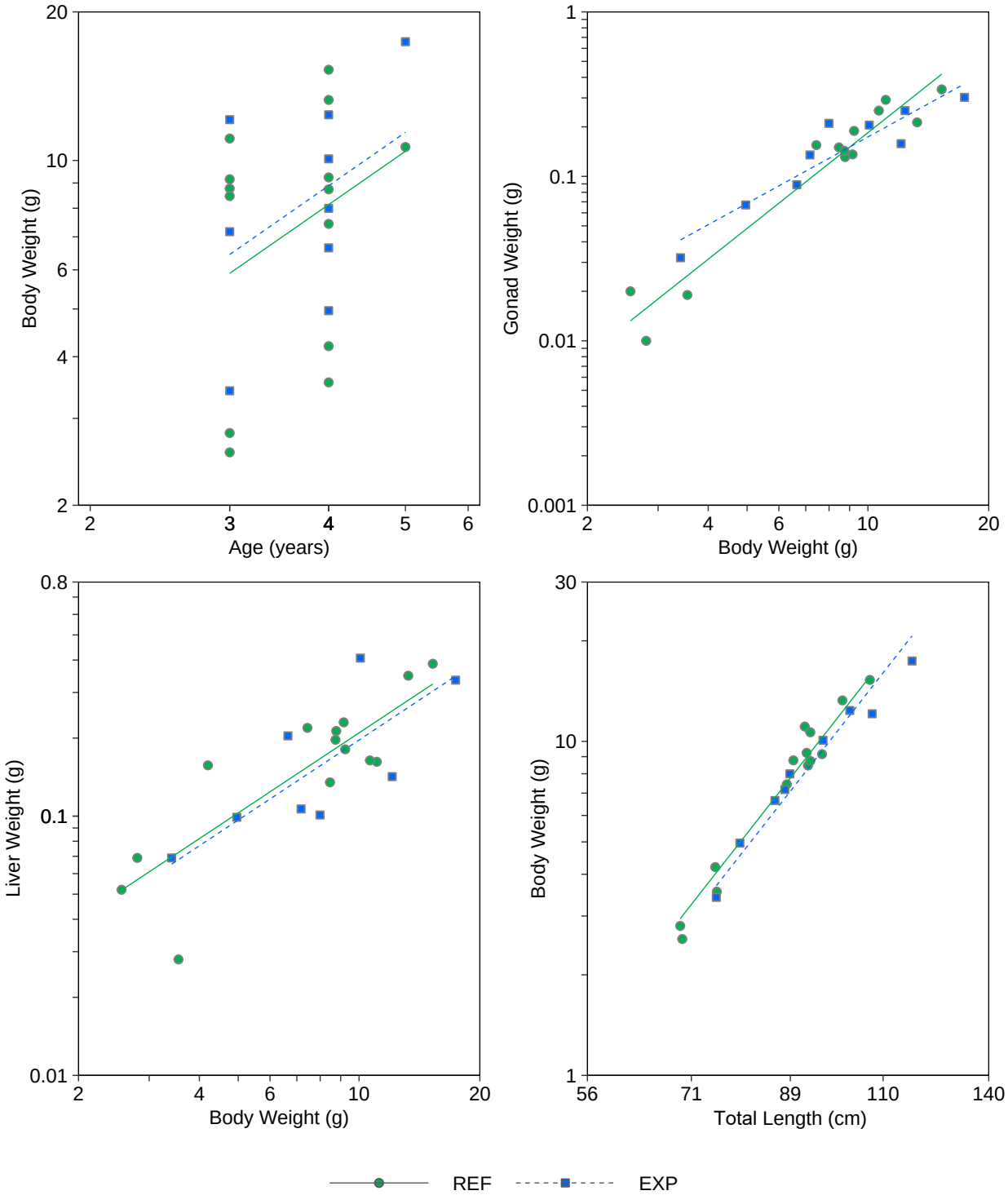


Figure 6.2: Comparison of Male Slimy Sculpin EEM Effect Indicator Relationships between Haggart Creek Effluent-Exposed (EXP) and Lynx Creek Reference (REF) Study Areas, Eagle Gold Project Phase 1 EEM, May 2021

the Haggart Creek effluent-exposed area or Lynx Creek reference area (Appendix Tables D.5 and D.6).

Overall, no responses related to survival, growth, energy usage, and relative liver size were indicated for male slimy sculpin between the Haggart Creek effluent-exposed area and the Lynx Creek reference area in 2021. Although male slimy sculpin showed significantly lower condition at Haggart Creek than at Lynx Creek, the magnitude of this difference was within applicable CES indicating that this difference was not ecologically meaningful. Therefore, no ecologically meaningful effects on male slimy sculpin were indicated at Haggart Creek downstream of the Eagle Gold Project effluent discharge(s) in 2021.

6.2.2 Females

A total of twelve and six female slimy sculpin were collected at the Haggart Creek effluent-exposed area and Lynx Creek reference area, respectively, in May 2021 (Appendix Table E.5) resulting in a deviation from the target sample size stated in the study design. Similar to that described for male slimy sculpin, caution is thus warranted regarding the following interpretation of the female slimy sculpin fish population survey endpoints.[9] Age distribution and age of female slimy sculpin sampled at Haggart Creek did not differ significantly from those sampled at Lynx Creek (Table 6.2; Figure 6.3; Appendix Table D.11), suggesting no effluent-related influences on female slimy sculpin survival at Haggart Creek.

Body size and growth of female slimy sculpin at Haggart Creek also did not differ significantly compared to those sampled from the reference area. Relative gonad weight was significantly lower for females sampled at the effluent-exposed area than at the reference area (Table 6.2; Figure 6.3; Appendix Table D.11), although the magnitude of this difference was near the applicable CES suggesting that the difference was likely not ecologically meaningful. A significant interaction in relative egg size (i.e., egg weight-at-body weight) was indicated between study areas. Although mean egg weight was shown to be significantly smaller for females sampled at the effluent-exposed area compared to those from the reference area, no significant difference in relative fecundity (i.e., fecundity-at-body weight) was indicated for females sampled between Haggart Creek and Lynx Creek (Table 6.2; Figure 6.3; Appendix Table D.11). Thus, females at the effluent-exposed area produced smaller, but similar number, of eggs compared to females at the reference area.

[9] Endpoints of weight-at-age, relative gonad weight, and condition showed Minimum Detectable Differences between the effluent-exposed and reference study areas that were outside of the applicable CES, suggesting greater uncertainty regarding statistical outcomes for these endpoints due to the small sample sizes.

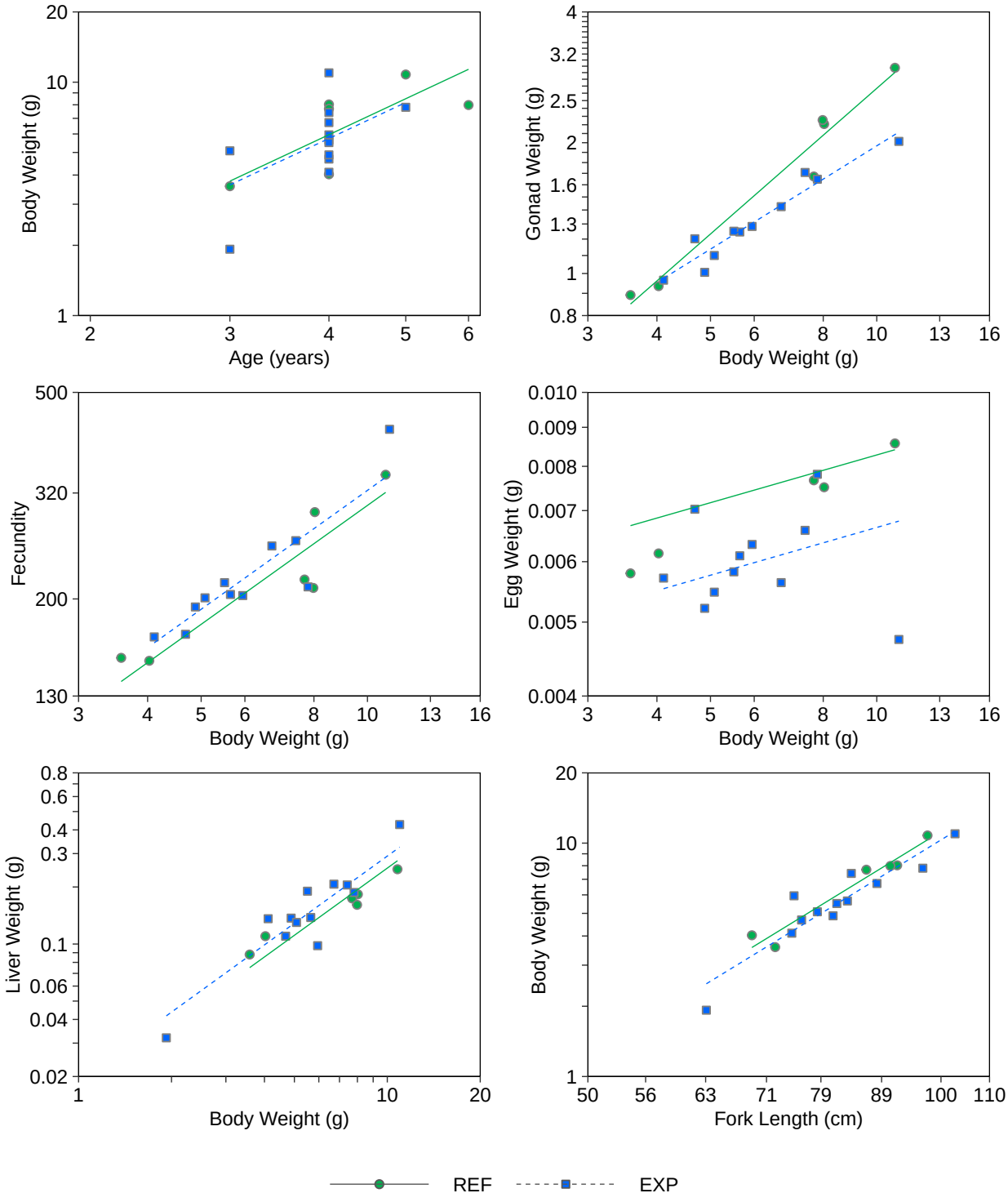


Figure 6.3: Comparison of Female Slimy Sculpin EEM Effect Indicator Relationships between Haggart Creek Effluent-Exposed (EXP) and Lynx Creek Reference (REF) Study Areas, Eagle Gold Project Phase 1 EEM, May 2021

Relative liver weight and condition of female slimy sculpin sampled from the effluent-exposed area did not differ significantly from those sampled from the reference area, indicating no effluent-related effects on energy storage in female slimy sculpin from Haggart Creek (Table 6.2; Figure 6.3; Appendix Table D.11). As documented for slimy sculpin males, no external or internal abnormalities were observed for female slimy sculpin sampled from either Haggart Creek or Lynx Creek during the May 2021 study (Appendix Tables D.9 and D.10), suggesting no effluent-related influences on physical health and incidence of parasitic infection for female slimy sculpin from Haggart Creek.

Overall, no responses related to survival, growth, and energy storage were indicated for female slimy sculpin between the Haggart Creek effluent-exposed area and the Lynx Creek reference area in May 2021. Although female slimy sculpin showed significantly lower relative gonad size at Haggart Creek than at Lynx Creek, this difference may have reflected production of similar numbers but smaller-sized eggs in females residing within Haggart Creek. Therefore, no marked effects on female slimy sculpin were indicated at Haggart Creek downstream of the Eagle Gold Project effluent discharge(s) in May 2021.

6.3 Arctic Grayling Population Evaluation

Measurements of length and weight were collected from 99 and 42 arctic grayling at the Haggart Creek effluent-exposed area and Lynx Creek reference study areas, respectively, in September 2021 for the assessment of EEM non-lethal fish population endpoints (Appendix Tables D.14 and D.15). Arctic grayling YOY were distinguishable from non-YOY individuals at a fork length of approximately 100 mm based on evaluation of length-frequency distributions coupled with supporting age determinations (Figure 6.4). Using this cut-off value, 35% and 81% of the arctic grayling sampled at the effluent-exposed and reference study areas, respectively, were YOY (Figure 6.4). Comparison of length-frequency distributions with and without the inclusion of non-YOY individuals in each data set did not return a different statistical test outcome (Appendix Table D.16). Accordingly, no effluent-related influences on reproduction or survival in early life stages of arctic grayling were suggested at the Haggart Creek effluent-exposed area.

Arctic grayling length-frequency distributions differed significantly between Haggart Creek and Lynx Creek, reflecting the occurrence of large numbers of sub-adults and no adults sampled from the effluent-exposed area in contrast to no sub-adults and a small number of adults sampled at the reference area (Table 6.3; Figure 6.4; Appendix Figure D.1). Differing life stages of arctic grayling between Haggart Creek and Lynx Creek was believed to be due to the general absence of large deep pools at the effluent-exposed area, which are preferred by adult arctic grayling for overwintering, cover, and foraging (Scott and Crossman 1998). Notably, adult arctic grayling

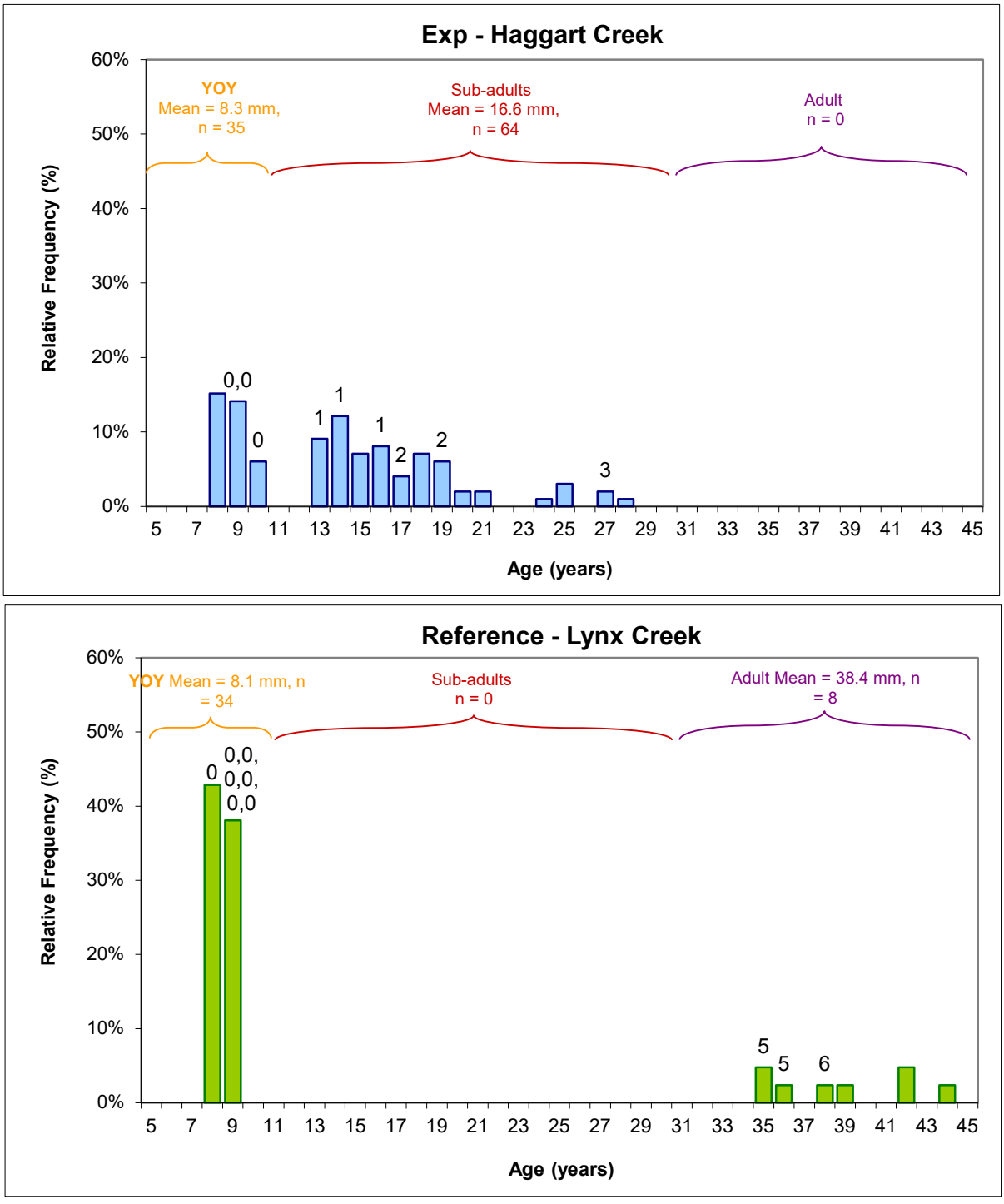


Figure 6.4: Relative Length Distributions of Arctic Grayling Captured for the Fish Population Survey

Table 6.3: Summary of Arctic Grayling Endpoint Statistical Comparison Results between Haggart Creek Effluent-Exposed and Lynx Creek Reference Study Areas, Eagle Gold Project Phase 1 EEM, September 2021

Endpoint[a]	Age	Statistically Significant Differences Observed?[b]
Survival/Recruitment (Length Frequency Distribution)*	Non-YOY	**Yes**
Growth (Fork Length)*	YOY	**Yes (+2.8%)**
Growth (Body Weight)*	YOY	No
Energy Storage (Body weight-at-length)*	Non-YOY	No
Energy Storage (Body weight-at-length)	All	**Yes[c] (-7.0%)**
Energy Storage (Body weight-at-length)	YOY	**Yes[c] (-3.5%)**

Note: Bolded values are significantly different compared to reference areas.

[a] Endpoints denoted with an asterisk represent primary EEM endpoints used for the determination of "effects" for a lethal fish population study.

[b] Significant difference indication (yes/no) is presented with the magnitude of difference compared to the reference area (in parentheses).

[c] Sample REF-AG-15 was determined to be an outlier and removed from analysis.

sampled from Lynx Creek were retrieved from a relatively large, ponded area created because of beaver activity, similar habitat of which was not present throughout the length of the effluent-exposed area within Haggart Creek.

A total of 64 (sub-adult) and eight (adult) non-YOY arctic grayling were sampled at Haggart Creek and Lynx Creek, respectively, in September 2021. Although non-YOY arctic grayling from the Haggart Creek effluent-exposed area were significantly shorter and lighter than those sampled from Lynx Creek, no significant difference in condition was indicated between study areas despite substantially smaller size of fish sampled from Haggart Creek (Table 6.3). Separate evaluation of the under-yearling age class indicated YOY arctic grayling at the effluent-exposed area were significantly longer but did not differ significantly in body weight compared to the Lynx Creek reference area, the relationship of which contributed to slightly, but significantly, lower condition for YOY arctic grayling sampled from Haggart Creek (Table 6.3; Appendix Table D.16). The magnitude of this difference in condition between study areas was small, well within an effect size of ± 10%, which suggested that the difference was not ecologically meaningful (Table 6.3; Appendix Table D.16). No external abnormalities were observed on any non-YOY or YOY arctic grayling sampled from either Haggart Creek or Lynx Creek in September 2021 with the exception of a single individual from the effluent-exposed study area that exhibited loss of the lower half of a caudal fin (Appendix Tables D.14 and D.15).

Overall, no effluent-related influences on reproduction or survival in early life stages of arctic grayling and no effects on fish energy storage (i.e., condition) were indicated for non-YOY arctic grayling at the Haggart Creek effluent-exposed area in September 2021. Although substantial differences in size of non-YOY arctic grayling were indicated between Haggart Creek and Lynx Creek, natural differences in habitat that included the lack of large, deep pools at Haggart Creek compared to Lynx Creek likely accounted for differing life stages of non-YOY inhabiting each creek system.

7 CONCLUSIONS AND RECOMMENDATIONS

The objectives of the Eagle Gold Phase 1 EEM study were to determine potential influences of mine effluent on biological communities of the Haggart Creek receiver. To meet these objectives, effluent quality and receiving environment water quality data were used to support the interpretation of benthic invertebrate community and fish population surveys conducted at an effluent-exposed area of Haggart Creek and appropriate reference areas that included Haggart Creek upstream of the effluent discharge point (benthic survey) and Lynx Creek (fish population survey). The principal conclusions from the Eagle Gold Phase 1 EEM study are:

- Effluent from the final discharge points (LDSP and FDP5) consistently met all MDMER monthly mean and grab-sample concentration limits, except for TSS concentrations in LDSP FDP effluent discharged in April 2019 and FDP5 effluent discharged in April 2020. Final effluent from the LDSP FDP and FDP5 was without exception non-acutely lethal to rainbow trout and *Daphnia magna* over the duration of the Phase 1 EEM (i.e., 2019 to 2021). Effluent was discharged in only six months over the duration of the Phase 1 EEM, in which the total monthly volume of effluent discharged ranged from 15,415 to 107,903 m^3.
- Receiving environment water quality monitoring data collected in the Phase 1 EEM period indicated routinely elevated concentrations of total arsenic, aluminum, copper, and iron at Haggart Creek effluent-exposed Station W4 compared to CWQG, but concentrations of these metals were also elevated above CWQG at the reference areas indicating the source was not related to mine effluent. Higher concentrations of metals in water appeared to be associated with higher TSS concentrations, indicating a potential causal link between elevated metal concentrations and surface runoff containing high TSS concentrations. Concentrations of TSS at effluent-exposed areas of Haggart Creek in the Phase 1 EEM period (2019 to 2021) compared to prior to mine operation suggested that the Eagle Gold Project may have had the potential to contribute to higher TSS concentrations in Haggart Creek but may also have been related to artifacts associated with different monitoring frequency since and prior to effluent discharge commencing.
- The benthic invertebrate community at the effluent-exposed area of Haggart Creek showed significantly lower benthic invertebrate density, significantly higher Simpson's Evenness, and significantly differing Bray-Curtis Index compared to the reference area in 2021. However, the occurrence of higher Simpson's Evenness at the effluent-exposed area and no significant difference in relative abundance of the metal-sensitive EPT group between the effluent-exposed and reference areas of Haggart Creek indicated that the

between-area differences in benthic invertebrate community traits were unrelated to metal concentrations originating from mine effluent. The benthic invertebrate community at the effluent-exposed area of Haggart Creek in 2021 was comparable to the community documented prior to commencement of mine operation, further indicating no adverse effluent-related influences on the benthic invertebrate community of Haggart Creek.

- The fish community at the effluent-exposed area of Haggart Creek was comparable to the Lynx Creek reference area in 2021 in terms of species diversity and overall species relative abundance based on evaluation of CPUE and comparison to historical data. No responses related to survival, growth, and relative liver size were indicated for slimy sculpin of either sex, and to reproduction in males and condition in females, between Haggart Creek and the reference area in 2021. Although male slimy sculpin showed significantly lower condition at Haggart Creek than at Lynx Creek, the magnitude of this difference was within applicable CES indicating that this difference was not ecologically meaningful. Significantly lower relative gonad size was documented in female slimy sculpin at Haggart Creek as compared to Lynx Creek, however this difference simply reflected production of similar numbers of smaller-sized eggs in females residing within Haggart Creek. No effluent-related influences on reproduction or survival in early life stages, and no effects on fish energy storage (i.e., condition), were indicated for non-YOY arctic grayling at the Haggart Creek effluent-exposed area in September 2021.

The first phase of EEM biological sampling at the Eagle Gold Project was successful in meeting the objectives set out in the Study Design for the majority of primary metrics required under the MDMER. For the second phase of EEM biological study, the only changes recommended for the benthic invertebrate community survey includes an attempt to relocate reference stations to locations containing larger interstitial substrate size that more closely reflects substrate found at the effluent-exposed area in Haggart Creek, and quantifying the size of interstitial substrate sampled. These changes would result in potential removal of this natural physical habitat feature difference between the existing study areas as a potential confounding influence for interpretation of future benthic invertebrate community data. No changes from the Phase 1 EEM fish population survey, including study areas, and target fish species, are recommended for the next phase of EEM biological study to maintain consistency in methodology between studies. Based on the prescribed frequency under the MDMER, and assuming the same approach applied in this Phase 1 EEM will be implemented for the Phase 2 EEM study, the Study Design for the next phase of EEM biological sampling must be submitted to ECCC no later than six months prior to implementing field collections in May 2024. Under the EEM framework, the second phase of biological monitoring will require effects assessment to determine whether the occurrence of significantly differing benthic invertebrate density, Simpson's Evenness, and Bray-Curtis Index

and difference in fish health metrics (e.g., lower condition and relative gonad size in male and female slimy sculpin, respectively) between the effluent-exposed and reference areas are consistent over study phases. The corresponding Phase 2 EEM Interpretive Report must be submitted to ECCC on or before April 20th, 2025.

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APPENDIX A

ECCC CORRESPONDENCE

Pacific and Yukon Region
Environmental Protection Operations Directorate
Environment and Climate Change Canada
101-401 Burrard St.
Vancouver, BC V6C 3R2

File #: MM4039

Via email to: hcoyle@vitgoldcorp.com

November 10, 2020

Hugh Coyle
Lands & Permitting Manager
Victoria Gold Corp.
Suite 1000 – 1050 West Pender St
Vancouver, BC V6E 3S7

Dear Hugh Coyle:

Subject: Eagle Gold Mine Phase #1 EEM Study Design– Action items identified

Environment and Climate Change Canada (ECCC) has reviewed the Environmental Effects Monitoring (EEM) report entitled "*Eagle Gold Mine Phase 1 Environmental Effects Monitoring Study Design April 2020*" submitted on April 20, 2020. The review of the study design took into account:

- requirements of the *Metal and Diamond Mining Effluent Regulations (MDMER)* of the *Fisheries Act*,
- information in the "EEM Technical Guidance Document", and
- generally accepted standards of good scientific practice.

This review is not a substitute for reading the MDMER and does not in any way supersede or modify the *Fisheries Act* or the MDMER. In the event of an inconsistency between this review and the Act and/or the MDMER, the Act and the regulation prevail.

Review comments and action items for the mine to consider are found below. ECCC expects that a response to the action items be submitted without delay to complete the review of the study design. The response should be submitted as an addendum to the Environmental Effects Monitoring Electronic Reporting (EEMER) system (https://ec.ss.ec.gc.ca/).

- **<u>Action #1</u>**: **Details required for all Final Discharge Points (FDP) and water treatment processes**
  Schedule 5 paragraph 10(a)(iii) requires information regarding the production processes used by a mine.
    - Section 2.2.1 of the Phase 1 study design provides some details regarding the treatment of mine water/solution from the HLF and Gold Recovery Plant and lists four final discharge points. The mine water treatment plant is not built and it is unclear when water treatment will commence. Currently water is being directed to the Lower Dublin South Pond (LDSP) but no details are provided as to what, if any, water treatment is used prior to discharge.
    - The Eagle Gold Project Environmental Monitoring Surveillance and Adaptive Management Plan Version 2019-02 (received via email 2019-08-14)section 2.4.3 indicated that water from LDSP will also be used for dust suppression.
    - The study design indicated that a fifth FDP, the LDSP Contingency Sump has been decommissioned; however, the 2020 Quarterly effluent monitoring, 2nd quarter, report submitted to the Mine Effluent Reporting System on August 13, 2020, reported a discharge from the contingency sump on April 20, 2020 that exceeded the total suspended solids authorized limits for deleterious substances (Schedule 4 of the MDMER).

  Provide details for current water treatment processes and all proposed uses for water held in the Lower Dublin South Pond. Provide details for the missing FDP LDSP Contingency Sump.

- **<u>Action #2</u>**: **Additional details regarding effluent mixing**
  Schedule 5, paragraph 10(a)(i) requires a description of the manner in which effluent mixes in exposure areas at 100 metres and 250 metres.
    - Section 2.4.1 of the study design indicates that the estimated effluent concentration at Haggart Creek near-field was 13.8%. However, the distances from the near-field sampling site (W4) and the far-field site (W22) to the FDP are not provided. The scale used by Figure 2.2 showing the hydrology station locations is too small to accurately determine the location of the sampling station in relation to the final discharge point. The study design suggests that concentrations greater than 10% can occur at the Haggart Creek effluent-exposed area but the total length is not defined.
    - Section 2.2.1.2 of the EEM TGD covers measuring conductivity in effluent using a formula to determine relative concentrations:

      $$Cr - (Ca - Cb)/(Ce - Cb)$$

      Cr = relative concentration
      Ce = effluent conductivity, µS/cm
      Cb = background conductivity, µS/cm
      Ca = measured conductivity to be converted, µS/cm

Temperature readings are also recommended since conductivity rises approximately 2% for every 1º C rise in temperature.

Section 2.3 of the study design used data from two days, however, conductivity was not measures for the reference W22 or the effluent LPSD Outlet for both days. The effluent concentration (Ca) was calculated using an average of the two readings for W4 while Cb and Ce had only one measurement each. Samples should have been collected on the same days and Cr calculated for each day rather than averaging the measured conductivity at W4. By not using an average for W4 the estimated effluent concentration for April 18 would be 34%. It is also unclear from Table 2.2 how far the extent of the reported 13.8% concentration is in the near-field.

Provide additional information for the sampling sites used to estimate effluent concentrations (W22 and W4) in terms of distance from the FDP discharge in metres. Provide a larger scale map that provides greater detail for locations of sampling sites W22 and W4 in relation to each other and the final discharge point.

- **<u>Action #3</u>**: **Fish population study clarification**
  Schedule 5 paragraph 10(b)(ii) requires an explanation as to how the study will provide the information necessary to determine the effluent effect on fish. The study design is proposing to use a control-impact lethal design for slimy sculpin and a control-impact non-lethal design for arctic grayling.
  - Section 3.3.2 of the study design provides details of the sample sizes and collection methods for slimy sculpin and arctic grayling. Table 3.3 indicates that lethal sampling (should be non-lethal) will be conducted for arctic grayling and that 100 individuals will be taken for each study area. It is unclear from the information in Table 2.12 in the study design that 100 fish per sample site would be attainable given the low density numbers presented from past baseline sampling (53 fish total caught for Haggart Creek and 13 fish total caught for Lynx Creek). The study design does not address if 100 fish/site (total 200) proposed can actually be met.

  Provide information detailing how the arctic grayling non-lethal sampling will be able to collect 100 fish/site (2 sites x 100 = 200 fish) given the low density numbers. Details should include any proposed alternate studies if 100 fish/site cannot be obtained.

- **<u>Action #4</u>**: **Benthic study sampling site requirements**
  Schedule 5 sub-paragraph 10(c)(1)(A) requires a description of the sampling areas and a scientific rationale why the sampling areas were selected.
  - The study design proposes a control-impact design using exposure/reference sampling sites. Section 3.2.1 of the study design (pg42) states "*The effluent-exposed and reference study areas*

indicated above correspond to Stations W4/W29 and W22, respectively, that are used to assess Project-related effects on chemical and biological conditions at Haggart Creek in accordance with territorial WUL stipulations (VGC 2020). These same study areas (and station locations, if possible) are proposed for benthic sampling as part of the Phase 1 EEM (Figure 3.1)." However, Table 3.1 indicates only 2 study areas W4 and W22. It is unclear if study area W29 is part of the proposed study.

- There is concern with the reference sampling site (W22) given its close proximity to the discharge point and mine footprint. The study design states that the site is sufficiently upstream of the LDSP outlet but details on how far are not provided and the map in Figure 3.1 does not provide any details on sampling site locations or distances. Note that the MDMER paragraph 2(2)(b) defines effluent as "*any seepage or surface runoff containing any deleterious substance that flows over, through or out of the site of a mine*." Thus any reference sampling site must not be situated where there is the potential for any effluent including seepage or surface runoff from the mine site that may impact the reference site.

Provide additional details to support the scientific rationale for the exposure and reference sites selected and the total number of sampling sites proposed. Update Table 3.1 if W29 is to be used as an exposure site. Update the Figure 3.1 map showing locations of sampling sites at a larger scale.

- **<u>Action #5</u>**: **Benthic study sediment sampling**
  Schedule 5 paragraphs 10(c)(i) and (ii) and subparagraph 12(1)e)(ii) require the description and scientific rationale for benthic studies, explaining how the study will provide the information necessary to determine effect. In addition, "*if the study is conducted in an area where it is possible to sample sediment, total organic carbon content of sediment and particle size distribution of sediment*" should be provided.
  - The study design does not indicate if any sediment sampling will be conducted.

  Provide details for sediment sampling, and if no sediment sampling is to be conducted, provide the rationale.

- **<u>Comment #1</u>**: **Bray-Curtis critical effect size**
  Schedule 5 subsection 1(2) requires critical effect sizes (CES) and provides the CES for benthic density, evenness and richness. For the Bray-Curtis Index, Table 1-3 of the EEM Technical Guidance Document sets the CES at +2SD.

Should you have any questions or concerns regarding the EEM program or wish to discuss the study design, contact the Regional Coordinator Myra Pagé at 250-287-1866 or at myra.page@canada.ca. If you have questions regarding EEMER, please contact ec.esee-eem.ec@canada.ca.

Sincerely,

Saul Schneider
Regional Director, Pacific and Yukon Region

cc: Myra Pagé, EEM Coordinator, ECCC PYR Region
Normand Légaré, Enforcement Officer, ECCC PYR Region

Pacific and Yukon Region
Environmental Protection Operations Directorate
Environment and Climate Change Canada
101 – 401 Burrard St.
Vancouver, BC V6C 3R2

File #: MM4039

Via email to: hcoyle@vitgoldcorp.com

December 11, 2020

Hugh Coyle
Lands & Permitting Manager
Victoria Gold Corp
Suite 1000 – 1050 West Pender St
Vancouver, BC V6E 3S7

Subject: Review of Eagle Gold Phase #1 EEM Study Design Addendum

Dear Hugh Coyle:

Environment and Climate Change Canada (ECCC) has reviewed the Environmental Effects Monitoring (EEM) addendum "*MM4039 Eagle Gold Mine Study Design 1.2*" submitted December 1, 2020. The review of the addendum took into account:

- requirements in the Metal and Diamond Mining Effluent Regulations (MDMER) of the Fisheries Act,
- the information in the *Metal Mining Technical Guidance for Environmental Effects Monitoring* document, and
- generally accepted standards of good scientific practice.

This review is not a substitute for reading the MDMER and does not in any way supersede or modify the *Fisheries Act* or the MDMER. In the event of an inconsistency between this review and the Act and/or the MDMER, the Act and the MDMER prevail.

ECCC has completed the review and has no further comments at this time.

ECCC would appreciate receiving a final schedule for the biological monitoring, sent to Myra Pagé at myra.page@canada.ca at least two weeks prior to the commencement of field activities. As required under the MDMER, biological monitoring studies must be conducted in accordance with the study design. If it becomes impossible to follow the study design because of unusual circumstances, the mine must inform the Minister of the Environment via the Mine Effluent

Reporting System (MERS) without delay of those circumstances and how the study will be conducted.

ECCC anticipates receiving the Phase #1 interpretive report no later than April 20, 2022. Regulated facilities are required to submit EEM reports and biological monitoring data to the Environmental Effects Monitoring Electronic Reporting system (EEMER) at https://ec.ss.ec.gc.ca/.

Should you have any questions or concerns regarding the EEM program or wish to discuss the study design, contact the Regional Coordinator Myra Pagé at 250-287-1866 or at myra.page@canada.ca. If you have questions regarding EEMER, please contact ec.esee-eem.ec@canada.ca. Questions related to MERS may be directed to ec.sdem-mers.ec@canada.ca .

Sincerely,

Saul Schneider
Regional Director, Pacific and Yukon Region

cc: Myra Pagé, EEM Coordinator, ECCC PYR Region
Normand Légaré, Enforcement Officer, ECCC PYR Region
Travis Teel, Enforcement Officer, ECCC PYR Region

APPENDIX B

EFFLUENT AND WATER QUALITY INFORMATION

Table B.1: Stations LDSP FDP and FDP5 Monthly Effluent Discharge Volumes, 2019 to 2021

Month/Year	Number of discharge days[a]	Volume Discharged (m^3)	
		LDSP FDP	FDP5
April 2019	4	15,415	-
April 2020	9	-	43,130
August 2020	18	107,903	-
September 2020	12	71,209	-
July 2021	12	80,933	-
November 2021	9	87,500	
Total		362,960	43,130
Average		72,592	-
Maximum		107,903	-

Note: Dash (-) indicates no effluent was discharged for the corresponding month.
[a] Discharge days consists of a 24 hour, continuous pumping period.

Table B.2: Summary of Effluent Monitoring Data for the Eagle Gold Project LDSP Final Discharge Point, 2019

Variable		Units	MDMER Grab Sample Limit[a]	20-Apr-19	27-Apr-19	29-Apr-19
Routine Monitoring[b]	pH (lab)	pH units	6.0 - 9.5	8.11	8.11	7.86
	Total Suspended Solids	mg/L	30	66	20	17
	Cyanide (total)	mg/L	1.0	<0.0050	<0.0050	<0.0050
	Arsenic (As)	mg/L	0.60	0.083	0.075	0.075
	Copper (Cu)	mg/L	0.60	0.0072	0.0062	0.0057
	Lead (Pb)	mg/L	0.20	0.0068	0.0061	0.0062
	Nickel (Ni)	mg/L	1.00	0.0052	0.0045	0.0041
	Zinc (Zn)	mg/L	1.00	0.011	0.010	0.0095
	Radium-226	Bq/L	1.11	-	-	<0.0068
Toxicity	Rainbow Trout[c]	% Pass (N)	non-lethal	not tested	not tested	non-lethal
	Daphnia magna[c]	% Pass (N)	non-lethal	not tested	not tested	non-lethal
Effluent Characterization[d]	Specific Conductance	µS/cm	-	559	504	492
	Hardness	mg/L (as $CaCO_3$)	-	260	238	216
	Alkalinity	mg/L (as $CaCO_3$)	-	155	142	138
	Un-ionized Ammonia	mg/L	-	-	-	<0.00012
	Ammonia (NH_4^+)	mg/L	-	<0.0050	0.0053	<0.0050
	Nitrate (NO_3)	mg/L	-	0.14	0.11	0.10
	Phosphorus (P)	mg/L	-	0.067	0.043	0.027
	Sulphate (SO_4)	mg/L	-	111	102	102
	Chloride (Cl)	mg/L	-	21	17	15
	Aluminum (Al)	mg/L	-	1.3	2.2	1.9
	Cadmium (Cd)	mg/L	-	0.000097	0.000098	0.000091
	Chromium (Cr)	mg/L	-	0.0026	0.0029	0.0027
	Cobalt (Co)	mg/L	-	0.0017	0.0014	0.0012
	Iron (Fe)	mg/L	-	3.2	2.4	2.1
	Manganese (Mn)	mg/L	-	0.14	0.12	0.11
	Mercury (Hg)	mg/L	0.00010	0.000011	0.0000076	<0.000025
	Molybdenum (Mo)	mg/L	-	0.0013	0.0012	0.0017
	Selenium (Se)	mg/L	0.0050/0.010[e]	0.00050	0.00057	0.00050
	Thallium (Tl)	mg/L	-	0.000043	0.000038	0.000037
	Uranium (U)	mg/L	-	0.0066	0.0059	0.0059

Indicates monthly mean value that exceeded applicable limit for deleterious substances and/or pH, or concentration that exceeded fish tissue survey trigger value (mercury and selenium only), or acute toxicity test failure based on individual monthly test result.

[a] Limits indicated refer to maximum authorized grab sample concentrations as per MDMER Schedule 4 except the limit for mercury, which has been included as a fish usability assessment trigger limit based on grab sample concentration of 0.0001 mg/L in this study.

[b] Deleterious substances and pH as defined under Schedule 4 of the MDMER (Government of Canada 2022)

[c] Indicates acute toxicity tests must 'pass' test criteria (i.e., 100% effluent which kills less than 50% of test organisms over a 96-hour [rainbow trout] or 48-hour [*D. magna*] period).

[d] Required effluent characterization and site-specific parameters as defined under Schedule 5 of the MDMER (Government of Canada 2022).

[e] MDMER Grab Sample Limit/Not to exceed limit

Table B.3: Summary of Effluent Monitoring Data for the Eagle Gold Project LDSP Final Discharge Point, 2020

	Variable	Units	MDMER Grab Sample Limit[a]	29-Jul-20	03-Aug-20	10-Aug-20	17-Aug-20	18-Aug-20	14-Sep-20	23-Sep-20
Routine Monitoring[b]	pH (lab)	pH units	6.0 - 9.5	8.12	8.10	8.03	8.12	8.12	8.09	8.10
	Total Suspended Solids	mg/L	30	<3.0	<3.0	<3.0	<3.0	9.4	4.6	<3.0
	Cyanide (total)	mg/L	1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Arsenic (As)	mg/L	0.60	0.029	0.028	0.030	0.031	0.036	0.033	0.033
	Copper (Cu)	mg/L	0.60	0.0034	0.0022	0.0028	0.0027	0.0031	0.0027	0.0020
	Lead (Pb)	mg/L	0.20	0.0025	0.00055	0.00085	0.0012	0.0017	0.00068	0.00047
	Nickel (Ni)	mg/L	1.00	0.0016	0.0016	0.0017	0.0022	0.0024	0.0019	0.0016
	Zinc (Zn)	mg/L	1.00	0.0037	<0.0030	<0.0030	0.0030	0.0036	0.0031	<0.0030
	Radium-226	Bq/L	1.11	0.0036	0.0029	<0.0088	<0.0085	0.051	<0.0075	<0.0063
Toxicity	Rainbow Trout[c]	% Pass (N)	non-lethal	non-lethal	non-lethal	not tested	not tested	not tested	non-lethal	not tested
	Daphnia magna[c]	% Pass (N)	non-lethal	non-lethal	non-lethal	not tested	not tested	not tested	non-lethal	not tested
Effluent Characterization[d]	Specific Conductance	µS/cm	-	319	301	312	306	308	356	349
	Hardness	mg/L (as $CaCO_3$)	-	147	146	144	146	149	165	177
	Alkalinity	mg/L (as $CaCO_3$)	-	85	85	81	84	87	95	95
	Un-ionized Ammonia	mg/L	-	-	<0.0010	-	<0.0010	<0.0010	<0.0010	-
	Ammonia (NH_4^+)	mg/L	-	0.017	0.0081	0.026	0.019	0.024	0.025	0.036
	Nitrate (NO_3)	mg/L	-	0.083	0.074	0.081	0.13	0.13	0.13	0.13
	Phosphorus (P)	mg/L	-	0.0065	0.0040	0.0048	0.0058	0.0085	0.0050	0.0039
	Sulphate (SO_4)	mg/L	-	67	67	65	62	62	76	74
	Chloride (Cl)	mg/L	-	4.1	4.0	3.9	4.0	4.0	3.6	3.5
	Aluminum (Al)	mg/L	-	0.14	0.070	0.11	0.28	0.38	0.12	0.091
	Cadmium (Cd)	mg/L	-	0.000030	0.000026	0.000031	0.000039	0.000044	0.000043	0.000038
	Chromium (Cr)	mg/L	-	0.00017	0.00018	0.00019	0.00036	0.00054	0.00021	0.00022
	Cobalt (Co)	mg/L	-	0.00023	0.00018	0.00020	0.00030	0.00040	0.00025	0.00022
	Iron (Fe)	mg/L	-	0.16	0.11	0.14	0.35	0.50	0.16	0.14
	Manganese (Mn)	mg/L	-	0.020	0.015	0.0083	0.015	0.020	0.024	0.031
	Mercury (Hg)	mg/L	0.0001	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)	mg/L	-	0.0017	0.0016	0.0015	0.0016	0.0015	0.0018	0.0019
	Selenium (Se)	mg/L	0.0050/0.010[e]	0.00034	0.00036	0.00040	0.00043	0.00036	0.00048	0.00048
	Thallium (Tl)	mg/L	-	<0.000010	<0.000010	<0.000010	0.000011	0.000013	0.000010	<0.000010
	Uranium (U)	mg/L	-	0.0027	0.0029	0.0027	0.0027	0.0028	0.0037	0.0031

Indicates monthly mean value that exceeded applicable limit for deleterious substances and/or pH, or concentration that exceeded fish tissue survey trigger value (mercury and selenium only), or acute toxicity test failure based on individual monthly test result.

[a] Limits indicated refer to maximum authorized grab sample concentrations as per MDMER Schedule 4 except the limit for mercury, which has been included as a fish usability assessment trigger limit based on grab sample

[b] Deleterious substances and pH as defined under Schedule 4 of the MDMER (Government of Canada 2022).

[c] Indicates acute toxicity tests must 'pass' test criteria (i.e., 100% effluent which kills less than 50% of test organisms over a 96-hour [rainbow trout] or 48-hour [*D. magna*] period).

[d] Required effluent characterization and site-specific parameters as defined under Schedule 5 of the MDMER (Government of Canada 2022).

[e] MDMER Grab Sample Limit/Not to exceed limit

Table B.4: Summary of Effluent Monitoring Data for the Eagle Gold Project LDSP Final Discharge Point, 2021

	Variable	Units	MDMER Grab Sample Limit[a]	12-Jul-21	19-Jul-21	12-Nov-21	15-Nov-21
Routine Monitoring[b]	pH (lab)	pH units	6.0 - 9.5	8.16	8.25	8.33	8.24
	Total Suspended Solids	mg/L	30	5.5	3.5	13.0	3.8
	Cyanide (total)	mg/L	1.0	<0.0050	<0.0050	<0.0050	<0.0050
	Arsenic (As)	mg/L	0.60	0.0270	0.0283	0.0526	0.0514
	Copper (Cu)	mg/L	0.60	0.0020	0.0022	0.0017	0.0014
	Lead (Pb)	mg/L	0.20	0.0003	0.0006	0.0016	0.0007
	Nickel (Ni)	mg/L	1.00	0.0014	0.0018	0.0016	0.0014
	Zinc (Zn)	mg/L	1.00	<0.0030	<0.0030	<0.0030	<0.0030
	Radium-226	Bq/L	1.11	<0.0081	<0.0072	<0.0082	<0.0052
Toxicity	Rainbow Trout[c]	% Pass (N)	non-lethal	non-lethal	not tested	non-lethal	not tested
	Daphnia magna[c]	% Pass (N)	non-lethal	non-lethal	not tested	non-lethal	not tested
Effluent Characterization[d]	Specific Conductance	µS/cm	-	316	324	430	434
	Hardness	mg/L (as $CaCO_3$)	-	160	162	211	214
	Alkalinity	mg/L (as $CaCO_3$)	-	100	95	145	144
	Un-ionized Ammonia	mg/L	-	0.0010	0.0013	0.0007	0.0006
	Ammonia (NH_4^+)	mg/L	-	0.016	0.020	0.016	0.019
	Nitrate (NO_3)	mg/L	-	0.29	0.27	0.67	0.65
	Phosphorus (P)	mg/L	-	0.0066	0.0083	0.0123	0.0055
	Sulphate (SO_4)	mg/L	-	65	64	76	74
	Chloride (Cl)	mg/L	-	4.2	4.2	8.6	8.5
	Aluminum (Al)	mg/L	-	0.065	0.102	0.229	0.117
	Cadmium (Cd)	mg/L	-	0.000030	0.000038	0.000036	0.000032
	Chromium (Cr)	mg/L	-	<0.00050	<0.00050	<0.00050	<0.00050
	Cobalt (Co)	mg/L	-	0.00026	0.00029	0.00092	0.00085
	Iron (Fe)	mg/L	-	0.167	0.134	0.378	0.161
	Manganese (Mn)	mg/L	-	0.015	0.005	0.035	0.031
	Mercury (Hg)	mg/L	0.0001	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)	mg/L	-	0.0024	0.0022	0.0019	0.0020
	Selenium (Se)	mg/L	0.0050/0.010[e]	0.00041	0.00048	0.00066	0.00073
	Thallium (Tl)	mg/L	-	<0.000010	0.000012	0.00001200	<0.000010
	Uranium (U)	mg/L	-	0.0038	0.0035	0.0067	0.0074

Indicates monthly mean value that exceeded applicable limit for deleterious substances and/or pH, or concentration that exceeded fish tissue survey trigger value (mercury and selenium only), or acute toxicity test failure based on individual monthly test result.

[a] Limits indicated refer to maximum authorized grab sample concentrations as per MDMER Schedule 4 except the limit for mercury, which has been included as a fish usability assessment trigger limit based on grab sample concentration of 0.0001 mg/L in this study.

[b] Deleterious substances and pH as defined under Schedule 4 of the MDMER (Government of Canada 2022).

[c] Indicates acute toxicity tests must 'pass' test criteria (i.e., 100% effluent which kills less than 50% of test organisms over a 96-hour [rainbow trout] or 48-hour [*D. magna*] period).

[d] Required effluent characterization and site-specific parameters as defined under Schedule 5 of the MDMER (Government of Canada 2022).

[e] MDMER Grab Sample Limit/Not to exceed limit

Table B.5: Summary of Effluent Monitoring Data for the Eagle Gold Project FDP5 Final Discharge Point, 2020

Variable		Units	MDMER Grab Sample Limit[a]	20-Apr-20	21-Apr-20	27-Apr-20	Monthly Mean
Routine Monitoring[b]	pH (lab)	pH units	6.0 - 9.5	8.00	7.91	7.79	7.90
	Total Suspended Solids	mg/L	30	62	53	53	56
	Cyanide (total)	mg/L	1.0	<0.0050	<0.0050	<0.0050	<0.0050
	Arsenic (As)	mg/L	0.60	0.14	0.17	0.23	0.18
	Copper (Cu)	mg/L	0.60	0.011	0.013	0.018	0.014
	Lead (Pb)	mg/L	0.20	0.017	0.019	0.029	0.022
	Nickel (Ni)	mg/L	1.00	0.0072	0.0077	0.010	0.0083
	Zinc (Zn)	mg/L	1.00	0.031	0.031	0.046	0.036
	Radium-226	Bq/L	1.11	<0.014	0.012	<0.0088	<0.011
Toxicity	Rainbow Trout[c]	% Pass (N)	non-lethal	not tested	non-lethal	not tested	not applicable
	Daphnia magna [c]	% Pass (N)	non-lethal	not tested	non-lethal	not tested	not applicable
Effluent Characterization[d]	Specific Conductance	µS/cm	-	433	400	280	371
	Hardness	mg/L (as $CaCO_3$)	-	209	190	127	175
	Alkalinity	mg/L (as $CaCO_3$)	-	114	105	74	98
	Un-ionized Ammonia	mg/L	-	-	0.0012	<0.0010	0.0011
	Ammonia (NH_4^+)	mg/L	-	0.078	0.109	0.019	0.069
	Nitrate (NO_3)	mg/L	-	0.59	0.56	0.32	0.49
	Phosphorus (P)	mg/L	-	0.072	0.092	0.087	0.084
	Sulphate (SO_4)	mg/L	-	86	75	51	71
	Chloride (Cl)	mg/L	-	18	17	8.2	14
	Aluminum (Al)	mg/L	-	2.4	2.8	3.7	2.9
	Cadmium (Cd)	mg/L	-	0.000222	0.00025	0.00032	0.00026
	Chromium (Cr)	mg/L	-	0.0037	0.0044	0.0052	0.0044
	Cobalt (Co)	mg/L	-	0.0032	0.0033	0.0039	0.0034
	Iron (Fe)	mg/L	-	4.4	5.1	7.0	5.5
	Manganese (Mn)	mg/L	-	0.18	0.20	0.19	0.19
	Mercury (Hg)	mg/L	0.00010	0.000019	0.000020	0.000030	0.000023
	Molybdenum (Mo)	mg/L	-	0.0043	0.0042	0.0027	0.0037
	Selenium (Se)	mg/L	0.0050/0.010[e]	0.00074	0.00078	0.00053	0.00068
	Thallium (Tl)	mg/L	-	0.000052	0.000060	0.000078	0.000063
	Uranium (U)	mg/L	-	0.0061	0.0057	0.0033	0.0050

Indicates monthly mean value that exceeded applicable limit for deleterious substances and/or pH, or concentration that exceeded fish tissue survey trigger value (mercury and selenium only), or acute toxicity test failure based on individual monthly test result.

[a] Limits indicated refer to maximum authorized grab sample concentrations as per MDMER Schedule 4 except the limit for mercury, which has been included as a fish usability assessment trigger limit based on grab sample concentration of 0.0001 mg/L in this study.

[b] Deleterious substances and pH as defined under Schedule 4 of the MDMER (Government of Canada 2022).

[c] Indicates acute toxicity tests must 'pass' test criteria (i.e., 100% effluent which kills less than 50% of test organisms over a 96-hour [rainbow trout] or 48-hour [*D. magna*] period).

[d] Required effluent characterization and site-specific parameters as defined under Schedule 5 of the MDMER (Government of Canada 2022).

[e] MDMER Grab Sample Limit/Not to exceed limit

Table B.6: Annual Average Effluent Chemistry at the LDSP FDP, 2019 to 2021

Parameter		Units	LDSP Final Discharge Point		
			2019	2020	2021
Routine Monitoring[c]	Volume[a]	m^3/day	15,415	89,556	477,967
	pH[b]	pH units	8.05	8.10	8.25
	Total Suspended Solids	mg/L	38	3.8	6.5
	Cyanide (total)	mg/L	<0.0050	<0.0050	<0.0050
	Arsenic (As)	mg/L	0.077	0.031	0.040
	Copper (Cu)	mg/L	0.0064	0.0028	0.0018
	Lead (Pb)	mg/L	0.0064	0.0014	0.0008
	Nickel (Ni)	mg/L	0.0046	0.0018	0.0016
	Zinc (Zn)	mg/L	0.010	0.0033	<0.0030
	Radium-226	Bq/L	<0.0068	0.0094	<0.0072
Toxicity	Rainbow Trout	% Pass	non-lethal	non-lethal	non-lethal
	Daphnia magna	% Pass	non-lethal	non-lethal	non-lethal
Effluent Characterization[d]	Specific Conductance	µS/cm	518	326	376
	Hardness	mg/L (as $CaCO_3$)	238	155	187
	Alkalinity	mg/L (as $CaCO_3$)	145	88	121
	Un-ionized Ammonia	mg/L	<0.00012	<0.0010	0.00090
	Ammonia (NH_4^+)	mg/L	<0.0051	0.022	0.018
	Nitrate (NO_3)	mg/L	0.12	0.11	0.47
	Phosphorus (P)	mg/L	0.046	0.0056	0.0082
	Sulphate (SO4)	mg/L	105	69	70
	Chloride (Cl)	mg/L	17	3.9	6.4
	Aluminum (Al)	mg/L	1.8	0.15	0.13
	Cadmium (Cd)	mg/L	0.000096	0.000035	0.000034
	Chromium (Cr)	mg/L	0.0027	0.00023	<0.00050
	Cobalt (Co)	mg/L	0.0014	0.00025	0.00058
	Iron (Fe)	mg/L	2.6	0.19	0.21
	Manganese (Mn)	mg/L	0.12	0.021	0.021
	Mercury (Hg)	µg/L	0.000014	<0.0000050	<0.0000050
	Molybdenum (Mo)	mg/L	0.0014	0.0017	0.0021
	Selenium (Se)	mg/L	0.00052	0.00040	0.00057
	Thallium (Tl)	mg/L	0.000039	0.000010	0.000011
	Uranium (U)	mg/L	0.0061	0.0030	0.0053

[a] Effluent discharge volume provided reflects average over the month indicated only for those dates in which effluent was deposited (i.e., days in which no effluent was discharged were not used to calculate the average).

[b] pH values were from the lab measurements in 2019 and 2021 and from the field measurements in 2020.

[c] Deleterious substances and pH as defined under Schedule 4 of the MDMER (Government of Canada 2022).

[d] Required effluent characterization and site-specific parameters as defined under Schedule 5 of the MDMER (Government of Canada 2022).

Table B.7: *In Situ* Water Quality at Haggart Creek and Lynx Creek, May 2021

Waterbody	Date	Latitude	Longitude	Temperature	Dissolved Oxygen		pH	Specific Conductance
				(ºC)	mg/L	% saturation	pH units	µS/cm
Lynx Creek (Reference)	21-May-21	63.986839	-135.857889	1.3	12.1	92.8	7.60	152
	24-May-21	63.986617	-135.859007	4.5	11.5	96.3	7.43	127
	Mean			2.9	11.8	94.5	7.52	140
	Standard Deviation			2.3	0.4	2.5	0.12	18
	Standard Error			1.6	0.3	1.8	0.09	12
	Minimum			1.3	11.5	92.8	7.43	127
	Maximum			4.5	12.1	96.3	7.60	152
Haggart Creek (Effluent-exposed)	20-May-21	64.033672	-135.858693	5.6	11.1	96.0	7.58	128
	22-May-21	64.019183	-135.854831	3.7	10.8	89.1	8.72	133
	23-May-21	64.008984	-135.852412	1.9	11.9	93.9	7.75	103
	24-May-21	64.009134	-135.852949	2.2	12.6	100.3	7.70	116
	Mean			3.4	11.6	94.8	7.94	120
	Standard Deviation			1.7	0.8	4.7	0.53	13
	Standard Error			0.8	0.6	2.3	0.26	7
	Minimum			1.9	10.8	89.1	7.58	103
	Maximum			5.6	12.6	100.3	8.72	132

Note: '-' indicates no data available.

Table B.8: *In Situ* Water Quality at Haggart Creek Effluent-Exposed and Reference Benthic Invertebrate Community Sampling Areas, September 2021

Study Area	Variable	Temperature	Dissolved Oxygen	Dissolved Oxygen	pH	Conductivity	Specific Conductance
	Units	°C	mg/L	% saturation	pH units	µS/cm	µS/cm
	CCME Water Quality Guidelines	-	6.5 - 9.5	54	6.5 - 9.0	-	-
Haggart Creek (Reference)	Ref-01	2.5	12.02	87.8	7.71	152.4	267.8
	Ref-02	2.5	12.25	89.6	7.73	153.1	268.5
	Ref-03	2.9	12.14	90.0	7.75	154.5	267.4
	Ref-04	3.3	12.01	90.0	7.77	156.4	266.7
	Ref-05	3.7	11.87	90.0	7.78	157.9	265.9
Haggart Creek (Effluent-exposed)	Exp-01	4.9	11.45	89.1	7.80	170.5	277.7
	Exp-02	4.8	11.50	89.7	7.72	170.5	277.7
	Exp-03	4.7	11.44	88.9	7.67	169.2	276.4
	Exp-04	4.8	11.49	89.4	7.70	171.6	278.5
	Exp-05	4.8	11.53	90.0	7.70	167.6	272.5

Table B.9: Statistical Comparison of *In Situ* Water Quality Between Effluent-Exposed and Reference Study Areas of Haggart Creek, September 2021

Parameter	Statistical Test Results				Summary Statistics						
	Statistical Test[a]	Transform-ation	Significant Difference Between Areas?	P-value	Station Type	n	Mean	Standard Deviation	Standard Error	Minimum	Maximum
Temperature (°C)	tunequal	none	YES	0.001	Reference	5	3.0	0.5	0.2	2.5	3.7
					Effluent-Exposed	5	4.8	0.1	0.03	4.7	4.9
Dissolved Oxygen (mg/L)	tequal	none	YES	0.001	Reference	5	12.1	0.1	0.1	11.9	12.2
					Effluent-Exposed	5	11.5	0.04	0.02	11.4	11.5
Dissolved Oxygen (%)	M-W	rank	NO	0.451	Reference	5	89.5	1.0	0.4	87.8	90.0
					Effluent-Exposed	5	89.4	0.4	0.2	88.9	90.0
pH (pH units)	tequal	none	NO	0.272	Reference	5	7.75	0.03	0.01	7.71	7.78
					Effluent-Exposed	5	7.72	0.05	0.02	7.67	7.80
Conductivity (µS/cm)	tequal	none	YES	0.001	Reference	5	155	2	1.0	152	158
					Effluent-Exposed	5	170	2	0.7	168	172
Specific Conductance (µS/cm)	tequal	none	YES	0.001	Reference	5	267	1.0	0.4	266	268
					Effluent-Exposed	5	277	2	1.1	272	278

Shaded values indicate significant difference between study areas based on test p-value less than 0.05.

[a] Statistical tests include Student's t-test assuming equal variance (tequal), Student's t-test assuming unequal variance (tunequal), or Mann-Whitney U-test (M-W).

Table B.10: Water Quality at the Haggart Creek Reference Area (Station W22), 2019 to 2021

	Variable	Units	Water Quality Guideline[a]	2019	2020				2021	
				29-Apr-19	21-Apr-20	29-Jul-20	10-Aug-20	14-Sep-20	12-Jul-21	12-Nov-21
Field Measure	pH (lab)	pH units	6.5 to 9.0	8.13	7.86	7.95	7.96	7.96	8.08	8.14
	Specific Conductance	µS/cm	-	349	304	225	261	281	293	341
Non-metals	Alkalinity	mg/L (as $CaCO_3$)	-	106	74	63	73	83	87	105
	Ammonia (NH_4^+)[b]	mg/L	0.86	<0.0050	<0.0050	0.0088	<0.0050	<0.0050	0.0070	<0.0050
	Un-ionized Ammonia	mg/L	0.0190	-	<0.0010	-	<0.0010	-	0.00010	-
	Cyanide (total)	mg/L	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Hardness	mg/L (as $CaCO_3$)	-	181	147	105	134	138	143	168
	Nitrate (NO_3)	mg/L	3.0	0.11	0.10	0.055	0.067	0.096	0.063	0.12
	Phosphorus (P)	mg/L	-	0.0054	0.016	0.0080	<0.0020	<0.0020	0.0026	<0.0020
	Chloride (Cl)	mg/L	120	<0.50	2.5	<0.50	<0.50	<0.50	<0.50	<0.50
	Sulphate (SO_4)	mg/L	-	83	72	44	55	57	68	79
	Total Suspended Solids	mg/L	-	7.1	<3.0	24	4.6	<3.0	<2.0	2.3
	Radium-226	Bq/L	-	-	<0.0065	<0.0066	<0.0069	<0.0087	<0.0057	<0.0083
Total Metals	Aluminum (Al)[c]	mg/L	0.10	0.11	0.079	0.20	0.059	0.025	0.041	0.013
	Arsenic (As)	mg/L	0.0050	0.0019	0.0012	0.0015	0.0011	0.00077	0.00081	0.00061
	Cadmium (Cd)[d]	mg/L	0.00017	0.000033	0.000024	0.000020	0.000016	0.000010	0.0000083	0.000012
	Chromium (Cr)[e]	mg/L	0.0089	0.00021	0.00015	0.00025	0.00014	<0.00010	<0.00050	<0.00050
	Cobalt (Co)	mg/L	-	0.00038	0.00021	0.00032	0.00022	0.00017	0.00013	0.00013
	Copper (Cu)[d]	mg/L	0.0025	0.00084	0.0011	0.0016	0.00093	0.00062	0.00065	<0.00050
	Iron (Fe)	mg/L	0.30	0.40	0.28	0.39	0.20	0.12	0.12	0.046
	Lead (Pb)[d]	mg/L	0.0034	0.00029	0.00012	0.00043	0.00019	<0.000050	<0.000050	<0.000050
	Manganese (Mn)	mg/L	-	0.095	0.053	0.034	0.041	0.045	0.035	0.040
	Mercury (Hg)	mg/L	0.000026	<0.0000050	<0.0000050	0.0000056	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)	mg/L	0.073	<0.000050	0.000052	0.000095	0.000071	0.00022	0.000078	0.000058
	Nickel (Ni)[d]	mg/L	0.099	0.0024	0.0020	0.0019	0.0015	0.0012	0.0013	0.0011
	Selenium (Se)	mg/L	0.0010	0.00023	0.00015	0.00013	0.00017	0.00019	0.00017	0.00021
	Thallium (Tl)	mg/L	0.00080	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Uranium (U)	mg/L	0.015	0.0013	0.00082	0.00048	0.00065	0.00081	0.00080	0.0011
	Zinc (Zn)	mg/L	-	0.0048	0.0048	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Indicates concentration that exceeded applicable Water Quality Guideline.

[a] CCME (Canadian Council of Ministers of the Environment; 1999).

[b] Guideline based on the lowest temperature (7.53 °C) and highest pH (8.17) at the exposed areas.

[c] Guideline based on the highest pH at the exposed areas (8.17).

[b] Guideline based on the lowest hardness concentration at the exposed areas (105 mg/L).

[e] Yukon Contaminated Sites Regulation (CSR), (Yukon Government 2012).

Table B.11: Water Quality at the Haggart Creek Effluent-Exposed Area (Station W4), 2019 to 2021

	Parameter	Units	Water Quality Guideline[a]	2019			2020					2021				
				27-Apr-19	28-Apr-19	29-Apr-19	21-Apr-20	29-Jul-20	9-Aug-20	10-Aug-20	14-Sep-20	12-Jul-21	17-Jul-21	18-Jul-21	19-Jul-21	12-Nov-21
Field Measure	pH (lab)	pH units	6.5 to 9.0	8.1	8.1	8.2	7.8	8.0	7.9	8.0	8.0	8.21	8.03	8.04	8.06	8.19
	Specific Conductance	µS/cm	-	447	431	351	308	221	259	249	274	322	305	311	302	350
Non-metals	Alkalinity	mg/L (as $CaCO_3$)	-	126	124	108	258	66	76	73	81	150	88	91	86	112
	Ammonia (NH_4^+)[b]	mg/L	0.86	0.0059	<0.0050	0.0052	0.017	0.013	0.013	<0.0050	0.0057	0.0136	0.0062	0.0058	0.0097	0.0051
	Un-ionized Ammonia	mg/L	0.019	-	-	-	<0.0010	-	-	<0.0010	<0.0010	0.00050	-	-	-	0.00010
	Cyanide (total)	mg/L	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.20	<0.0050	<0.0050	<0.0050	<0.0050
	Hardness	mg/L (as $CaCO_3$)	-	207	212	183	134	105	122	122	134	154	143	145	141	172
	Nitrate (NO_3)	mg/L	3.0	0.12	0.11	0.11	0.18	0.056	0.060	0.065	0.092	0.261	0.12	0.13	0.15	0.25
	Phosphorus (P)	mg/L	-	0.037	0.023	0.026	0.13	0.023	0.0023	<0.0020	0.021	0.022	0.0055	0.0050	0.0081	0.031
	Chloride (Cl)	mg/L	120	9.2	7.1	<0.50	4.6	0.54	0.54	0.57	0.89	4.28	1.3	1.6	1.9	2.1
	Sulphate (SO_4)	mg/L	-	94	93	80	57	43	51	51	54	65	65	65	64	74
	Total Suspended Solids	mg/L	-	36	13	52	63	45	<3.0	7.9	45	57	<3.0	<3.0	<3.0	61
	Radium-226	Bq/L	-	-	-	-	0.012	<0.0078	-	<0.0081	<0.0058	<0.0057	-	-	-	<0.0072
Total Metals	Aluminum (Al)[c]	mg/L	0.10	1.5	1.0	0.97	3.6	0.61	0.049	0.10	0.69	0.77	0.051	0.052	0.10	1.0
	Arsenic (As)	mg/L	0.0050	0.050	0.038	0.034	0.13	0.018	0.010	0.011	0.025	0.043	0.0126	0.0122	0.018	0.035
	Cadmium (Cd)[d]	mg/L	0.00017	0.000065	0.000060	0.000042	0.00016	0.000033	0.000010	0.000016	0.000033	0.000050	0.000013	0.000011	0.000019	0.000054
	Chromium (Cr)[e]	mg/L	0.0089	0.0022	0.0014	0.0019	0.0063	0.0012	<0.00010	0.00021	0.0014	0.0016	<0.00050	<0.00050	<0.00050	0.0019
	Cobalt (Co)	mg/L	-	0.0012	0.00081	0.0011	0.0039	0.00074	0.00016	0.00023	0.00076	0.00080	0.00018	0.00016	0.00026	0.0010
	Copper (Cu)[d]	mg/L	0.0025	0.0045	0.0033	0.0030	0.013	0.0025	0.00075	0.00091	0.0024	0.0034	0.00097	0.0012	0.0014	0.0026
	Iron (Fe)	mg/L	0.30	2.3	1.2	2.1	8.0	1.2	0.13	0.23	1.4	1.3	0.11	0.12	0.21	1.9
	Lead (Pb)[d]	mg/L	0.0034	0.0046	0.0031	0.0028	0.015	0.0024	0.00015	0.00029	0.0028	0.0032	0.00019	0.00021	0.00043	0.0042
	Manganese (Mn)	mg/L	-	0.11	0.094	0.11	0.18	0.047	0.028	0.035	0.054	0.042	0.024	0.022	0.021	0.069
	Mercury (Hg)	mg/L	0.000026	0.000011	0.0000065	<0.0000050	0.000025	0.0000075	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)	mg/L	0.073	0.00073	0.00063	0.00021	0.00058	0.00050	0.00055	0.00054	0.00082	0.00205	0.00099	0.00093	0.0014	0.00064
	Nickel (Ni)[d]	mg/L	0.099	0.0042	0.0033	0.0038	0.011	0.0026	0.0012	0.0014	0.0026	0.0029	0.0013	0.0011	0.0015	0.0028
	Selenium (Se)	mg/L	0.0010	0.00033	0.00033	0.00023	0.00028	0.00018	0.00018	0.00022	0.00030	0.00045	0.00025	0.00024	0.00026	0.00031
	Thallium (Tl)	mg/L	0.00080	0.000035	0.000018	0.000038	0.00011	0.000017	<0.000010	<0.000010	0.000020	0.000025	<0.000010	<0.000010	<0.000010	0.000026
	Uranium (U)	mg/L	0.015	0.0040	0.0034	0.0015	0.0014	0.00093	0.0011	0.0011	0.0016	0.0036	0.0018	0.0017	0.0023	0.0024
	Zinc (Zn)	mg/L	-	0.010	0.0065	0.012	0.030	0.0050	<0.0030	<0.0030	0.0059	0.0068	<0.0030	<0.0030	<0.0030	0.0087

Indicates concentration that exceeded applicable Water Quality Guideline.

[a] CCME (Canadian Council of Ministers of the Environment; 1999).

[b] Guideline based on the lowest temperature (7.53 °C) and highest pH (8.17) at the exposed areas.

[c] Guideline based on the highest pH at the exposed areas (8.17).

[d] Guideline based on the lowest hardness concentration at the exposed areas (105 mg/L).

[e] Yukon Contaminated Sites Regulation (CSR), (Yukon Government 2012).

Table B.12: Average Water Chemistry at Haggart Creek Effluent-Exposed and Reference Areas Prior to Mine Operation (2007 to 2016) and Over the Phase 1 EEM (2019 to 2021)

Parameter		Units	Water Quality Guideline[a]	2007 to 2016		2019 to 2021	
				Reference	Effluent-exposed	Reference	Effluent-exposed
Field Measure	pH (lab)	pH units	6.5 to 9.0	7.85	7.90	8.01	8.05
	Specific Conductance	µS/cm	-	309	301	293	318
Non-metals	Alkalinity	mg/L (as $CaCO_3$)	-	96	94	85	111
	Ammonia (NH_4^+)[b]	mg/L	0.86	0.0087	0.0067	0.0058	0.0084
	Un-ionized Ammonia	mg/L	0.019	-	-	<0.00070	<0.00072
	Cyanide (total)	mg/L	-	0.0054	0.0053	<0.0050	<0.020
	Hardness	mg/L (as $CaCO_3$)	-	169	162	145	152
	Nitrate (NO_3)	mg/L	3.0	0.106	0.10	0.088	0.13
	Phosphorus (P)	mg/L	-	-	-	0.0054	0.026
	Chloride (Cl)	mg/L	120	0.595	0.9	<0.78	2.7
	Sulphate (SO_4)	mg/L	-	69	66	65	66
	Total Suspended Solids	mg/L	-	5	6	7	30
	Radium-226	Bq/L	-	-	-	<0.0071	<0.0078
Total Metals	Aluminum (Al)[c]	mg/L	0.10	0.069	0.08	0.075	0.81
	Arsenic (As)	mg/L	0.0050	0.0009	0.0032	0.0011	0.033
	Cadmium (Cd)[d]	mg/L	0.00017	0.000023	0.000021	0.000017	0.000043
	Chromium (Cr)[e]	mg/L	0.0089	0.00046	0.0005	0.00026	0.0015
	Cobalt (Co)	mg/L	-	0.00024	0.00022	0.00022	0.00088
	Copper (Cu)[d]	mg/L	0.0025	0.00083	0.0009	0.00089	0.0030
	Iron (Fe)	mg/L	0.30	0.21	0.2	0.22	1.6
	Lead (Pb)[d]	mg/L	0.0034	0.00014	0.0002	0.00017	0.0031
	Manganese (Mn)	mg/L	-	0.051	0.042	0.049	0.064
	Mercury (Hg)	mg/L	0.000026	0.000010	0.000010	<0.0000051	<0.0000073
	Molybdenum (Mo)	mg/L	0.073	0.000141	0.000255	0.000089	0.00081
	Nickel (Ni)[d]	mg/L	0.099	0.0014	0.0013	0.0016	0.0030
	Selenium (Se)	mg/L	0.0010	0.00017	0.00019	0.00018	0.00027
	Thallium (Tl)	mg/L	0.00080	0.00001	0.000010	<0.000010	0.000026
	Uranium (U)	mg/L	0.015	0.0010	0.0010	0.0008	0.0021
	Zinc (Zn)	mg/L	-	0.0042	0.0036	<0.0035	0.0076

Indicates concentration that exceeded applicable Water Quality Guideline.

[a] CCME (Canadian Council of Ministers of the Environment; 1999).

[b] Guideline based on the lowest temperature (7.53 °C) and highest pH (8.17) at the exposed areas.

[c] Guideline based on the highest pH at the exposed areas (8.17).

[b] Guideline based on the lowest hardness concentration at the exposed areas (105 mg/L).

[e] Yukon Contaminated Sites Regulation (CSR), (Yukon Government 2012).

Data Quality Review

APPENDIX B DATA QUALITY REVIEW

B1 INTRODUCTION

Quality Assurance/Quality Control (QA/QC) implemented for the Eagle Gold Phase 1 EEM study included a Data Quality Review (DQR) of the receiving environment water quality data collected at the time of biological monitoring to provide an evaluation of how well laboratory data quality compared to prescribed goals (i.e., Data Quality Objectives [DQO]) established *a priori*. This DQR report provides a comparison of target data quality to actual data quality, subsequently discussing the consequences of any failures to meet DQO. By completing this step, the quality of the data for the program can be effectively evaluated and demonstrated.

B2 QUALITY CONTROL MEASURES AND DQO

Two types of QC were applied to the receiving environment water quality component of the EEM study for data collected at the time of biological monitoring:

- **Field Duplicates (Precision)** are sub-sample pairs collected from a randomly selected field station using identical collection and handling methods that are then analyzed separately in the laboratory. The duplicate samples are handled and analyzed in an identical manner in the laboratory. The data from field duplicate samples reflect natural variability, as well as the variability associated with sample collection methods, and therefore provide a measure of field precision.
- **Laboratory Duplicates** are replicate sub-samples created in the laboratory from randomly selected field samples which are sub-sampled and then analyzed independently using identical analytical methods. The laboratory duplicate sample results reflect any variability introduced during laboratory sample handling and analysis and thus provide a measure of laboratory precision.

B3 FIELD DUPLICATE SAMPLE DQR RESULTS

A single field duplicate was collected at the effluent-exposed area at the time of the May 2021 biological study. Very close agreement in parameter concentrations was observed between duplicate samples, with field duplicate parameter pairs meeting the water quality field duplicate DQO of ≤ 25% Relative Percent Difference (RPD) between replicates for 46 of the 49 parameters assessed (Appendix Table B-DQR.1). Total suspended solids, chloride, and total selenium concentrations showed RPD greater than 25% between the replicate duplicates.

Table B-DQR.1: Water Sample Field Duplicate Results for Data Collected in May 2021 Indicating, in Highlight, Parameter Values Not Meeting the DQO of ≤25% RPD

Parameter	Units	Lowest Detection Limit	Replicate Samples		RPD
			Exp	Exp DUP	
Conductivity	µS/cm	2	117	117	0
Alkalinity, Total (as CaCO3)	mg/L	1	36	37	3.6
Hardness (as CaCO3), from total Ca/Mg	mg/L	0.6	58.4	56.5	3.3
Total Suspended Solids	mg/L	1	8	12	40
Ammonia, Total (as N)	mg/L	0.005	0.006	<0.005	15
Chloride (Cl)	mg/L	0.5	<0.5	0.9	58
Nitrate (as N)	mg/L	0.005	0.041	0.047	14
Phosphorus, Total	mg/L	0.002	0.0180	0.0182	1.1
Sulphate (SO4)	mg/L	0.3	21.6	23.4	8.0
Aluminum (Al)	mg/L	0.003	0.364	0.341	6.5
Antimony (Sb)	mg/L	0.0001	0.0004	0.0003	5.7
Arsenic (As)	mg/L	0.0001	0.0057	0.0056	1.8
Barium (Ba)	mg/L	0.0001	0.0278	0.0278	0
Beryllium (Be)	mg/L	0.0001	<0.0001	<0.0001	0
Bismuth (Bi)	mg/L	0.00005	<0.00005	<0.00005	0
Boron (B)	mg/L	0.01	<0.010	<0.010	0
Cadmium (Cd)	mg/L	0.000005	0.0000268	0.0000273	1.8
Calcium (Ca)	mg/L	0.05	15.6	15.0	3.9
Cesium (Cs)	mg/L	0.00001	0.000052	0.000054	3.8
Chromium (Cr)	mg/L	0.0005	0.00060	0.00061	1.7
Cobalt (Co)	mg/L	0.0001	0.00038	0.00039	2.6
Copper (Cu)	mg/L	0.0005	0.0020	0.0020	0
Iron (Fe)	mg/L	0.01	0.62	0.63	1.0
Lead (Pb)	mg/L	0.00005	0.00052	0.00061	17
Lithium (Li)	mg/L	0.001	0.0029	0.0026	11
Magnesium (Mg)	mg/L	0.005	4.730	4.620	2.4
Manganese (Mn)	mg/L	0.0001	0.0367	0.0370	0.8
Mercury (Hg)	mg/L	0.000005	0.000009	0.000010	13
Molybdenum (Mo)	mg/L	0.00005	0.00019	0.00018	2.2
Nickel (Ni)	mg/L	0.0005	0.00217	0.00219	0.9
Phosphorus (P)	mg/L	0.05	<0.05	<0.05	0
Potassium (K)	mg/L	0.050	0.697	0.677	2.9
Rubidium (Rb)	mg/L	0.0002	0.0009	0.0010	11
Selenium (Se)	mg/L	0.00005	0.00010	0.00014	28
Silicon (Si)	mg/L	0.1	2.8	2.6	9.3
Silver (Ag)	mg/L	0.00001	0.000010	0.000011	9.5
Sodium (Na)	mg/L	0.05	0.742	0.736	0.8
Strontium (Sr)	mg/L	0.0002	0.0778	0.0751	3.5
Sulfur (S)	mg/L	0.5	7.5	7.0	6.6
Tellurium (Te)	mg/L	0.0002	<0.0002	<0.0002	0
Thallium (Tl)	mg/L	0.00001	<0.00001	<0.00001	0
Thorium (Th)	mg/L	0.0001	0.0001	0.0002	21
Tin (Sn)	mg/L	0.0001	<0.0001	<0.0001	0
Titanium (Ti)	mg/L	0.0003	<0.0099	<0.0090	9.5
Tungsten (W)	mg/L	0.0001	<0.0001	<0.0001	0
Uranium (U)	mg/L	0.00001	0.00035	0.00036	3.9
Vanadium (V)	mg/L	0.0005	0.00076	0.00075	1.3
Zinc (Zn)	mg/L	0.003	0.004	0.004	0
Zirconium (Zr)	mg/L	0.0002	0.00031	0.00033	6.3

Notes: Exp = Effluent-exposed area of Haggart Creek; Dup = field duplicate value. DQO = data quality objectives.

Although replicate results for these parameters were outside of the target DQO, concentrations near the laboratory reporting limit resulted in the small incremental difference in concentrations between replicates being greater than the DQO. In addition, chloride and total selenium concentrations were well below the Canadian Water Quality Guidelines (CWQG) of 120 mg/L and 0.001 mg/L, respectively and thus interpretation of the data relative to the objectives was not compromised.

In September 2021, a single field duplicate was collected at the effluent-exposed area. A total of 50 out of 52 parameters assessed achieved the DQO of ≤ 25% RPD between the replicate samples (Appendix Table B-DQR.2). Total ammonia and total phosphorus concentrations showed RPD > 25% between the replicate pairs, and like the May 2021 analysis, parameter concentrations close the lowest detection limits resulted in small incremental differences between duplicates not achieving the DQO. Concentrations of total ammonia and total phosphorus were well below applicable water quality guidelines of 0.86 mg/L and 0.030 mg/L, respectively, and thus interpretation of the data relative to the objectives was not compromised. Overall, in both May and September, the low RPD in parameter concentrations between duplicate samples indicated high field precision for the water quality sampling component of the study, and thus the data were adequate for interpretation.

A total of four laboratory duplicate pairs were assessed in May and September 2021. All laboratory duplicate pairs met the DQO of ≤ 25% RPD (Appendix Table B-DQR.3). Therefore, the laboratory analytical precision was considered excellent.

Table B-DQR.2: Water Sample Field Duplicate Results for Data Collected in September 2021 Indicating, in Highlight, Parameter Values Not Meeting the DQO of ≤25% RPD

Parameter	Units	Lowest Detection Limit	Replicate Samples		RPD
			Exp	Exp Dup	
Conductivity	µS/cm	2	268	279	4.0
Alkalinity, Total (as CaCO3)	mg/L	1	82	83	1.1
Hardness (as CaCO3), from total Ca/Mg	mg/L	0.6	138.0	136.0	1.5
pH	pH units	0.1	8.1	8.1	0
Total Dissolved Solids	mg/L	20	184	186	1.1
Total Suspended Solids	mg/L	1	41	33	20
Ammonia, Total (as N)	mg/L	0.005	<0.005	0.009	59
Chloride (Cl)	mg/L	0.5	<0.50	<0.5	0
Nitrate (as N)	mg/L	0.005	0.068	0.065	4.2
Phosphorus, Total	mg/L	0.002	0.029	0.040	32
Sulphate (SO4)	mg/L	0.3	59.3	59.2	0.2
Cyanide, Total	mg/L	0.005	<0.005	<0.005	0
Aluminum (Al)	mg/L	0.003	1.140	1.340	16
Antimony (Sb)	mg/L	0.0001	0.0008	0.0009	7.3
Arsenic (As)	mg/L	0.0001	0.0126	0.014	11
Barium (Ba)	mg/L	0.0001	0.0531	0.0573	7.6
Beryllium (Be)	mg/L	0.0001	<0.0001	<0.0001	0
Bismuth (Bi)	mg/L	0.00005	0.000068	0.000072	5.7
Boron (B)	mg/L	0.01	<0.01	<0.01	0
Cadmium (Cd)	mg/L	0.000005	0.000037	0.000038	2.1
Calcium (Ca)	mg/L	0.05	35.50	34.40	3.1
Cesium (Cs)	mg/L	0.00001	0.00031	0.00034	11
Chromium (Cr)	mg/L	0.0005	0.0020	0.0024	17
Cobalt (Co)	mg/L	0.0001	0.0011	0.0012	12
Copper (Cu)	mg/L	0.0005	0.0031	0.0035	12
Iron (Fe)	mg/L	0.01	2.26	2.50	10
Lead (Pb)	mg/L	0.00005	0.00174	0.00215	21
Lithium (Li)	mg/L	0.001	0.0062	0.0063	1.6
Magnesium (Mg)	mg/L	0.005	12.000	12.300	2.5
Manganese (Mn)	mg/L	0.0001	0.0872	0.0925	5.9
Mercury (Hg)	mg/L	0.000005	0.000006	<0.000005	9.5
Molybdenum (Mo)	mg/L	0.00005	0.00037	0.00033	12
Nickel (Ni)	mg/L	0.0005	0.0031	0.0035	9.7
Phosphorus (P)	mg/L	0.05	<0.05	<0.05	0
Potassium (K)	mg/L	0.05	1.21	1.24	2.4
Rubidium (Rb)	mg/L	0.0002	0.0036	0.0042	15
Selenium (Se)	mg/L	0.00005	0.00017	0.00020	18
Silicon (Si)	mg/L	0.1	5.6	5.8	2.1
Silver (Ag)	mg/L	0.00001	0.00002	0.00002	0
Sodium (Na)	mg/L	0.05	1.64	1.62	1.2
Strontium (Sr)	mg/L	0.0002	0.1850	0.1790	3.3
Sulfur (S)	mg/L	0.5	19.2	18.7	2.6
Tellurium (Te)	mg/L	0.0002	<0.0002	<0.0002	0
Thallium (Tl)	mg/L	0.00001	0.000029	0.000032	9.8
Thorium (Th)	mg/L	0.0001	0.00041	0.00043	4.8
Tin (Sn)	mg/L	0.0001	<0.0001	<0.0001	0
Titanium (Ti)	mg/L	0.0003	0.0475	0.0571	18
Tungsten (W)	mg/L	0.0001	0.00011	0.00014	24
Uranium (U)	mg/L	0.00001	0.00094	0.00093	0.1
Vanadium (V)	mg/L	0.0005	0.0027	0.0031	15
Zinc (Zn)	mg/L	0.003	0.007	0.008	13
Zirconium (Zr)	mg/L	0.0002	0.0003	0.0003	0

Notes: Exp = Effluent-exposed area of Haggart Creek; Dup = field duplicate value. DQO = data quality objectives.

Table B-DQR.3: Water Sample Laboratory Duplicate Results for Data Collected in May and September 2021 Indicating, in Highlight, Parameter Values Not Meeting the DQO of ≤25% RPD

Parameter	Units	Lowest Detection Limit	Sample Results	Duplicate Results	RPD
May 2021 - Exp					
Ammonia, Total (as N)	mg/L	0.005	0.006	0.006	0
September 2021 - Exp					
Conductivity	µS/cm	1	268	271	1.1
Chloride (Cl)	mg/L	0.5	<0.5	<0.5	0
Nitrate (as N)	mg/L	0.005	0.068	0.070	3.0
Sulphate (SO4)	mg/L	0.3	59.3	59.3	0
September 2021 - Exp Dup					
Alkalinity, Total (as CaCO3)	mg/L	1	83	82	1.8

Notes: Exp = Effluent-exposed area of Haggart Creek; Dup = field duplicate value. DQO = data quality objectives.

APPENDIX C

BENTHIC INVERTEBRATE COMMUNITY DATA

Table C.1: Coordinates of Benthic Invertebrate Community Sampling Stations, Eagle Gold Project Phase 1 EEM, September 2021

Study Area	Station	Date Sampled	Time Sampled	Latitude (dd mm ss.s)[a]	Longitude (ddd mm ss.s)[a]
Haggart Creek (Reference)	Ref-01	1-Sep-21	16:00	64° 02 37.60	135° 51 08.75
	Ref-02	2-Sep-21	8:00	64° 02 39.47	135° 51 10.43
	Ref-03	2-Sep-21	9:50	64° 02 40.66	135° 51 10.32
	Ref-04	2-Sep-21	10:20	64° 02 41.80	135° 51 10.20
	Ref-05	2-Sep-21	11:10	64° 02 43.21	135° 51 10.98
Haggart Creek (Effluent-exposed)	Exp-01	2-Sep-21	14:00	64° 01 08.48	135° 51 17.59
	Exp-02	2-Sep-21	15:45	64° 01 10.09	135° 51 17.27
	Exp-03	2-Sep-21	16:25	64° 01 11.39	135° 51 17.02
	Exp-04	2-Sep-21	16:50	64° 01 12.84	135° 51 16.77
	Exp-05	2-Sep-21	17:20	64° 01 14.87	135° 51 17.64

[a] Coordinates presented as dd mm ss.s (d-degrees, m-minutes, s-seconds) using 1983 North American Datum (NAD 83).

Table C.2: Haggart Creek Habitat Characterization Information, September 2021

Characteristics		Haggart Creek				Haggart Creek			
		Reference				Effluent-exposed			
		Ref-01		Ref-05		Exp-01		Exp-05	
		Transect 1	Transect 2	Transect 1	Transect 2	Transect 1	Transect 2	Transect 1	Transect 2
Date		2-Sep-21		2-Sep-21		2-Sep-21		2-Sep-21	
UTM (NAD83, Zone 8V)	Easting	458372		458344		458215		458217	
	Northing	7102172		7102345		7099414		7099612	
Approximate Length of Reach Assessed (m)		20		20		20		20	
Gradient (%)		2.0	2.0	3.0	3.0	2.0	2.0	2.0	3.0
Velocity (m/s)	Mean	0.623	0.252	0.418	0.429	2.825	0.410	0.533	0.855
Depth (cm)	Mean	36.8	13.5	21.3	25.2	39.1	27	18	22
	Maximum	45	21	29.5	41.0	46	27	27	28
Width (m)	Wetted	8.10	4.95	4.90	6.11	6.60	7.80	8.85	8.40
	Bankfull	8.85	5.70	7.65	6.88	7.15	8.50	10.85	9.60
General Morphology	% pool	5		0		0		0	
	% rapid	10		25		20		50	
	% riffle	55		45		70		40	
	% run	30		30		10		10	
Bank Condition		Stable		Stable		Moderate		Moderate	
Substrate Type	% bedrock	0		0		0		0	
	% boulder	5		10		10		2	
	% cobble	40		35		45		75	
	% pebble	35		35		25		20	
	% gravel	10		10		5		3	
	% sand	5		5		5		0	
	% silt and finer	3		3		5		<1	
	% organics	2		2		5		0	
Instream Cover (% total Surface)	undercut banks	20		30		0		0	
	boulder	60		65		50		3	
	woody debris	10		0		50		3	
	deep pool	10		0		0		17	
	macrophytes	0		5		0		0	
	other	0		0		0		77 (riffle)	
Overhead Canopy (%Surface)	% shaded	1-25		0		1- 25		26-50	
	Overstory	White Spruce		White Spruce		Willow, Alder, Balsam Poplar		Poplar, Spruce, Birch, Willow, Alder	
	Understory	Willow, Blueberry, Dwarf Birch, Water Sedge		Willow, Blueberry, Dwarf Birch, Water Sedge		Water sedge, Equisetum, Potentill, Star moss		Alder, Willow, Equisetum, Bryophyte, Grass	
Aquatic Vegetation (% areal coverage)	Emergent	15		15		20		3	
	Submergent	0		0		0		<1	
	Floating	0		0		0		0	
	Attached Algae	40		40		50		5	
Substrate Coverage		rocks slightly slippery, yellow-brown to light green colour (0.5-1mm thick)		rocks slightly slippery, yellow-brown to light green colour (0.5-1mm thick)		rocks noticeably slippery, patches of thicker green to brown algae (1-5mm thick)		rocks noticeably slippery, patches of thicker green to brown algae (1-5mm thick)	
Instream Features		None		None		None		None	

Table C.3: Replicate Sample Habitat Information Collected at Haggart Creek Reference Area, September 2021

Characteristics		Haggart Creek (Reference)														
		Ref-01			Ref-02			Ref-03			Ref-04			Ref-05		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Date		1-Sep-21			2-Sep-21			2-Sep-21			2-Sep-21			2-Sep-21		
UTM (NAD83, Zone 8V)	Easting	458372			458350			458352			458354			458344		
	Northing	7102171			7102229			7102266			7102301			7102345		
Water Velocity (m/s)		0.358	0.378	0.385	0.423	0.409	0.378	0.379	0.401	0.392	0.404	0.384	0.348	0.384	0.423	0.397
Depth (m)		0.16	0.18	0.20	0.18	0.17	0.19	0.23	0.20	0.18	0.19	0.19	0.18	0.21	0.22	0.22
Embeddedness (in sample)		1/4	1/2	1/4	1/4	-	-	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
Macrophytes (in sample)		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Algae (in sample)		S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Macrophytes/Algae Type/Species		Periphyton (brown/green)			Green brown film on substrate			Green/brown Algae			Green/brown Algae			Green/brown Algae		
Silt Precipitate Presence on Substrate		1 mm; very sparse			1 mm; very sparse			1 mm, very sparse			1 mm, very sparse			1 mm, very sparse		
Substrate size (intermediate axis diameter, in cm)		7.3	3.9	11.6	10.2	6.9	8.8	9.5	10.9	5.1	7.4	7.3	4.9	5.7	6.0	6.9
		9.4	7.8	7.3	7.8	6.4	8.6	5.5	6.6	3.9	6.9	4.9	7.1	10.0	8.3	7.0
		4.7	9.7	6.2	4.2	4.3	4.7	7.2	9.8	8.9	7.7	6.7	9.3	9.8	7.0	5.6
		3.0	7.5	4.3	10.3	4.7	5.3	6.9	5.0	9.5	3.1	7.0	6.4	7.4	9.8	8.6
		3.6	9.3	5.6	5.4	8.6	4.3	7.0	4.7	5.4	4.1	7.5	5.0	5.8	4.5	7.3
		10.2	5.4	7.9	4.7	5.4	4.9	5.2	4.8	5.2	4.5	8.6	4.3	5.9	4.8	5.5
		9.5	6.2	9.5	4.3	7.3	2.7	6.6	4.5	4.5	5.3	4.9	4.8	5.6	6.4	8.0
		2.9	8.7	4.4	4.8	4.5	3.8	4.5	4.9	5.5	8.7	3.2	5.1	3.0	5.2	5.0
		4.4	7.4	5.4	5.6	3.7	5.0	3.6	4.5	4.8	9.1	3.4	3.5	5.3	4.1	5.7
		5.6	5.3	6.1	3.3	5.7	4.4	5.4	3.2	4.5	4.4	4.2	4.2	8.1	5.6	5.1
		-	4.5	-	6.2	4.2	3.8	5.5	3.1	4.3	5.4	3.9	4.4	3.7	3.9	4.9
		-	8.4	-	3.9	5.1	5.7	4.3	5.4	3.4	5.1	3.4	4.2	5.5	4.1	2.8
		-	-	-	6.7	5.0	7.5	5.9	4.0	3.9	3.9	2.7	4.5	3.4	2.8	3.5
		-	-	-	-	4.5	-	9.5	3.5	3.0	2.8	-	1.7	3.8	3.2	3.0
		-	-	-	-	-	-	3.1	1.6	7.8	-	-	3.3	4.5	1.5	-
		-	-	-	-	-	-	3.2	2.1	-	-	-	3.9	5.0	8.3	-

Notes: N = None; S = Sparse; "-" = no data available.

Table C.4: Replicate Sample Habitat Information Collected at Haggart Creek Effluent-Exposed Area, September 2021

Characteristics		Haggart Creek (Effluent-exposed)														
		Exp-01			Exp-02			Exp-03			Exp-04			Exp-05		
		Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3	Rep 1	Rep 2	Rep 3
Date		2-Sep-21			2-Sep-21			2-Sep-21			2-Sep-21			2-Sep-21		
UTM (NAD83, Zone 8V)	Easting	458215			458220			458224			458228			458217		
	Northing	7099414			7099464			7099504			7099549			7099612		
Water Velocity (m/s)		0.378	0.411	0.351	0.342	0.383	0.404	0.414	0.389	0.423	0.358	0.370	0.411	0.366	0.393	0.407
Depth (m)		0.19	0.18	0.20	0.12	0.18	0.17	0.20	0.21	0.22	0.16	0.18	0.20	0.15	0.18	0.17
Embeddedness (in sample)		1/4	1/2	1/4	1/2	1/4	3/4	1/4	1/4	1/2	1/4	1/2	1/2	1/2	1/4	1/4
Macrophytes (in sample)		N	N	N	N	N	N	N	N	N	N	N	S	N	N	N
Algae (in sample)		C	S	C	S	S	C	S	S	S	S	C	C	C	S	S
Macrophytes/Algae Type/Species		Brown Green filamentous Algae			-			Brown Green filamentous Algae			-			-		
Silt Precipitate Presence on Substrate		< 1 mm			-			< 1mm			~ 1mm			-		
Substrate size (intermediate axis diameter, in cm)		8.5	7.4	8.5	6.5	11.5	11.5	9.7	6.7	10.2	5.3	4.8	7.3	6.7	7.7	6.5
		8.5	8.1	7.3	4.4	9.3	6.0	8.5	6.0	12.1	9.2	5.7	5.8	6.1	9.0	4.5
		9.0	9.8	7.1	12.0	8.0	5.9	8.1	8.6	6.2	8.4	5.5	7.4	15.5	7.3	8.0
		7.2	7.5	5.0	10.1	3.9	5.0	14.0	5.0	8.5	4.8	5.8	4.7	7.0	7.2	5.4
		6.1	8.7	4.4	9.5	3.7	6.0	4.7	4.0	7.1	5.5	7.5	3.6	5.0	5.0	13.0
		6.5	7.5	5.0	4.8	2.0	5.7	5.9	3.0	4.9	3.8	8.2	2.5	6.4	8.9	2.6
		2.2	6.1	5.5	7.9	12.0	11.6	7.9	3.9	4.0	7.2	4.3	8.1	7.2	5.0	5.9
		7.0	5.0	7.0	4.2	11.2	3.8	8.1	3.5	5.5	5.0	6.7	6.8	4.9	5.5	4.8
		5.2	5.5	4.1	11.0	4.7	14.5	2.9	4.2	3.5	3.2	4.4	5.4	3.8	3.4	6.6
		4.1	3.5	4.6	12.0	3.5	5.5	4.0	6.1	4.6	2.8	3.9	3.5	4.4	4.6	6.5
		3.1	4.4	4.7	4.9	4.6	-	4.5	4.1	3.7	4.7	7.1	3.7	2.8	3.7	5.4
		2.1	4.4	2.5	4.1	2.5	-	3.6	7.0	4.5	6.2	7.0	4.6	2.7	6.0	9.5
		2.0	2.3	-	2.5	4.9	-	-	8.5	-	8.8	4.1	4.0	2.4	4.8	4.7
		-	2.1	-	10.9	5.3	-	-	7.5	-	-	3.7	2.7	-	-	5.5
		-	-	-	-	2.1	-	-	3.6	-	-	-	3.3	-	-	-
		-	-	-	-	-	-	-	-	-	-	-	2.9	-	-	-

Notes: N = None; S = Sparse; C = Common; "-" = no data available.

Table C.5: Statistical Comparison of Benthic Invertebrate Habitat Endpoints Between Reference and Effluent-Exposed Areas of Haggart Creek, September 2021

Parameter	Statistical Test Results				Summary Statistics						
	Statistical Test [a]	Data Transform-ation	Significant Difference Between Areas?	P-value	Station Type	n	Mean	Standard Deviation	Standard Error	Minimum	Maximum
Mean Depth (m)	tequal	none	NO	0.31	Reference	5	0.191	0.016	0.007	0.175	0.213
					Effluent-exposed	5	0.178	0.022	0.010	0.153	0.208
Mean Velocity (m/s)	tequal	none	NO	0.74	Reference	5	0.390	0.013	0.006	0.374	0.403
					Effluent-exposed	5	0.387	0.013	0.006	0.376	0.409

Shaded values indicate significant difference between study areas based on test p-value less than 0.05.

[a] Statistical tests include Student's t-test assuming equal variance (tequal), Student's t-test assuming unequal variance (tunequal), or Mann-Whitney U-test (M-W).

Table C.6: Haggart Creek Reference Benthic Invertebrate Community Sample Data Expressed in Densities per Square Metre, September 2021

Study Area	Haggart Creek Reference Area				
Replicate	Ref-1	Ref-2	Ref-3	Ref-4	Ref-5
ROUNDWORMS					
P. Nemata	73	7	33	27	47
ANNELIDS					
P. Annelida					
WORMS					
Cl. Oligochaeta					
F. Enchytraeidae	-	-	-	-	63
F. Haplotaxidae					
Haplotaxis	-	-	67	-	-
F. Naididae					
S.F. Tubificinae					
Arctodrilus wulikensis	73	-	267	53	250
F. Lumbriculidae					
Rhynchelmis	-	7	-	-	-
indeterminate	683	793	1,000	567	1,000
ARTHROPODS					
P. Arthropoda					
MITES					
Cl. Arachnida					
Subcl. Acari					
O. Trombidiformes					
indeterminate	3	-	-	7	-
F. Lebertiidae					
Lebertia	3	-	13	-	13
F. Sperchonidae					
Sperchon	17	13	20	-	-
INSECTS					
Cl. Insecta					
MAYFLIES					
O. Ephemeroptera					
F. Ameletidae					
Ameletus	7	7	27	13	33
F. Baetidae					
immature	87	80	47	33	80
F. Ephemerellidae					
Drunella doddsii	3	-	-	-	-
immature	10	7	7	13	7
F. Heptageniidae					
Cinygmula	77	120	127	140	93
Epeorus	47	**40**	**20**	**27**	**7**
Rhithrogena	-	-	-	7	-
immature	63	147	33	100	67
F. Leptophlebiidae					
immature	-	7	-	-	-
STONEFLIES					

Table C.6: Haggart Creek Reference Benthic Invertebrate Community Sample Data Expressed in Densities per Square Metre, September 2021

Study Area	Haggart Creek Reference Area				
Replicate	Ref-1	Ref-2	Ref-3	Ref-4	Ref-5
O. Plecoptera					
F. Capniidae					
Eucapnopsis	-	7	13	-	-
Paracapnia	93	93	100	173	60
immature	33	93	47	80	120
F. Chloroperlidae					
Sweltsa	-	27	20	13	7
indeterminate	10	13	13	20	47
immature	7	67	13	13	13
F. Leuctridae					
Paraleuctra	33	47	67	-	27
F. Nemouridae					
Zapada	43	-	53	27	93
immature	37	47	27	-	60
F. Perlodidae					
immature	-	-	-	-	-
F. Taeniopterygidae					
immature	7	7	7	-	7
CADDISFLIES					
O. Trichoptera					
pupae	-	-	-	-	-
F. Glossosomatidae					
Anagapetus/Glossosoma	10	47	67	40	33
F. Limnephilidae					
immature	10	-	-	-	-
F. Rhyacophilidae					
Rhyacophila	50	7	20	-	27
TRUE FLIES					
O. Diptera					
BITING-MIDGE					
F. Ceratopogonidae					
Culicoides	-	-	-	13	-
Probezzia	-	-	7	7	-
indeterminate	-	107	-	-	-
MIDGES					
F. Chironomidae					
chironomid pupae	-	-	-	-	7
S.F. Chironominae					
Micropsectra	-	-	-	7	-
Paratanytarsus	-	-	-	-	-
S.F. Diamesinae					
Diamesa	-	-	-	-	-
Pagastia	13	-	7	-	-
S.F. Orthocladiinae					
Brillia	-	7	-	-	-
Cricotopus/Orthocladius	3	-	-	-	-
Eukiefferiella	3	-	-	7	7
Orthocladius (E.) rivularum	3	-	-	-	-

Table C.6: Haggart Creek Reference Benthic Invertebrate Community Sample Data Expressed in Densities per Square Metre, September 2021

	Study Area	Haggart Creek Reference Area				
	Replicate	Ref-1	Ref-2	Ref-3	Ref-4	Ref-5
Orthocladius (Euorthocladius)		-	-	-	-	-
Paraphaenocladius		-	7	7	-	7
Parorthocladius		-	-	-	-	-
Rheocricotopus		-	7	-	-	-
Thienemanniella		-	-	-	-	-
Tvetenia		-	-	-	7	-
indeterminate		3	-	-	-	-
S.F. Tanypodinae						
Thienemannimyia complex		-	-	-	-	-
F. Empididae						
Chelifera/Metachela		-	-	33	13	-
Clinocera		-	-	-	-	20
Wiedemannia		53	33	33	27	53
F. Psychodidae						
Pericoma		-	-	-	-	-
F. Simuliidae						
Helodon		7	-	-	-	-
F. Tipulidae						
Dicranota		7	13	7	-	-
Limnophila		-	7	7	-	-
Rhabdomastix		-	-	-	-	-
Density (No. organisms per sq. metre)		1,571	1,864	2,209	1,434	2,248
Family Level	**Richness**[a]	21	19	21	15	18
	Simpson's Evenness (E)	0.214	0.225	0.2	0.29	0.239
Lowest Practical Level	**Richness**	26	25	27	21	22
	Simpson's Evenness (E)	0.18	0.185	0.158	0.229	0.198
Dominant Taxonomic Group Composition						
% Oligochaeta		48.1	43.0	60.4	43.3	58.5
% Ephemeroptera		18.6	21.9	11.8	23.3	12.8
% Plecoptera		16.7	21.5	16.3	22.8	19.3
% Trichoptera		4.5	2.9	3.9	2.8	2.7
% EPT		39.8	46.2	32.0	48.8	34.7
% Chironomidae		1.7	1.1	0.6	1.4	0.9
Functional Feeding Groups						
% Collector-Gatherer		60.2	49.1	65.9	49.8	66.4
% Scraper		13.3	19.4	11.5	22.3	9.2
% Shredder		16.5	16.1	14.2	19.5	16.4
Habitat Preference Groups						
% Clinger/Climber		45.3	48.7	35.0	51.6	38.6
% Sprawler		1.9	1.4	2.4	1.9	0.6
% Burrower		52.8	49.8	62.5	46.5	60.5

[a] Bold entries excluded from lowest-practical-level taxonomy richness determination.

Table C.7: Haggart Creek Effluent-Exposed Benthic Invertebrate Community Sample Data Expressed in Densities per Square Metre, September 2021

Study Area	Haggart Creek Effluent-Exposed Area				
Replicate	Exp-1	Exp-2	Exp-3	Exp-4	Exp-5
ROUNDWORMS					
P. Nemata	20	7	27	7	13
ANNELIDS					
P. Annelida					
WORMS					
Cl. Oligochaeta					
F. Enchytraeidae	17	-	-	-	-
F. Haplotaxidae					
Haplotaxis	-	-	-	-	-
F. Naididae					
S.F. Tubificinae					
Arctodrilus wulikensis	-	-	-	-	-
F. Lumbriculidae					
Rhynchelmis	-	-	-	-	-
indeterminate	203	247	327	133	460
ARTHROPODS					
P. Arthropoda					
MITES					
Cl. Arachnida					
Subcl. Acari					
O. Trombidiformes					
indeterminate	-	7	-	20	-
F. Lebertiidae					
Lebertia	-	-	13	67	13
F. Sperchonidae					
Sperchon	60	13	40	113	20
INSECTS					
Cl. Insecta					
MAYFLIES					
O. Ephemeroptera					
F. Ameletidae					
Ameletus	40	7	-	87	-
F. Baetidae					
immature	173	20	93	73	87
F. Ephemerellidae					
Drunella doddsii	-	7	7	-	-
immature	-	-	**13**	13	-
F. Heptageniidae					
Cinygmula	27	7	53	20	33
Epeorus	13	13	20	27	33
Rhithrogena	-	-	-	-	-
immature	**7**	**33**	**13**	-	**27**
F. Leptophlebiidae					
immature	-	-	-	-	-
STONEFLIES					
O. Plecoptera					

Table C.7: Haggart Creek Effluent-Exposed Benthic Invertebrate Community Sample Data Expressed in Densities per Square Metre, September 2021

Study Area	Haggart Creek Effluent-Exposed Area				
Replicate	Exp-1	Exp-2	Exp-3	Exp-4	Exp-5
F. Capniidae					
Eucapnopsis	-	-	-	-	-
Paracapnia	13	33	67	-	27
immature	**7**	**27**	**33**	27	**33**
F. Chloroperlidae					
Sweltsa	-	7	-	7	7
indeterminate	-	-	-	-	-
immature	-	-	-	**7**	-
F. Leuctridae					
Paraleuctra	20	47	53	7	7
F. Nemouridae					
Zapada	47	60	113	73	27
immature	**100**	**80**	**180**	**140**	**73**
F. Perlodidae					
immature	-	-	7	7	-
F. Taeniopterygidae					
immature	7	20	-	-	13
CADDISFLIES					
O. Trichoptera					
pupae	-	**2**	-	-	-
F. Glossosomatidae					
Anagapetus/Glossosoma	67	33	47	20	40
F. Limnephilidae					
immature	-	-	7	7	-
F. Rhyacophilidae					
Rhyacophila	27	27	33	47	40
TRUE FLIES					
O. Diptera					
BITING-MIDGE					
F. Ceratopogonidae					
Culicoides	-	-	-	-	-
Probezzia	7	13	13	20	7
indeterminate	-	-	-	-	-
MIDGES					
F. Chironomidae					
chironomid pupae	-	-	-	-	-
S.F. Chironominae					
Micropsectra	-	-	-	-	-
Paratanytarsus	-	7	-	-	-
S.F. Diamesinae					
Diamesa	-	33	-	13	-
Pagastia	-	-	7	13	-
S.F. Orthocladiinae					
Brillia	7	7	-	7	-
Cricotopus/Orthocladius	27	33	13	87	7
Eukiefferiella	7	7	7	-	-
Orthocladius (E.) rivularum	-	-	7	-	-
Orthocladius (Euorthocladius)	-	-	7	20	7

Table C.7: Haggart Creek Effluent-Exposed Benthic Invertebrate Community Sample Data Expressed in Densities per Square Metre, September 2021

	Study Area	Haggart Creek Effluent-Exposed Area				
	Replicate	Exp-1	Exp-2	Exp-3	Exp-4	Exp-5
Paraphaenocladius		-	-	-	-	-
Parorthocladius		-	-	-	-	27
Rheocricotopus		-	-	-	-	-
Thienemanniella		7	-	-	-	-
Tvetenia		7	-	-	-	-
indeterminate		-	-	-	**7**	-
S.F. Tanypodinae						
Thienemannimyia complex		-	7	-	-	-
F. Empididae						
Chelifera/Metachela		27	13	113	67	13
Clinocera		7	7	-	-	13
Wiedemannia		27	27	20	13	33
F. Psychodidae						
Pericoma		7	7	-	-	-
F. Simuliidae						
Helodon		-	-	-	-	-
F. Tipulidae						
Dicranota		-	-	-	-	-
Limnophila		13	-	27	7	20
Rhabdomastix		-	7	-	-	-
Density (No. organisms per sq. metre)		991	865	1,360	1,156	1,080
Family Level	**Richness**[a]	18	19	18	20	17
	Simpson's Evenness (E)	0.476	0.376	0.414	0.504	0.273
Lowest Practical Level	**Richness**	26	28	23	26	22
	Simpson's Evenness (E)	0.346	0.280	0.337	0.429	0.218
Dominant Taxonomic Group Composition						
% Oligochaeta		22.3	28.7	24.0	11.6	42.6
% Ephemeroptera		26.4	10.1	14.7	19.1	16.7
% Plecoptera		19.6	31.8	33.3	23.1	17.3
% Trichoptera		9.5	7.0	6.4	6.4	7.4
% EPT		55.4	48.8	54.4	48.5	41.4
% Chironomidae		5.4	10.8	2.9	12.7	3.7
Functional Feeding Groups						
% Collector-Gatherer		48.6	38.0	34.8	30.6	52.5
% Scraper		11.5	10.9	11.3	6.9	12.3
% Shredder		23.0	36.4	34.3	30.1	19.8
Habitat Preference Groups						
% Clinger/Climber		67.6	58.9	60.8	74.6	49.4
% Sprawler		4.7	7.8	10.3	10.4	4.3
% Burrower		27.7	33.3	28.9	15.0	46.3

[a] Bold entries excluded from lowest-practical-level taxonomy richness determination.

Table C.8: Benthic Invertebrate Community[a] Statistical Comparison Results between the Haggart Creek Effluent-Exposed and Reference Study Areas, Eagle Gold Project Phase 1 EEM, September 2021

Metric	Two Sample Comparison				Summary Statistics (n = 5 per study area)						
	Statistical Test [b]	Data Transform-ation	p-value	Magnitude of Difference [c] (No. of SD_{REF})	Study Area	Mean	Standard Deviation	Standard Error	Minimum	Median	Maximum
LPL Richness (Number of Taxa)	tequal	none	0.629	not applicable	Reference	24.2	2.6	1.2	21.0	25.0	27.0
					Effluent-exposed	25.0	2.5	1.1	22.0	26.0	28.0
LPL Simpson's Evenness	tequal	log10	0.004	5.1	Reference	0.190	0.026	0.012	0.158	0.185	0.229
					Effluent-exposed	0.322	0.079	0.035	0.218	0.337	0.429
Collecter-Gatherer FFG (% of community)	tequal	none	0.015	-2.1	Reference	58.2	8.4	3.7	49.1	60.2	66.2
					Effluent-exposed	40.9	9.3	4.2	30.6	38.0	52.5
Scraper FFG (% of community)	tequal	none	0.122	not applicable	Reference	15.1	5.5	2.5	9.2	13.3	22.3
					Effluent-exposed	10.6	2.1	0.9	6.9	11.3	12.3
Shredder FFG (% of community)	tequal	none	0.006	6.4	Reference	16.5	1.9	0.9	14.2	16.3	19.5
					Effluent-exposed	28.7	7.2	3.2	19.8	30.1	36.4
Clinger HPG (% of community)	tequal	none	0.008	2.7	Reference	43.9	6.9	3.1	35.0	45.3	51.6
					Effluent-exposed	62.2	9.5	4.2	49.4	60.8	74.6
Sprawler HPG (% of community)	tequal	none	0.002	8.6	Reference	1.6	0.7	0.3	0.6	1.9	2.4
					Effluent-exposed	7.5	2.9	1.3	4.3	7.8	10.4
Burrower HPG (% of community)	tequal	none	0.003	-3.5	Reference	54.4	6.9	3.1	46.5	52.8	62.5
					Effluent-exposed	30.3	11.3	5.0	15.0	28.9	46.3

Grey shading indicates significant difference between study areas based on a p-value less than 0.10.

Blue shading indicates significant difference between study areas that was also outside of a Critical Effect Size of ±2 SD_{REF}.

Green shading indicates significant difference between study areas that was also outside of an Effect Size of ±2 SD_{REF}.

[a] Benthic metrics calculated using Lowest-Practical-Level (LPL) taxonomy.

[b] Statistical tests include Student's t-test assuming equal variance (tequal), Student's t-test assuming unequal variance (tunequal), or Mann-Whitney U-test (M-W).

[c] Magnitude calculated by comparing the difference between the reference area and effluent-exposed area means divided by the reference area standard deviation.

Table C.9: Bray-Curtis Index Statistical Comparison Results between Haggart Creek Effluent-Exposed and Reference Study Areas, Eagle Gold Project Phase 1 EEM, September 2021

Taxonomic Resolution	Sample Sizes		Betadisper P-Value	Mantel Test			dbRDA			
	Reference Area	Effluent-Exposed Area		r	R^2	P-Value	F-Value	R^2	R^2_{adj}	P-Value
Family-Level	5	5	0.739	0.621	0.386	0.008	4.740	0.372	0.294	0.005
Lowest-Practical-Level	5	5	0.980	0.727	0.529	0.008	4.460	0.358	0.278	0.004

Grey shading indicates significant difference between study areas for each respective test based on a p-value less than 0.10.

Table C.10: Mean Density, Richness, and Relative Abundance of Dominant Taxonomic Groups at Haggart Creek Effluent-Exposed (W4 and W29) and Reference (W22) Study Areas, 2007 to 2021

Metric	Study Area	Study Year						
		2007	2009	2010	2017	2018	2019	2021
Density (Individuals/m^2)	W22	2,100	3,138	1,832	4,313	2,623	11,324	1,864
	W4	2,100	-	-	5,404	1,206	9,971	-
	W29	-	3,171	1,888	3,592	3,348	18,500	1,088
FL Richness (Number of Taxa)	W22	-	-	-	17.0	21.0	15.3	18.8
	W4	-	-	-	21.7	18.7	19.3	-
	W29	-	-	-	20.3	20.3	17.3	18.4
Oligochaeta (% of community)	W22	-	-	-	15.7	1.6	13.9	50.6
	W4	-	-	-	9.0	8.9	4.7	-
	W29	-	-	-	25.6	33.5	12.0	25.8
Ephemeroptera (% of community)	W22	-	-	-	43.7	38.9	57.1	17.7
	W4	-	-	-	51.0	30.4	53.9	-
	W29	-	-	-	30.9	18.4	57.7	17.4
Plecoptera (% of community)	W22	-	-	-	16.5	26.5	17.7	19.3
	W4	-	-	-	28.2	28.0	26.1	-
	W29	-	-	-	25.1	23.4	18.7	25.0
Trichoptera (% of community)	W22	-	-	-	7.4	8.3	4.3	3.3
	W4	-	-	-	3.9	6.0	4.0	-
	W29	-	-	-	4.6	4.6	1.0	7.3
EPT (% of community)	W22	-	-	-	67.6	73.7	79.1	40.3
	W4	-	-	-	83.1	64.4	84.0	-
	W29	-	-	-	60.6	46.4	77.4	49.7

Data Quality Review

APPENDIX C BENTHIC DATA QUALITY REVIEW

C1 INTRODUCTION

Quality Assurance/Quality Control (QA/QC) implemented for the Eagle Gold Phase 1 EEM study included a Data Quality Review (DQR) of the benthic invertebrate community data to provide an evaluation of how well laboratory data quality compared to prescribed goals (i.e., Data Quality Objectives [DQO]) established *a priori*. This DQR report provides a comparison of target data quality to actual data quality, subsequently discussing the consequences of any failures to meet DQO. By completing this step, the quality of the data for the program can be effectively evaluated and demonstrated.

C2 QUALITY CONTROL MEASURES AND DQO

Two types of QC were applied in the laboratory for the benthic invertebrate community study component:

- **Sub-Sampling Error.** Sub-sampling error is assessed for studies in which benthic invertebrate community samples require processing of subsets of sample material (due to excessive sample volume and/or high invertebrate density). By comparing the numbers of benthic invertebrates recovered between at least two sub-samples, this measure provides an evaluation of how effective the sub-sampling method was in evenly dividing the original sample. Therefore, sub-sampling error provides a measure of analytical precision. The processing of entire benthic invertebrate community samples separately in representative sample fractions also allows an evaluation of sub-sampling accuracy. The DQO for sub-sampling error precision/accuracy was ≤20%.
- **Organism Recovery Check.** Organism recovery checks for benthic invertebrate community samples involve the re-processing of previously sorted material from a randomly selected sample to determine the number of invertebrates that were not recovered during the original sample processing. The reprocessing is conducted on a minimum of 10% of the samples submitted for the study by an analyst not involved in the original processing to reduce potential bias. This check allows the determination of accuracy through assessment of recovery efficiency. The DQO for organism recovery checks was ≥90%

C3 BENTHIC INVERTEBRATE COMMUNITY SAMPLE DQR RESULTS

Sub-sampling of benthic invertebrate community samples was conducted on nine of the ten samples collected, with half of the total material processed for these samples

(Appendix Table C-DQR.3). Sub-sampling error estimates indicated that precision and accuracy of the sub-sampled benthic invertebrate community sample met the DQO of ≤ 20% (Appendix Table C-DQR.1). Sorting efficiency (i.e., percent recovery) of the two benthic invertebrate community samples evaluated was high, averaging 96.5% and well above the sorting efficiency DQO of ≥ 90% recovery (Appendix Table C-DQR.2). Therefore, the benthic invertebrate community sample recovery was considered acceptable. Overall, the benthic invertebrate community sample data were of acceptable quality, meeting all established precision, accuracy, and percent recovery QC criteria.

Table C-DQR.1: Subsampling Error Estimates for Benthic Invertebrate Community Samples

Station	Whole Organisms	Number of Organisms in Fraction 1	Number of Organisms in Fraction 2	Number of Organisms in Fraction 3	Number of Organisms in Fraction 4	Actual Density[a]	Precision		Accuracy (%)
							% range		
Ref-01	-	230	242	-	-	472	5.0	-	2.5

Note: min = minimum absolute % error, max = maximum absolute % error.

[a] whole large organisms excluded in calculations.

"-" denotes no measurement or observation

Table C-DQR.2: Organism Recovery Rates for Benthic Invertebrate Community Samples

Station	Number of Organisms Recovered (initial sort)	Number of Organisms in Re-sort	Percent Recovery
Ref-04	211	215	98.1%
Exp-01	145	153	94.8%
Average % Recovery			96.5%

Table C-DQR.3: Sample Fractions Sorted for Benthic Invertebrate Community Samples

Station	Fraction Sorted	Station	Fraction Sorted
Ref-01	Whole[a]	Exp-01	1/2
Ref-02	1/2	Exp-02	1/2
Ref-03	1/2	Exp-03	1/2
Ref-04	1/2	Exp-04	1/2
Ref-05	1/2	Exp-05	1/2

Note: Pupae were not counted toward total number of taxa unless they were the sole representative of their taxa group. Immatures were not counted toward total number of taxa unless they were the sole representative of their taxa group. The exceptions to this rule are immature tubificidae with and without hairs. Immature oligocheates are counted as taxa as the probability of the immature being a unique taxa is high.

[a] two halves sorted for subsampling error calculations.

APPENDIX D

FISH POPULATION SURVEY INFORMATION

Table D.1: Detailed Electrofishing Catch Results for Spring Fish Population Survey, May 2021

Area	Station	Habitat Notes/Comments	Upstream UTM		Downstream UTM		Date	Time	Effort (sec)	Slimy Sculpin		
			Easting	Northing	Easting	Northing				Adults	Juveniles	CPUE [a]
Lynx Creek (Reference)	REF_EF-01	Run-riffle section, tea coloured, low turbidity. Lots of pools, LWD, SWD, side channels and back eddies. Overhanging deciduous and willow trees. Substrate varied: gravel and cobble bars, sandy bottom, silty pockets.	458020	7095830	458953	7095845	21-May-21	9:35	238	2	1	0.756
	REF_EF-02	Run-riffle section, did a cross section across top of riffles. Water clear, tea coloured. Gravel bar.	458056	7095898	458068	7095935	21-May-21	10:25	232	0	5	1.29
	REF_EF-03	-	458068	7095935	458095	7095969	21-May-21	11:06	69	0	3	2.61
	REF_EF-04	All passes combined into one.	458095	7095969	-	-	21-May-21	11:42	352	0	4	0.68
								Total	**891**	**2**	**13**	**1.33**
Haggart Creek (Effluent-Exposed)	EXP_EF-01	Straight runs and riffles, slower bank habitats, lack of pools or side channels, not a lot of LWD. Some SWD on backs, overhanging deciduous in summer. Substrate consistently cobble and pebble, some sand/gravel near banks.	458051	7101049	-	-	20-May-21	15:30	422	8	16	3.41
	EXP_EF-02	Water level up by 10-15 cm. Steady rain has increased discharge and water has risen on banks. Not safe to cross. Biologists worked along banks moving upstream.	458218	7099432	458228	7099525	22-May-21	9:13	180	0	8	2.67
	EXP_EF-03	Unknown small fish seen jumping, possible grayling. Both passes combined together.	458233	7099648	458228	7099663	22-May-21	10:32	88	0	3	2.05
	EXP_EF-04	Both passes combined together.	458240	7100250	458245	7100282	22-May-21	10:53	144	0	5	2.08
	EXP_EF-05	-	458051	7101025	458070	7101145	22-May-21	12:11	218	0	4	1.10
	EXP_EF-08	Riffle section opens into braided channel flowing into pond (beaver dam) at lower Haggart. Gravel, cobble, sand substrate. This pass went out and back, starting and ending at the same coordinates.	458321	7098294	458321	7098294	23-May-21	9:33	343	4	8	2.10
	EXP_EF-09	Discharge greater compared to previous days. Staff gauge indicates up by 1 cm. Cobble, pebble, sand, silt.	458261	7098491	458243	7098576	23-May-21	10:46	185	4	10	4.54
	EXP_EF-10	-	458295	7098311	458244	7099439	24-May-21	10:22	188	3	2	1.60
	EXP_EF-11	Both passes combined together.	458244	7099439	458231	7099480	24-May-21	11:51	182	2	1	0.99
								Total	**1,950**	**21**	**57**	**2.28**

Notes: '-' indicates no data recorded.

[a] Catch-per-Unit-Effort (CPUE) represents total number of fish captured per electrofishing minute (60 seconds)

Table D.2: Catch Records for Minnow Traps Set at the Lynx Creek Reference Area in Spring (May) 2021, Eagle Gold Project Phase 1 EEM

Area	Trap ID	Observations	UTM (NAD83, 8U)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	Slimy Sculpin		
			Easting	Northing						Adults	Juveniles	CPUE [a]
Lynx Creek (Reference)	REF-MT01	-	457962	7095812	20-May-21	21-May-21	9:58	9:23	23.42	0	0	0.00
					21-May-21	21-May-21	9:24	14:15	4.85	0	0	0.00
	REF-MT02	Back eddy, sand bottom, some gravel	458021	7095835	20-May-21	21-May-21	10:08	9:27	23.32	0	0	0.00
					21-May-21	22-May-21	9:28	15:39	30.18	0	0	0.00
					22-May-21	23-May-21	15:40	14:04	22.40	0	0	0.00
					23-May-21	24-May-21	15:45	15:06	23.35	0	0	0.00
	REF-MT03	Eddy, pool, tea coloured. Attempted recovery after May 22 and 23 - water too high to safely cross.	458061	7095908	20-May-21	21-May-21	10:21	10:21	24.00	0	0	0.00
					21-May-21	24-May-21	10:23	15:08	76.75	0	0	0.00
	REF-MT04	Back eddy, deep, tea coloured.	458045	7095926	20-May-21	21-May-21	10:30	10:45	24.25	0	0	0.00
					21-May-21	22-May-21	10:46	15:45	28.98	0	0	0.00
					22-May-21	23-May-21	15:46	14:10	22.40	2	0	2.14
					23-May-21	24-May-21	14:11	15:10	24.98	1	0	0.96
	REF-MT05	End of gravel/sand bar	-	-	20-May-21	21-May-21	10:43	11:09	24.43	0	0	0.00
					21-May-21	21-May-21	11:10	14:15	3.08	0	0	0.00
	REF-MT06	Deep, large pool off channel. Roe bait.	458087	7095995	20-May-21	21-May-21	10:50	11:11	24.35	0	0	0.00
					21-May-21	21-May-21	11:12	14:22	3.17	0	1	7.58
					21-May-21	22-May-21	14:23	15:45	25.37	2	0	1.89
					22-May-21	23-May-21	15:46	14:19	22.55	1	0	1.06
					23-May-21	24-May-21	14:20	15:42	25.37	4	0	3.78
	REF-MT07	-	458101	7096021	20-May-21	21-May-21	11:02	11:20	24.30	0	1	0.99
					21-May-21	21-May-21	11:21	14:20	2.98	0	0	0.00
	REF-MT08	-	458128	7096033	20-May-21	21-May-21	11:08	11:30	24.37	0	0	0.00
					21-May-21	21-May-21	11:31	14:25	2.90	0	0	0.00
	REF-MT09	Large back channel entrance, changed channel (side) connects to main Lynx Ck, slower moving, LWD undercut banks.	458137	7096044	20-May-21	21-May-21	11:00	12:00	25.00	2	0	1.92
					21-May-21	22-May-21	12:01	16:22	28.35	0	0	0.00
					22-May-21	23-May-21	16:23	14:33	22.17	0	0	0.00
					23-May-21	24-May-21	14:34	15:15	24.68	0	0	0.00
	REF-MT10	Large back channel, tea colour, LWD, good cover habitat.	458175	7096056	20-May-21	21-May-21	11:20	12:05	24.75	4	0	3.88
					21-May-21	22-May-21	12:06	16:25	28.32	0	0	0.00
					22-May-21	23-May-21	16:26	14:35	22.15	0	0	0.00
					23-May-21	24-May-21	14:36	15:20	24.73	1	0	0.97
	REF-MT11	Side channel (right downstream side) near confluence back to main channel. Attempted recovery May 22 - water too high to safely cross.	458160	7096050	21-May-21	23-May-21	14:37	14:25	47.80	0	0	0.00
					23-May-21	24-May-21	14:26	15:17	24.85	0	0	0.00
	REF-MT12	Right downstream side channel.	458171	7096076	21-May-21	22-May-21	14:41	16:21	25.67	1	0	1.87
					22-May-21	23-May-21	16:22	14:43	22.35	0	0	0.00
					23-May-21	24-May-21	14:44	15:16	24.53	0	0	0.00
	REF-MT13	-	458183	7096099	21-May-21	22-May-21	14:42	16:30	25.80	0	0	0.00
					22-May-21	23-May-21	16:31	14:35	22.07	0	0	0.00
					23-May-21	24-May-21	14:36	15:17	24.68	0	0	0.00
	REF-MT14	Pool at bottom of small cascade. Minnow trap broken - pulled out.	458207	7096108	21-May-21	22-May-21	14:43	16:28	25.75	0	0	0.00
	REF-MT15	Undercut bank and LWD providing shelter, slow current.	458167	7096068	22-May-21	23-May-21	16:11	14:30	22.32	0	0	0.00
	REF-MT16	In grasses, slow current.	458185	7096073	22-May-21	23-May-21	16:22	14:44	22.37	0	0	0.00
					23-May-21	24-May-21	14:45	15:40	24.92	0	0	0.00
	REF-MT17	In grasses.	458181	7096085	22-May-21	23-May-21	16:36	14:45	22.15	0	0	0.00
					23-May-21	24-May-21	14:46	15:44	24.97	0	0	0.00
	REF-MT18	-	458162	7096108	22-May-21	23-May-21	16:27	14:46	22.32	0	0	0.00
					23-May-21	24-May-21	14:47	15:45	24.97	2	0	1.92
									Total	**20**	**2**	**0.62**

Notes: Juvenile fish were released, whereas adults were retained for sampling. '-' indicates no data available.

[a] Catch-per-Unit-Effort (CPUE) reflects number of fish captured per minnow trap per day (24 hours).

Table D.3: Catch Records for Minnow Traps Set at the Haggart Creek Effluent-Exposed Area in Spring (May) 2021, Eagle Gold Project Phase 1 EEM

Area	Trap ID	Observations	UTM (NAD83, 8U)		Set Date	Lift Date	Set Time	Lift Time	Trap Hours (hrs)	Slimy Sculpin		
			Easting	Northing						Adults	Juveniles	CPUE [a]
Haggart Creek (Exposed)	EXP-MT01	Creek flowing fast, lots of riffles.	458220	7099438	20-May-21	21-May-21	13:18	15:49	26.52	0	0	0.00
	EXP-MT02	-	458226	7099470	20-May-21	21-May-21	13:23	15:47	26.40	0	0	0.00
	EXP-MT03	Small eddy.	458217	7099483	20-May-21	21-May-21	13:29	15:45	26.27	0	0	0.00
	EXP-MT04	LWD proving slow spot.	458231	7099529	20-May-21	21-May-21	13:38	15:43	26.08	0	0	0.00
	EXP-MT05	-	458212	7099589	20-May-21	21-May-21	13:47	15:41	25.90	0	0	0.00
	EXP-MT06	Boulder providing protection.	458214	7099642	20-May-21	21-May-21	13:52	15:40	25.80	0	0	0.00
	EXP-MT07	Boulder providing lower velocity refuge. Turbidity increasing, more opaque.	458214	7099765	20-May-21	21-May-21	14:04	15:38	25.57	0	0	0.00
	EXP-MT08	Boulder providing habitat, turbid.	458205	7099769	20-May-21	21-May-21	14:12	15:37	25.42	0	0	0.00
	EXP-MT09	Boulder providing shelter. Increased turbidity. Poor access.	458205	7099802	20-May-21	21-May-21	14:18	15:30	25.20	0	0	0.00
					21-May-21	23-May-21	15:31	11:30	43.98	0	0	0.00
	EXP-MT10	LWD creating small pool habitat. Delayed pickup, water not safe to cross.	458031	7101010	21-May-21	23-May-21	16:54	16:54	48.00	0	0	0.00
	EXP-MT11	-	458023	7100998	21-May-21	22-May-21	16:54	16:50	23.93	0	0	0.00
	EXP-MT12	-	458023	7100985	21-May-21	22-May-21	16:55	12:15	19.33	1	0	1.24
									Total	**1**	**0**	**0.10**

Notes: Juvenile fish were released, whereas adults were retained for sampling. '-' indicates no data available.

[a] Catch-per-Unit-Effort (CPUE) reflects number of fish captured per minnow trap per day (24 hours).

Table D.4: Seine Netting Catch Records for the Eagle Gold Project Phase 1 EEM, May 2021

Area	Station ID	Date	Time	UTM (NAD83, 15U)		Length (m)	Distance (m)	# of Hauls	Area Seined (m^2)	Slimy Sculpin	
				Easting	Northing					Catch	CPUE[a]
Haggart Creek (Exposed)	Lower Haggart Ponded Area	24-May-21	9:50	458326	7098284	10	10	1	100	0	0.00
	Lower Haggart Ponded Area	24-May-21	10:02	458332	7098308	10	5	1	50	0	0.00
									Totals	**0**	**0**

[a] Total catch-per-unit-effort (CPUE) calculated as the number of fish caught per seine haul per 100 square metre area.

Table D.5: Male Slimy Sculpin Measures Collected at Lynx Creek (Reference), Eagle Gold Project Phase 1 EEM, May 2021

Specimen ID	Age (yrs)	Total Length (mm)	Body Weight (g)	Gonad Weight (g)	Liver Weight (g)	Fulton's Condition Factor (K)	Abnormalities (Deformities, Erosion, Lesions or Tumors [DELT])
REF-SS-01	3	89.6	8.773	0.131	0.213	1.219	None
REF-SS-02	3	92.7	8.466	0.150	0.135	1.064	None
REF-SS-03	4	93.2	8.737	0.143	0.197	1.081	None
REF-SS-04	3	69.6	2.560	0.020	0.052	0.761	None
REF-SS-06	4	106.7	15.271	0.338	0.387	1.256	None
REF-SS-07	3	95.7	9.158	0.136	0.230	1.046	None
REF-SS-08	3	69.2	2.802	0.010	0.069	0.845	None
REF-SS-11	4	100.2	13.263	0.213	0.348	1.317	None
REF-SS-12	3	92.0	11.076	0.292	0.162	1.423	None
REF-SS-13	4	88.3	7.437	0.155	0.219	1.081	None
REF-SS-14	4	92.4	9.238	0.189	0.181	1.172	None
REF-SS-15	4	75.3	3.549	0.019	0.028	0.833	None
REF-SS-18	5	93.2	10.646	0.251	0.164	1.317	None
REF-SS-19	4	75.0	4.203	IMM	0.157	0.997	None
total sample size	**14**	**14**	**14**	**13**	**14**	**14**	**14**
average	**3.6**	**88.1**	**8.227**	**0.157**	**0.182**	**1.101**	**-**
median	**4.0**	**92.2**	**8.755**	**0.150**	**0.173**	**1.081**	**-**
standard deviation	**0.6**	**11.4**	**3.840**	**0.102**	**0.101**	**0.198**	**-**
standard error	**0.2**	**3.1**	**1.026**	**0.028**	**0.027**	**0.053**	**-**
minimum	**3.0**	**69.2**	**2.560**	**0.010**	**0.028**	**0.761**	**-**
maximum	**5.0**	**106.7**	**15.271**	**0.338**	**0.387**	**1.423**	**-**

Table D.6: Male Slimy Sculpin Measures Collected at Haggart Creek Effluent-Exposed Study Area, Eagle Gold Project Phase 1 EEM, May 2021

Specimen ID	Age (yrs)	Total Length (mm)	Body Weight (g)	Gonad Weight (g)	Liver Weight (g)	Fulton's Condition Factor (K)	Abnormalities (Deformities, Erosion, Lesions or Tumors [DELT])
EXP-SS-01	4	102.0	12.375	0.251	-	1.168	None
EXP-SS-02	5	117.5	17.404	0.302	0.335	1.073	None
EXP-SS-03	3	87.9	7.171	0.135	0.107	1.056	None
EXP-SS-06	4	95.9	10.075	0.205	0.407	1.142	None
EXP-SS-08	3	107.3	12.095	0.158	0.142	0.980	None
EXP-SS-12	4	79.3	4.960	0.067	0.099	0.994	None
EXP-SS-19	4	88.9	7.995	0.210	0.101	1.138	None
EXP-SS-23	4	85.9	6.650	0.089	0.204	1.048	None
EXP-SS-24	3	75.2	3.412	0.032	0.069	0.804	None
total sample size	**9**	**9**	**9**	**9**	**8**	**9**	**9**
average	**3.8**	**93.3**	**9.126**	**0.161**	**0.183**	**1.045**	**-**
median	**4.0**	**88.9**	**7.995**	**0.158**	**0.124**	**1.056**	**-**
standard deviation	**0.7**	**13.6**	**4.331**	**0.089**	**0.124**	**0.111**	**-**
standard error	**0.2**	**4.5**	**1.444**	**0.030**	**0.044**	**0.037**	**-**
minimum	**3.0**	**75.2**	**3.412**	**0.032**	**0.069**	**0.804**	**-**
maximum	**5.0**	**117.5**	**17.404**	**0.302**	**0.407**	**1.168**	**-**

Table D.7: Male Slimy Sculpin Population Statistical Comparison Results between the Haggart Creek Effluent-Exposed and Lynx Creek Reference Study Areas, Eagle Gold Project Phase 1 EEM, May 2021

Indicator	Endpoint	Variables		Sample Size		Test			ANCOVA Statistics			Summary Statistics[b]			Test *P*-value (Location)	Magnitude of Difference (%)[c]	Estimated Minimum Detectable Difference with α=β=0.1[d]	
		Response	Covariate	REF	EXP	Statistical Test	Shapiro Wilk's P-Value	Levene's Test P-Value	Interaction Model: Interaction *p*-value	Parallel Slope Model: Covariate *p*-value	Covariate Value for Comparisons[a]	Statistic	REF	EXP			Increase	Decrease
Survival/Recruitment	Length-Frequency Distribution	Total Length (cm)	-	14	9	K-S	-	-	-	-	-	-	-	-	0.701	-	-	-
	Age-Frequency Distribution	**Age (years)**	-	**14**	**9**	**K-S**	-	-	-	-	-	-	-	-	**1.000**	-	-	-
Survival	**Age**	**Age (years)**	**-**	**14**	**9**	**M-W**	**0.002[e]**	**0.806[e]**	**-**	**-**	**-**	**Median**	**4.00**	**4.00**	**0.647**	**ns**	**22**	**-18**
Body Size	Total Length	Total Length (cm)	-	14	9	tequal	0.435	0.559	-	-	-	Mean	88.1	93.3	0.330	ns	14	-14
	Body Weight	Body Weight (g)	-	14	9	tequal	0.433	0.680	-	-	-	Mean	8.23	9.13	0.607	ns	50	-50
Energy Usage	Length-at-age	Total Length (cm)	Age (years)	14	9	ANCOVA	-	-	0.726	0.137	-	-	-	-	-	-	14	-14
		Total Length (cm)	-	14	9	tequal	0.435	0.559	-	-	-	Mean	88.1	93.3	0.330	ns	14	-14
	Weight-at-age	**Body Weight (g)**	**Age (years)**	**14**	**9**	**ANCOVA**	**-**	**-**	**0.756**	**0.104**	**-**	**-**	**-**	**-**	**-**	**-**	**47**	**-47**
		Body Weight (g)	**-**	**14**	**9**	**tequal**	**0.433**	**0.680**	**-**	**-**	**-**	**Mean**	**8.23**	**9.13**	**0.607**	**ns**	**50**	**-50**
	Relative Gonad Weight	**log10[Gonad Weight (g)]**	**log10[Body Weight (g)]**	**13**	**9**	**ANCOVA**	**-**	**-**	**0.031**	**<0.001**	**3.41**	**Predicted Mean**	**0.0231**	**0.0411**	**0.565**	**78**	**-**	**-**
											15.3		**0.418**	**0.306**		**-27**		
Energy Storage	**Relative Liver Weight**	**log10[Liver Weight (g)]**	**log10[Body Weight (g)]**	**14**	**8**	**ANCOVA**	**-**	**-**	**0.683**	**<0.001**	**7.42**	**Adjusted Mean**	**0.154**	**0.145**	**0.728**	**ns**	**50**	**-34**
	Condition	**log10[Body Weight (g)]**	**log10[Total Length (cm)]**	**14**	**9**	**ANCOVA**	**-**	**-**	**0.038[f]**	**<0.001**	**89.3**	**Adjusted Mean**	**7.87**	**7.18**	**0.087**	**-8.7**	**-**	**-**

Shading indicates an area p-value less than 0.1 or an interaction p-value less than 0.05.

Indicates a Magnitude of Difference (MOD) outside of applicable Critical Effect Size (i.e., ±25% for all endpoints with the exception of ±10% for condition).

Covariate P-value > 0.05.

Notes: ns = non-significant. "-" indicates the value is not applicable. **Bold = EEM Effect Indicator endpoints**

[a] The mean value of the covariate (that corresponds to the adjusted means for the response variable) for the parallel slope ANCOVA model or the minimum and maximum values of the overlap in covariate values for the interaction ANCOVA model.

[b] The median, mean (geometric mean for $\log_{10}$-transformed variables), and adjusted mean are reported for Mann-Whitney, t-test and ANCOVA, respectively, and the predicted means of the regression line equations for minimum and maximum values of the covariate (where the data sets overlap) for ANCOVAs where a significant interaction (i.e., different slopes) occurs.

[c] Calculated as the difference in measure of central tendency (MCT) between areas (mine-exposed minus reference), expressed as a percentage of the reference area MCT.

[d] Minimum detectable effect size (see methods section of report for formula).

[e] When a non-parameterc test was selected only untransformed results are displayed. Results were qualitatively similar when log-10 transformed.

[f] ANCOVA proceeded under the assumption that the slopes are practically parallel (R2 of interaction model = 0.9669 and R2 of parallel slope model = 0.9582; a difference < 0.02) following Environment Canada (2012). Interaction p-value was not shaded to indicate the model was treating the interaction as non-significant.

Table D.8: Estimated Sample Sizes Required to Detect Various Effect Sizes as a Percentage Change in Male Slimy Sculpin Population Endpoints between Haggart Creek Effluent-Exposed and Lynx Creek Reference Study Areas with α=β=0.1

Indicator	Endpoint	Variables		Test	S[a]	COV (%)[b]	Minimum Sample Size to Detect an Effect Size (% Increase/Decrease Relative to Reference) with α=β=0.1[c]								
							log(Response)	5%	10%	20%	25%	30%	33%	40%	50%	100%
								-5%	-9%	-17%	-20%	-23%	-25%	-29%	-33%	-50%
		Response	Covariate				Response	±5%	±10%	±20%	±25%	±30%	±33%	±40%	±50%	±100%
Survival	Age	Age (years)	-	M-W	0.0757	17.7	Response	252	64	18	12	9	7	6	5	3
Body Size	Total Length	Total Length (cm)	-	tequal	-	14.0	Response	135	35	10	7	5	4	4	3	2
	Body Weight	Body Weight (g)	-	tequal	-	49.0	Response	1,648	413	104	67	47	38	27	18	5
Energy Usage	Length-at-age	Total Length (cm)	-	ANCOVA	-	13.4	Response	125	32	9	6	5	4	3	3	2
	Total Length	Total Length (cm)	-	tequal	-	14.0	Response	135	35	10	7	5	4	4	3	2
	Weight-at-age	Body Weight (g)	-	ANCOVA	-	45.8	Response	1,439	361	91	59	41	34	24	16	5
	Body Weight	Body Weight (g)	-	tequal	-	49.0	Response	1,648	413	104	67	47	38	27	18	5
	Relative Gonad Weight	log10[Gonad Weight (g)]	log10[Body Weight (g)]	ANCOVA	0.127	-	log(Response)	616	163	46	32	23	20	15	11	5
Energy Storage	Relative Liver Weight	log10[Liver Weight (g)]	log10[Body Weight (g)]	ANCOVA	0.176	-	log(Response)	1,189	313	87	59	43	36	27	19	8
	Condition	log10[Body Weight (g)]	log10[Total Length (cm)]	ANCOVA	0.0500	-	log(Response)	98	27	9	7	6	5	5	4	3

Notes: "-" indicates the value is not relevant for that analysis.

[a] Pooled standard deviation of the regression residuals.

[b] Coefficient of variation (pooled standard deviation/reference mean)×100%.

[c] Sample size estimates for the M-W test were estimated based on a two-sample t-test using sample sizes multiplied by 0.864. The 0.864 is the lower bound of the asymptotic relative efficiency of the Mann-Whitney test and the two-sample t-test (Hodges and Lehmann 1956). Estimates were generated for the response variable on the untransformed and log $_{10}$-transformed scales and the lowest sample size is reported.

Table D.9: Female Slimy Sculpin Measures Collected from the Lynx Creek Reference Area, Eagle Gold Project Phase 1 EEM, May 2021

Specimen ID	Age (yrs)	Total Length (mm)	Body Weight (g)	Gonad Weight (g)	Liver Weight (g)	Fulton's Condition Factor (K)	Total Fecundity (no. eggs)	Egg Weight (mg)	Abnormalities (Deformities, Erosion, Lesions or Tumors [DELT])
REF-SS-05	5	97.4	10.788	2.975	0.248	1.168	347	9	None
REF-SS-09	4	69.0	4.028	0.935	0.110	1.227	152	6	None
REF-SS-10	4	91.8	8.030	2.208	0.183	1.039	294	8	None
REF-SS-16	4	86.4	7.693	1.672	0.174	1.194	218	8	None
REF-SS-17	6	90.6	7.981	2.255	0.161	1.075	210	11	None
REF-SS-20	3	72.2	3.583	0.892	0.088	0.951	154	6	None
total sample size	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6.0**
average	**4.3**	**84.55**	**7.017**	**1.823**	**0.161**	**1.109**	**229**	**8**	**-**
median	**4.0**	**88.46**	**7.837**	**1.940**	**0.168**	**1.121**	**214**	**8**	**-**
tandard deviation	**1.0**	**11.40**	**2.733**	**0.817**	**0.057**	**0.105**	**78**	**2**	**-**
standard error	**0.4**	**4.66**	**1.116**	**0.334**	**0.023**	**0.043**	**32**	**1**	**-**
minimum	**3.0**	**68.99**	**3.583**	**0.892**	**0.088**	**0.951**	**152**	**6**	**-**
maximum	**6.0**	**97.39**	**10.788**	**2.975**	**0.248**	**1.227**	**347**	**11**	**-**

Table D.10: Female Slimy Sculpin Measures Collected from the Haggart Creek Effluent-Exposed Area, Eagle Gold Project Phase 1 EEM, May 2021

Specimen ID	Age (yrs)	Total Length (mm)	Body Weight (g)	Gonad Weight (g)	Liver Weight (g)	Fulton's Condition Factor (K)	Total Fecundity (no. eggs)	Egg Weight (mg)	Abnormalities (Deformities, Erosion, Lesions or Tumors [DELT])
EXP-SS-04	4	102.8	10.965	2.014	0.427	1.009	424	5	None
EXP-SS-05	5	96.5	7.807	1.648	0.187	0.869	211	8	None
EXP-SS-07	4	88.2	6.714	1.425	0.207	0.979	253	6	None
EXP-SS-09	4	74.6	4.112	0.965	0.136	0.990	169	6	None
EXP-SS-11	4	83.2	5.650	1.246	0.138	0.980	204	6	None
EXP-SS-13	3	63.1	1.924	IMM	0.032	0.766	-	-	None
EXP-SS-15	4	76.1	4.685	1.202	0.110	1.065	171	7	None
EXP-SS-16	4	83.9	7.417	1.708	0.205	1.258	259	7	None
EXP-SS-17	4	74.9	5.947	1.283	0.098	1.413	203	6	None
EXP-SS-20	4	80.9	4.881	1.006	0.137	0.922	193	5	None
EXP-SS-21	3	78.5	5.081	1.100	0.130	1.052	201	5	None
EXP-SS-22	4	81.5	5.512	1.251	0.190	1.018	215	6	None
total sample size	**12**	**12**	**12**	**11**	**12**	**12**	**11**	**11**	**12**
average	**3.9**	**82.01**	**5.891**	**1.350**	**0.166**	**1.027**	**228**	**6**	**-**
median	**4.0**	**81.21**	**5.581**	**1.251**	**0.138**	**1.000**	**204**	**6**	**-**
tandard deviation	**0.5**	**10.43**	**2.229**	**0.322**	**0.096**	**0.169**	**71**	**1**	**-**
standard error	**0.1**	**3.01**	**0.643**	**0.097**	**0.028**	**0.049**	**21**	**0**	**-**
minimum	**3.0**	**63.09**	**1.924**	**0.965**	**0.032**	**0.766**	**169**	**5**	**-**
maximum	**5.0**	**102.80**	**10.965**	**2.014**	**0.427**	**1.413**	**424**	**8**	**-**

Table D.11: Female Slimy Sculpin Population Statistical Comparison Results between the Haggart Creek Effluent-Exposed and Lynx Creek Reference Study Areas, Eagle Gold Project Phase 1 EEM, May 2021

Indicator	Endpoint	Variables		Sample Size		Test			ANCOVA Statistics			Summary Statistics[b]			Test *P*-value (Location)	Magnitude of Difference (%)[c]	Estimated Minimum Detectable Difference with α=β=0.1[d]	
									Interaction Model	Parallel Slope Model	Covariate Value for Comparisons[a]							
		Response	Covariate	REF	EXP	Statistical Test	Shapiro Wilk's P-Value	Levene's Test P-Value	Interaction *p*-value	Covariate *p*-value		Statistic	REF	EXP			Increase	Decrease
Survival/ Recruitment	Length-Frequency Distribution	Total Length (cm)	-	6	12	K-S	-	-	-	-	-	-	-	-	0.468	ns	-	-
	Age-Frequency Distribution	**Age (years)**	**-**	**6**	**12**	**K-S**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.964**	**ns**	**-**	**-**
Survival	**Age**	**Age (years)**	**-**	**6**	**12**	**tequal**	**0.051**	**0.177**	**-**	**-**	**-**	**Mean**	**4.33**	**3.92**	**0.263**	**ns**	**18**	**-18**
Body Size	Total Length	Total Length (cm)	-	6	12	tequal	0.995	0.715	-	-	-	Mean	84.5	82.0	0.643	ns	14	-14
	Body Weight	Body Weight (g)	-	6	12	tequal	0.863	0.656	-	-	-	Mean	7.02	5.89	0.362	ns	36	-36
Energy Usage	Length-at-age	log10[Total Length (cm)]	log10[Age (years)]	6	12	ANCOVA	-	-	0.515	0.007	4.00	Adjusted Mean	81.6	82.5	0.840	ns	12	-11
	Weight-at-age	**log10[Body Weight (g)]**	**log10[Age (years)]**	**6**	**12**	**ANCOVA**	**-**	**-**	**0.534**	**0.005**	**4.00**	**Adjusted Mean**	**5.95**	**5.73**	**0.832**	**ns**	**43**	**-30**
	Relative Gonad Weight	**log10[Gonad Weight (g)]**	**log10[Body Weight (g)]**	**6**	**11**	**ANCOVA**	**-**	**-**	**0.019**	**<0.001**	**4.11**	**Predicted Mean**	**0.991**	**0.975**	**0.002**	**-1.7**	**-**	**-**
											10.8		**2.90**	**2.09**		**-28**		
	Relative Egg Weight	log10[Egg Weight (g)]	log10[Body Weight (g)]	6	11	ANCOVA	-	-	0.065	0.117	-	-	-	-	-	-	-	-
		Egg Weight (g)	-	6	11	tequal	0.568	0.166	-	-	-	Mean	0.00774	0.00604	0.018	-22	-	-
	Relative Fecundity	log10[Fecundity]	log10[Body Weight (g)]	6	11	ANCOVA	-	-	0.496	<0.001	6.19	Adjusted Mean	210	225	0.300	ns	15	-13
Energy Storage	**Relative Liver Weight**	**log10[Liver Weight (g)]**	**log10[Body Weight (g)]**	**6**	**12**	**ANCOVA**	**-**	**-**	**0.064**	**<0.001**	**5.80**	**Adjusted Mean**	**0.132**	**0.153**	**0.213**	**ns**	**26**	**-21**
	Condition	**log10[Body Weight (g)]**	**log10[Total Length (cm)]**	**6**	**12**	**ANCOVA**	**-**	**-**	**0.938**	**<0.001**	**82.2**	**Adjusted Mean**	**6.13**	**5.65**	**0.279**	**ns**	**17**	**-14**

Shading indicates an area p-value less than 0.1 or an interaction p-value less than 0.05.

Indicates a Magnitude of Difference (MOD) outside of applicable Critical Effect Size (i.e., ±25% for all endpoints with the exception of ±10% for condition).

Covariate P-value > 0.05.

Notes: ns = non-significant. "**-**" indicates the value is not applicable. **Bold =** EEM Effect Indicator endpoints.

[a] The mean value of the covariate (that corresponds to the adjusted means for the response variable) for the parallel slope ANCOVA model or the minimum and maximum values of the overlap in covariate values for the interaction ANCOVA model.

[b] The median, mean (geometric mean for $\log_{10}$-transformed variables), and adjusted mean are reported for Mann-Whitney, t-test and ANCOVA, respectively, and the predicted means of the regression line equations for minimum and maximum values of the covariate (where the data sets overlap) for ANCOVAs where a significant interaction (i.e., different slopes) occurs.

[c] Calculated as the difference in measure of central tendency (MCT) between areas (mine-exposed minus reference), expressed as a percentage of the reference area MCT.

[d] Minimum detectable effect size (see methods section of report for formula).

Table D.12: Estimated Sample Sizes Required to Detect Various Effect Sizes as a Percentage Change in Female Slimy Sculpin Population Endpoints between Haggart Creek Effluent-Exposed and Lynx Creek Reference Study Areas with α=β=0.1

Indicator	Endpoint	Variables		Test	S[a]	COV (%)[b]	Minimum Sample Size to Detect an Effect Size (% Increase/Decrease Relative to Reference) with α=β=0.1[c]								
							log(Response)	5%	10%	20%	25%	30%	33%	40%	50%	100%
								-5%	-9%	-17%	-20%	-23%	-25%	-29%	-33%	-50%
		Response	Covariate				Response	±5%	±10%	±20%	±25%	±30%	±33%	±40%	±50%	±100%
Survival	Age	Age (years)	-	tequal	-	16.6	Response	189	48	13	9	7	6	4	3	2
Body Size	Total Length	Total Length (cm)	-	tequal	-	12.7	Response	112	29	8	6	4	4	3	3	2
	Body Weight	Body Weight (g)	-	tequal	-	34.2	Response	801	201	51	33	23	19	14	9	4
Energy Usage	Length-at-age	log10[Total Length (cm)]	log10[Age (years)]	ANCOVA	0.0456	-	log(Response)	81	23	8	6	5	5	4	4	3
	Weight-at-age	log10[Body Weight (g)]	log10[Age (years)]	ANCOVA	0.146	-	log(Response)	818	216	61	41	30	26	19	14	6
	Relative Gonad Weight	log10[Gonad Weight (g)]	log10[Body Weight (g)]	ANCOVA	0.0344	-	log(Response)	47	14	6	5	4	4	4	3	3
	Relative Egg Weight	Egg Weight (g)	-	tequal	-	13.6	log(Response)	128	33	9	6	5	4	3	3	2
	Relative Fecundity	log10[Fecundity]	log10[Body Weight (g)]	ANCOVA	0.0527	-	log(Response)	108	30	10	7	6	5	5	4	3
Energy Storage	Relative Liver Weight	log10[Liver Weight (g)]	log10[Body Weight (g)]	ANCOVA	0.0955	-	log(Response)	350	93	27	19	14	12	10	7	4
	Condition	log10[Body Weight (g)]	log10[Total Length (cm)]	ANCOVA	0.0634	-	log(Response)	156	42	13	10	8	7	6	5	4

Notes: "-" indicates the value is not relevant for that analysis.

[a] Pooled standard deviation of the regression residuals.

[b] Coefficient of variation (pooled standard deviation/reference mean)×100%.

[c] Sample size estimates for the M-W test were estimated based on a two-sample t-test using sample sizes multiplied by 0.864. The 0.864 is the lower bound of the asymptotic relative efficiency of the Mann-Whitney test and the two-sample t-test (Hodges and Lehmann 1956). Estimates were generated for the response variable on the untransformed and log $_{10}$-transformed scales and the lowest sample size is reported.

Table D.13: Detailed Electrofishing Catch Results for Fall Fish Population Survey, September 2021

Station	Upstream UTM		Downstream UTM		Date	Effort (sec)	Slimy Sculpin		Arctic Grayling		Notes
	Easting	Northing	Easting	Northing			Caught	CPUE [a]	Caught	CPUE [a]	
Lynx Creek (Reference)	457958	7095773	459094	7096077	04-Sep-21	7,140	187	1.57	27	0.23	Many large AG upstream of large beaver dam. Very deep holes and runs >1m deep (~20), making fishing a challenge.
	458251	7096033	459290	7096043	05-Sep-21	2,981	67	1.35	15	0.30	Very deep holes and runs >1m deep (~20), making fishing a challenge.
Haggart Creek (Exposed)	458326	7098184	458274	7098444	03-Sep-21	7,751	31	0.24	103	0.80	Turbid water conditions.

[a] Catch-per-Unit-Effort (CPUE) represents total number of fish captured per electrofishing minute (60 seconds).

Table D.14: Measurements, Age, and External Physical Abnormalities of Arctic Grayling Sampled at Lynx Creek, September 2021

Processing Date	Fish ID	Total Length (cm)	Fork Length (cm)	Body Weight (g)	Age	Fulton's Condition Factor (K)	DELT (Present[P]/Absent[A])				Comment
							D	E	L	T	
04-Sep-21	REF-AG-01	37.8	34.6	430	6	0.796	A	A	A	A	adult
04-Sep-21	REF-AG-02	34.3	31.0	375	5	0.929	A	A	A	A	adult
04-Sep-21	REF-AG-03	35.7	32.4	450	5	0.989	A	A	A	A	adult
04-Sep-21	REF-AG-04	8.4	7.7	4.553	0	0.768	A	A	A	A	yoy
04-Sep-21	REF-AG-05	8.9	8.2	4.891	0	0.694	A	A	A	A	yoy
04-Sep-21	REF-AG-06	8.9	7.3	3.644	0	0.517	A	A	A	A	yoy
04-Sep-21	REF-AG-07	7.8	7.2	3.334	0	0.703	A	A	A	A	yoy
04-Sep-21	REF-AG-08	8.2	7.6	4.006	0	0.727	A	A	A	A	yoy
04-Sep-21	REF-AG-09	8.3	7.7	4.154	0	0.726	A	A	A	A	yoy
04-Sep-21	REF-AG-10	8.4	7.8	4.114	0	0.694	A	A	A	A	yoy
04-Sep-21	REF-AG-11	7.7	7.1	3.138	-	0.687	A	A	A	A	yoy
04-Sep-21	REF-AG-12	7.8	7.2	3.750	-	0.790	A	A	A	A	yoy
04-Sep-21	REF-AG-13	8.1	7.6	3.823	-	0.719	A	A	A	A	yoy
04-Sep-21	REF-AG-14	7.9	7.3	3.740	-	0.759	A	A	A	A	yoy
04-Sep-21	REF-AG-15	8.7	8.1	3.348	-	0.508	A	A	A	A	yoy
04-Sep-21	REF-AG-16	7.7	7.2	3.525	-	0.772	A	A	A	A	yoy
04-Sep-21	REF-AG-17	8.0	7.4	3.736	-	0.730	A	A	A	A	yoy
04-Sep-21	REF-AG-18	8.2	7.6	4.072	-	0.739	A	A	A	A	yoy
04-Sep-21	REF-AG-19	7.5	6.9	3.074	-	0.729	A	A	A	A	yoy
04-Sep-21	REF-AG-20	8.1	7.5	3.884	-	0.731	A	A	A	A	yoy
04-Sep-21	REF-AG-21	7.5	6.9	3.043	-	0.721	A	A	A	A	yoy
04-Sep-21	REF-AG-22	8.0	7.8	4.099	-	0.801	A	A	A	A	yoy
04-Sep-21	REF-AG-23	7.9	7.3	3.542	-	0.718	A	A	A	A	yoy
04-Sep-21	REF-AG-24	8.1	7.5	3.616	-	0.680	A	A	A	A	yoy
04-Sep-21	REF-AG-25	7.6	7.0	3.320	-	0.756	A	A	A	A	yoy
04-Sep-21	REF-AG-26	7.8	7.2	3.325	-	0.701	A	A	A	A	yoy
04-Sep-21	REF-AG-27	8.1	7.5	3.844	-	0.723	A	A	A	A	yoy
05-Sep-21	REF-AG-28	41.2	38.0	555	-	0.794	A	A	A	A	adult
05-Sep-21	REF-AG-29	42.0	39.1	635	-	0.857	A	A	A	A	adult
05-Sep-21	REF-AG-30	43.1	39.9	695	-	0.868	A	A	A	A	adult
05-Sep-21	REF-AG-31	8.8	8.1	4.955	-	0.727	A	A	A	A	yoy
05-Sep-21	REF-AG-32	8.1	7.4	3.508	-	0.660	A	A	A	A	yoy
05-Sep-21	REF-AG-33	8.1	7.6	3.866	-	0.727	A	A	A	A	yoy
05-Sep-21	REF-AG-34	7.9	7.2	3.307	-	0.671	A	A	A	A	yoy
05-Sep-21	REF-AG-35	7.9	7.3	3.484	-	0.707	A	A	A	A	yoy
05-Sep-21	REF-AG-36	8.4	7.7	4.212	-	0.711	A	A	A	A	yoy
05-Sep-21	REF-AG-37	8.0	7.4	3.433	-	0.671	A	A	A	A	yoy
05-Sep-21	REF-AG-38	7.9	7.4	3.959	-	0.803	A	A	A	A	yoy
05-Sep-21	REF-AG-39	8.0	7.5	4.515	-	0.882	A	A	A	A	yoy
05-Sep-21	REF-AG-40	7.8	7.2	3.452	-	0.727	A	A	A	A	yoy
05-Sep-21	REF-AG-41	34.1	31.6	335	-	0.845	A	A	A	A	adult
05-Sep-21	REF-AG-42	38.6	35.4	590	-	1.026	A	A	A	A	adult
total sample size		**42**	**42**	**42**	**10**	**42**	**-**	**-**	**-**	**-**	**-**
average		**13.8**	**12.7**	**99.84**	**1.6**	**0.750**	**-**	**-**	**-**	**-**	**-**
median		**8.1**	**7.5**	**3.86**	**0**	**0.727**	**-**	**-**	**-**	**-**	**-**
standard deviation		**12.1**	**11.1**	**207.45**	**2.59**	**0.098**	**-**	**-**	**-**	**-**	**-**
standard error		**1.9**	**1.7**	**32.01**	**0.82**	**0.015**	**-**	**-**	**-**	**-**	**-**
minimum		**7.5**	**6.9**	**3.04**	**0**	**0.508**	**-**	**-**	**-**	**-**	**-**
maximum		**43.1**	**39.9**	**695.00**	**6**	**1.026**	**-**	**-**	**-**	**-**	**-**

Notes: D - deformity, E - erosion, L - lesion, T - tumor, "-" indicates no data. yoy = young-of-the-year. A = absent.

Table D.15: Measurements, Age, and External Physical Abnormalities of Arctic Grayling Sampled at Haggart Creek (Effluent-exposed), September 2021

Processing Date	Fish ID	Total Length (cm)	Fork Length (cm)	Body Weight (g)	Age	Fulton's Condition Factor (K)	DELT (Present[P]/Absent[A])				Comment
							D	E	L	T	
03-Sep-21	EXP-AG-01	9.3	8.5	4.773	0	0.593	A	A	A	A	yoy
03-Sep-21	EXP-AG-02	18.7	17.2	54.223	2	0.829	A	A	A	A	juv
03-Sep-21	EXP-AG-03	12.6	11.6	14.355	1	0.718	A	A	A	A	juv
03-Sep-21	EXP-AG-04	13.4	12.2	16.698	1	0.694	A	A	A	A	juv
03-Sep-21	EXP-AG-05	8.4	7.7	4.137	0	0.698	A	A	A	A	yoy
03-Sep-21	EXP-AG-06	26.5	24.3	140	3	0.752	A	A	A	A	juv
03-Sep-21	EXP-AG-07	16.0	14.8	29.956	1	0.731	A	A	A	A	juv
03-Sep-21	EXP-AG-08	8.7	8.1	4.302	0	0.653	A	A	A	A	yoy
03-Sep-21	EXP-AG-09	14.1	11.1	11.873	1	0.424	A	A	A	A	juv
03-Sep-21	EXP-AG-10	18.6	17.2	42.917	2	0.667	A	A	A	A	juv
03-Sep-21	EXP-AG-11	7.3	6.7	2.682	-	0.689	A	A	A	A	yoy
03-Sep-21	EXP-AG-12	7.8	7.3	3.321	-	0.700	A	A	A	A	yoy
03-Sep-21	EXP-AG-13	8.3	7.8	4.256	-	0.744	A	A	A	A	yoy
03-Sep-21	EXP-AG-14	9.2	8.6	5.636	-	0.724	A	A	A	A	yoy
03-Sep-21	EXP-AG-15	13.3	12.1	15.677	-	0.666	A	A	A	A	juv
03-Sep-21	EXP-AG-16	14.3	13.1	19.373	-	0.663	A	A	A	A	juv
03-Sep-21	EXP-AG-17	12.4	11.2	12.898	-	0.676	A	A	A	A	juv
03-Sep-21	EXP-AG-18	12.3	11.2	12.810	-	0.688	A	A	A	A	juv
03-Sep-21	EXP-AG-19	9.5	8.8	6.138	-	0.716	A	A	A	A	yoy
03-Sep-21	EXP-AG-20	13.1	11.9	14.894	-	0.663	A	A	A	A	juv
03-Sep-21	EXP-AG-21	7.8	7.2	3.422	-	0.721	A	A	A	A	yoy
03-Sep-21	EXP-AG-22	19.1	17.2	52	-	0.746	A	A	A	A	juv
03-Sep-21	EXP-AG-23	14.7	13.5	21.532	-	0.678	A	A	A	A	juv
03-Sep-21	EXP-AG-24	15.6	14.2	29.194	-	0.769	A	A	A	A	juv
03-Sep-21	EXP-AG-25	7.7	7.2	3.835	-	0.840	A	A	A	A	yoy
03-Sep-21	EXP-AG-26	15.9	14.6	26.377	-	0.656	A	A	A	A	juv
03-Sep-21	EXP-AG-27	16.9	15.5	34	-	0.704	A	A	A	A	juv
03-Sep-21	EXP-AG-28	16.8	15.6	32.5	-	0.685	A	A	A	A	juv
03-Sep-21	EXP-AG-29	7.3	6.9	3.243	-	0.834	A	A	A	A	yoy
03-Sep-21	EXP-AG-30	7.6	7.0	2.873	-	0.654	A	A	A	A	yoy
03-Sep-21	EXP-AG-31	15.3	14.2	25.5	-	0.712	A	A	A	A	juv
03-Sep-21	EXP-AG-32	7.7	7.2	2.955	-	0.647	A	A	A	A	yoy
03-Sep-21	EXP-AG-33	13.2	12.1	17.167	-	0.746	A	A	A	A	juv
03-Sep-21	EXP-AG-34	7.7	7.1	3.209	-	0.703	A	A	A	A	yoy
03-Sep-21	EXP-AG-35	7.8	7.2	3.548	-	0.748	A	A	A	A	yoy
03-Sep-21	EXP-AG-36	7.9	7.3	3.371	-	0.684	A	A	A	A	yoy
03-Sep-21	EXP-AG-37	18.4	16.7	54	-	0.867	A	A	A	A	juv
03-Sep-21	EXP-AG-38	7.6	7.2	3.62	-	0.825	A	A	A	A	yoy
03-Sep-21	EXP-AG-39	9.5	9.1	5.644	-	0.658	A	A	A	A	yoy
03-Sep-21	EXP-AG-40	12.6	12.0	13.617	-	0.681	A	A	A	A	juv
03-Sep-21	EXP-AG-41	7.4	6.9	2.862	-	0.706	A	A	A	A	yoy
03-Sep-21	EXP-AG-42	23.4	21.4	80.75	-	0.630	A	A	A	A	juv
03-Sep-21	EXP-AG-43	20.9	19.4	70.5	-	0.772	A	A	A	A	juv
03-Sep-21	EXP-AG-44	8.1	7.4	3.593	-	0.676	A	A	A	A	yoy
03-Sep-21	EXP-AG-45	7.7	7.1	3.017	-	0.661	A	A	A	A	yoy
03-Sep-21	EXP-AG-46	14.4	13.1	20.172	-	0.676	A	A	A	A	juv
03-Sep-21	EXP-AG-47	8.1	7.5	3.602	-	0.678	A	A	A	A	yoy
03-Sep-21	EXP-AG-48	27.7	25.4	169	-	0.795	A	A	A	A	juv
03-Sep-21	EXP-AG-49	24.2	22.2	112	-	0.790	A	A	A	A	juv
03-Sep-21	EXP-AG-50	18.3	16.6	47.5	-	0.775	A	A	A	A	juv
03-Sep-21	EXP-AG-51	24.5	22.2	120.5	-	0.819	A	A	A	A	juv
03-Sep-21	EXP-AG-52	24.6	22.5	109	-	0.732	A	A	A	A	juv
03-Sep-21	EXP-AG-53	13.6	12.5	16.100	-	0.640	A	A	A	A	juv
03-Sep-21	EXP-AG-54	17.5	15.9	38.5	-	0.718	A	A	A	A	juv
03-Sep-21	EXP-AG-55	26.4	24.2	162	-	0.880	A	A	A	A	juv
03-Sep-21	EXP-AG-56	12.6	11.6	16.371	-	0.818	A	A	A	A	juv
03-Sep-21	EXP-AG-57	13.0	12.1	15.170	-	0.690	A	A	A	A	juv
03-Sep-21	EXP-AG-58	15.8	14.5	26.470	-	0.671	A	A	A	A	juv
03-Sep-21	EXP-AG-59	17.1	15.8	38.5	-	0.770	A	A	A	A	juv
03-Sep-21	EXP-AG-60	13.2	12.3	14.660	-	0.637	A	A	A	A	juv
03-Sep-21	EXP-AG-61	17.1	15.4	36.5	-	0.730	A	A	A	A	juv
03-Sep-21	EXP-AG-62	14.6	13.6	21.682	-	0.697	A	A	A	A	juv
03-Sep-21	EXP-AG-63	18.7	17.1	49.5	-	0.757	A	A	A	A	juv
03-Sep-21	EXP-AG-64	19.6	18.0	53.5	-	0.711	A	A	A	A	juv
03-Sep-21	EXP-AG-65	7.5	7.0	3.005	-	0.712	A	A	A	A	yoy
03-Sep-21	EXP-AG-66	14.0	12.9	17.415	-	0.635	A	A	A	A	juv
03-Sep-21	EXP-AG-67	8.6	7.9	4.792	-	0.753	A	A	A	A	yoy
03-Sep-21	EXP-AG-68	18.7	17.0	45.5	-	0.696	A	A	A	A	juv
03-Sep-21	EXP-AG-69	8.7	8.0	4.733	-	0.719	A	A	A	A	yoy
03-Sep-21	EXP-AG-70	7.8	7.2	3.273	-	0.690	A	A	A	A	yoy
03-Sep-21	EXP-AG-71	12.9	11.8	14.194	-	0.661	A	A	A	A	juv
03-Sep-21	EXP-AG-72	14.9	13.8	21.677	-	0.655	A	A	A	A	juv
03-Sep-21	EXP-AG-73	9.0	8.2	5.147	-	0.706	A	A	A	A	yoy
03-Sep-21	EXP-AG-74	20.7	19.1	63.5	-	0.716	A	A	A	A	juv
03-Sep-21	EXP-AG-75	17.2	16.0	35.6	-	0.700	A	A	A	A	juv

Notes: D - deformity, E - erosion, L - lesion, T - tumor, A - absent, P - present, "-" indicates no data. yoy = young-of-the-year. Juv = juvenile.

Table D.15: Measurements, Age, and External Physical Abnormalities of Arctic Grayling Sampled at Haggart Creek (Effluent-exposed), September 2021

Processing Date	Fish ID	Total Length (cm)	Fork Length (cm)	Body Weight (g)	Age	Fulton's Condition Factor (K)	DELT (Present[P]/Absent[A])				Comment
							D	E	L	T	
03-Sep-21	EXP-AG-76	8.4	7.8	4.250	-	0.717	A	A	A	A	yoy
03-Sep-21	EXP-AG-77	17.7	16.2	39.0	-	0.703	A	A	A	A	juv
03-Sep-21	EXP-AG-78	13.8	12.7	18.647	-	0.710	A	A	A	A	juv
03-Sep-21	EXP-AG-79	14.3	13.2	19.778	-	0.676	A	A	A	A	juv
03-Sep-21	EXP-AG-80	15.9	14.5	26.968	-	0.671	A	A	A	A	juv
03-Sep-21	EXP-AG-81	8.5	7.8	4.242	-	0.691	A	A	A	A	yoy
03-Sep-21	EXP-AG-82	17.7	16.0	39.5	-	0.712	A	A	A	A	juv
03-Sep-21	EXP-AG-83	9.3	8.6	5.281	-	0.657	A	A	A	A	yoy
03-Sep-21	EXP-AG-84	17.5	16.0	40.5	-	0.756	A	A	A	A	juv
03-Sep-21	EXP-AG-85	8.8	8.2	4.659	-	0.684	A	A	A	A	yoy
03-Sep-21	EXP-AG-86	14.0	12.8	19.178	-	0.699	A	A	A	A	juv
03-Sep-21	EXP-AG-87	9.1	8.2	5.086	-	0.675	P	A	A	A	Missing lower caudal fin
03-Sep-21	EXP-AG-88	16.0	14.6	27.384	-	0.669	A	A	A	A	juv
03-Sep-21	EXP-AG-89	8.6	8.1	4.290	-	0.674	A	A	A	A	yoy
03-Sep-21	EXP-AG-90	14.3	13.2	22.029	-	0.753	A	A	A	A	juv
03-Sep-21	EXP-AG-91	13.4	12.2	16.642	-	0.692	A	A	A	A	juv
03-Sep-21	EXP-AG-92	12.7	11.6	13.079	-	0.639	A	A	A	A	juv
03-Sep-21	EXP-AG-93	8.1	7.6	3.459	-	0.651	A	A	A	A	yoy
03-Sep-21	EXP-AG-94	12.8	11.8	14.451	-	0.689	A	A	A	A	juv
03-Sep-21	EXP-AG-95	13.3	12.2	16.443	-	0.699	A	A	A	A	juv
03-Sep-21	EXP-AG-96	16.7	15.4	36.587	-	0.786	A	A	A	A	juv
03-Sep-21	EXP-AG-97	8.3	7.7	3.907	-	0.683	A	A	A	A	yoy
03-Sep-21	EXP-AG-98	15.7	14.5	27.013	-	0.698	A	A	A	A	juv
03-Sep-21	EXP-AG-99	16.2	14.7	31.070	-	0.731	A	A	A	A	juv
03-Sep-21	EXP-AG-100	13.7	12.5	17.377	-	0.676	A	A	A	A	juv
total sample size		**100**	**100**	**100**	**10**	**100**	**-**	**-**	**-**	**-**	**-**
average		**13.6**	**12.5**	**26.736**	**1.1**	**0.707**	**-**	**-**	**-**	**-**	**-**
median		**13.4**	**12.2**	**16.543**	**1.0**	**0.698**	**-**	**-**	**-**	**-**	**-**
standard deviation		**5.0**	**4.6**	**32.908**	**1.0**	**0.061**	**-**	**-**	**-**	**-**	**-**
standard error		**0.5**	**0.5**	**3.2908**	**0.3**	**0.006**	**-**	**-**	**-**	**-**	**-**
minimum		**7.3**	**6.7**	**2.682**	**0.0**	**0.424**	**-**	**-**	**-**	**-**	**-**
maximum		**27.7**	**25.4**	**169.000**	**3.0**	**0.880**	**-**	**-**	**-**	**-**	**-**

Notes: D - deformity, E - erosion, L - lesion, T - tumor, A - absent, P - present, "-" indicates no data. yoy = young-of-the-year. Juv = juvenile.

Table D.16: Arctic Grayling Population Statistical Comparison Results between the Haggart Creek Effluent-Exposed and Lynx Creek Reference Study Areas, Eagle Gold Project Phase 1 EEM, September 2021

Age Category	Indicator	Endpoint	Variables		Sample Size		Test			ANCOVA Statistics			Summary Statistics[b]			Test *P*-value (Location)	Magnitude of Difference (%)[c]	Estimated Minimum Detectable Difference with α=β=0.1[d]	
			Response	Covariate	REF	EXP	Statistical Test	Shapiro Wilk's P-Value	Levene's Test P-Value	Interaction Model Interaction *p*-value	Parallel Slope Model Covariate *p*-value	Covariate Value for Comparisons[a]	Statistic	REF	EXP			Increase	Decrease
All	Survival/Recruitment	**Length-Frequency Distribution**	**Fork Length (cm)**	-	**42**	**99**	**K-S**	-	-	-	-	-	-	-	-	**<0.001**	-	-	-
NON-YOY	Survival/Recruitment	**Length-Frequency Distribution**	**Fork Length (cm)**	-	**8**	**64**	**K-S**	-	-	-	-	-	-	-	-	**<0.001**	-	-	-
All	Survival/Recruitment	Relative Frequency of YOY	YOY and Non-YOY Counts	-	42	99	Chi-Squared	-	-	-	-	-	-	-	-	<0.001	-	-	-
YOY	Body Size	Fork Length	Fork Length (cm)	-	34	35	tunequal	0.141	<0.001	-	-	-	Mean	7.45	7.66	0.081	2.8	-	-
		Body Weight	Body Weight (g)	-	34	35	tunequal	0.651	<0.001	-	-	-	Mean	3.77	4.00	0.187	ns	14	-14
	Energy Storage	Condition	log10[Body Weight (g)]	log10[Fork Length (cm)]	34	35	ANCOVA	-	-	0.217	<0.001	7.54	Adjusted Mean	3.87	3.78	0.202	ns	5.2	-4.9
			log10[Body Weight (g)]	log10[Fork Length (cm)]	33[e]	35	ANCOVA	-	-	0.762	<0.001	7.53	Adjusted Mean	3.91	3.77	0.017	-3.5	-	-
NON-YOY	Body Size	**Fork Length**	**Fork Length (cm)**	-	**8**	**64**	**M-W**	**<0.001[f]**	**0.754[f]**	-	-	-	**Median**	**35.0**	**14.5**	**<0.001**	**-59**	-	-
		Body Weight	**Body Weight (g)**	-	**8**	**64**	**M-W**	**<0.001[f]**	**<0.001[f]**	-	-	-	**Median**	**502**	**27.0**	**<0.001**	**-95**	-	-
	Energy Storage	**Condition**	**log10[Body Weight (g)]**	**log10[Fork Length (cm)]**	**8**	**64**	**ANCOVA**	-	-	**0.015[g]**	**<0.001**	**16.4**	**Adjusted Mean**	**43.1**	**41.1**	**0.332**	**ns**	**3.2**	**-3.1**

Shading indicates an area p-value less than 0.1 or an interaction p-value less than 0.05.

Indicates a Magnitude of Difference (MOD) outside of applicable Critical Effect Size (i.e., ±25% for all endpoints with the exception of ±10% for condition).

Covariate P-value > 0.05

Notes: Fish with Fork Length less than 10 centimetres long classified as Young-of-the-Year (YOY). ns = non-significant. "-" indicates the value is not applicable. Bold **= EEM Effect Indicator endpoints.**

[a] The mean value of the covariate (that corresponds to the adjusted means for the response variable) for the parallel slope ANCOVA model or the minimum and maximum values of the overlap in covariate values for the interaction ANCOVA model.

[b] The median, mean (geometric mean for log_{10}-transformed variables), and adjusted mean are reported for Mann-Whitney, t-test and ANCOVA, respectively, and the predicted means of the regression line equations for minimum and maximum values of the covariate (where the data sets overlap) for ANCOVAs where a significant interaction (i.e., different slopes) occurs.

[c] Calculated as the difference in measure of central tendency (MCT) between areas (mine-exposed minus reference), expressed as a percentage of the reference area MCT.

[d] Minimum detectable effect size (see methods section of report for formula).

[e] One outlier (REF-AG-15 Stdnt resid: -5.516) was removed from analysis.

[f] When a non-parameterc test was selected only untransformed results are displayed. Results were qualitatively similar when log-10 transformed.

[g] ANCOVA proceeded under the assumption that the slopes are practically parallel (R2 of interaction model = 0.9952 and R2 of parallel slope model = 0.9948; a difference < 0.02) following Environment Canada (2012). Shading for the p-value was removed to indicate that the interaction was non-significant.

Table D.17: Estimated Sample Sizes Required to Detect Various Effect Sizes as a Percentage Change in Arctic Grayling Population Endpoints between Haggart Creek Effluent-Exposed and Lynx Creek Reference Study Areas with α=β=0.1

Age Category	Indicator	Endpoint	Variables		Test	S[a]	COV (%)[b]	Minimum Sample Size to Detect an Effect Size (% Increase/Decrease Relative to Reference) with α=β=0.1[c]								
			Response	Covariate				log(Response)	5%	10%	20%	25%	30%	33%	40%	50%	100%
									-5%	-9%	-17%	-20%	-23%	-25%	-29%	-33%	-50%
								Response	±5%	±10%	±20%	±25%	±30%	±33%	±40%	±50%	±100%
YOY	Body Size	Fork Length	Fork Length (cm)	-	tunequal	-	6.53	Response	30	9	3	3	3	2	2	2	2
		Body Weight	Body Weight (g)	-	tunequal	-	19.3	Response	256	65	17	11	8	7	5	4	2
	Energy Storage	Condition	log10[Body Weight (g)]	log10[Fork Length (cm)]	ANCOVA	0.0314	-	log(Response)	40	12	5	4	4	4	4	3	3
		Condition[d]	log10[Body Weight (g)]	log10[Fork Length (cm)]	ANCOVA	0.0258	-	log(Response)	28	9	4	4	4	3	3	3	3
NON-YOY	Body Size	Fork Length	Fork Length (cm)	-	M-W	0.0875	9.88	Response	79	21	7	5	4	4	4	3	3
		Body Weight	Body Weight (g)	-	M-W	0.281	10.4	Response	87	24	7	5	5	4	4	4	3
	Energy Storage	Condition	log10[Body Weight (g)]	log10[Fork Length (cm)]	ANCOVA	0.0348	-	log(Response)	48	14	6	5	4	4	4	3	3

Notes: "-" indicates the value is not relevant for that analysis.

[a] Pooled standard deviation of the regression residuals.

[b] Coefficient of variation (pooled standard deviation/reference mean)×100%.

[c] Sample size estimates for the M-W test were estimated based on a two-sample t-test using sample sizes multiplied by 0.864. The 0.864 is the lower bound of the asymptotic relative efficiency of the Mann-Whitney test and the two-sample t-test (Hodges and Lehmann 1956). Estimates were generated for the response variable on the untransformed and log $_{10}$-transformed scales and the lowest sample size is reported.

Table D.18: Catch-per-unit-effort (CPUE) for Fish Captured by Electrofishing and Minnow Trapping Sampling Methods at Haggart and Lynx Creek Fish and Fish Habitat Monitoring Stations, 2017 to 2021[a]

Creek	Station	Sampling Method	Units	2017			2018			2019			Spring (May) 2021			Fall (September) 2021		
				arctic grayling	burbot	slimy sculpin	arctic grayling	burbot	slimy sculpin	arctic grayling	burbot	slimy sculpin	arctic grayling	burbot	slimy sculpin	arctic grayling	burbot	slimy sculpin
Lynx Creek (Reference)	L1	Electrofishing	fish per electrofishing minute	0.22	0	2.41	0.10	0	0.91	0.10	0	0.50	0	0	1.33	0.26	0	1.46
	L1	Minnow Trapping	fish per trap per 24 hours	3.6	0	4.8	0	0.9	2.8	0	0	0	0	0	0.62	not applicable	0	not applicable
Haggart Creek (Effluent-exposed)	HC2	Electrofishing	fish per electrofishing minute	0.12	0	1.16	0.19	0	0.19	0.24	0	0.08	0	0	2.28	0.80	0	0.24
	HC2	Minnow Trapping	fish per trap per 24 hours	0	0	1.2	0	0	1.0	0	0	0	0	0	0.10	not applicable	0	not applicable

[a] Calculations for 2017, 2018, and 2019 completed using data from de Graffe 2017, 2019, and 2020.

Data Quality Review

APPENDIX D FISH SURVEY DATA QUALITY REVIEW

D1 INTRODUCTION

Quality Assurance/Quality Control (QA/QC) implemented for the Eagle Gold Phase 1 EEM study included a Data Quality Review (DQR) of the fish population survey data to provide an evaluation of how well laboratory data quality compared to prescribed goals (i.e., Data Quality Objectives [DQO]) established *a priori*. This DQR report provides a comparison of target data quality to actual data quality, subsequently discussing the consequences of any failures to meet DQO. By completing this step, the quality of the data for the program can be effectively evaluated and demonstrated.

D2 QUALITY CONTROL MEASURES AND DQO

Two types of QC were applied in the laboratory for the fish population survey component:

- **Laboratory Fecundity Recount** was completed by recounting sub-samples of ovary tissues for assessing the precision of fecundity estimates. The DQO for laboratory recounts was ≤5% relative percent difference (RPD) between the original count and the second count.
- **Aging Precision Check** for fish aging structures involves the use of two separate experienced aging technicians to individually determine the age of the fish based on the same structure. Aging results from a minimum of 10% of the samples submitted for the project are evaluated by each aging technician to verify the precision of the original fish age estimates. The DQO for laboratory age confirmation was ±1 year of the original age determination.

D3 FISH POPULATION SURVEY DQR RESULTS

Fecundity sample recounts were conducted on two of the seventeen slimy sculpin ovary samples (i.e., ≥10%) submitted to the laboratory for analysis. Precision of the laboratory sub-samples met the DQO of ≤ 5% for all samples (Appendix Table D-DQR.1), indicating that the fecundity count data were of acceptable quality.

Aging precision checks were completed on all 66 of the age samples submitted to the laboratory, including 46 slimy sculpin and 20 arctic grayling. Age estimates for all individuals met the DQO of ±1 year between samples (Appendix Table D-DQR.2).

Table D-DQR.1: Fecundity Estimate Recounts for Slimy Sculpin Ovary Samples

Fish Sample ID	Egg Count (no. of eggs)			Original Average	Egg Recount (no. of eggs)			Recount Average	Relative Percent Difference
	1	2	3		1	2	3		
EXP-SS-20	193	-	-	193	193	-	-	193	0.0%
REF-SS-09	152	-	-	152	152	-	-	152	0.0%

Table D-DQR.2: Laboratory Between-Technician Fish Age Comparisons for Slimy Sculpin and Arctic Grayling Samples Related to the Eagle Gold Project Phase 1 EEM Biological Study, 2021

Fish Species	Fish Sample ID	Age Assigned by NF	Age Assigned by CC	Difference (years)
Slimy Sculpin (otoliths)	REF-SS-01	3	3	0
	REF-SS-02	3	3	0
	REF-SS-03	4	4	0
	REF-SS-04	3	3	0
	REF-SS-05	5	5	0
	REF-SS-06	4	4	0
	REF-SS-07	3	3	0
	REF-SS-08	3	3	0
	REF-SS-09	4	4	0
	REF-SS-10	4	4	0
	REF-SS-11	4	4	0
	REF-SS-12	3	3	0
	REF-SS-13	4	4	0
	REF-SS-14	4	4	0
	REF-SS-15	4	4	0
	REF-SS-16	4	4	0
	REF-SS-17	6	6	0
	REF-SS-18	5	5	0
	REF-SS-19	4	4	0
	REF-SS-20	3	3	0
	EXP-SS-01	4	4	0
	EXP-SS-02	5	5	0
	EXP-SS-03	3	3	0
	EXP-SS-04	4	4	0
	EXP-SS-05	5	5	0
	EXP-SS-06	4	4	0
	EXP-SS-07	4	4	0
	EXP-SS-08	3	3	0
	EXP-SS-09	4	4	0
	EXP-SS-10	4	4	0
	EXP-SS-11	4	4	0
	EXP-SS-12	4	4	0
	EXP-SS-13	3	3	0
	EXP-SS-14	3	3	0
	EXP-SS-15	4	4	0
	EXP-SS-16	4	4	0
	EXP-SS-17	4	4	0
	EXP-SS-18	3	3	0
	EXP-SS-19	4	4	0
	EXP-SS-20	4	4	0
	EXP-SS-21	3	3	0
	EXP-SS-22	4	4	0
	EXP-SS-23	4	4	0
	EXP-SS-24	3	3	0
	EXP-SS-25	3	3	0
Arctic Grayling (scales)	REF-AG-01	6	6	0
	REF-AG-02	5	5	0
	REF-AG-03	5	5	0
	REF-AG-04	0	0	0
	REF-AG-05	0	0	0
	REF-AG-06	0	0	0
	REF-AG-07	0	0	0
	REF-AG-08	0	0	0
	REF-AG-09	0	0	0
	REF-AG-10	0	0	0
	EXP-AG-01	0	0	0
	EXP-AG-02	2	2	0
	EXP-AG-03	1	1	0
	EXP-AG-04	1	1	0
	EXP-AG-05	0	0	0
	EXP-AG-06	3	3	0
	EXP-AG-07	1	1	0
	EXP-AG-08	0	0	0
	EXP-AG-09	1	1	0
	EXP-AG-10	2	2	0

Government of Canada Gouvernement du Canada

Canada

Eagle Gold Mine - Annual effluent monitoring report - Version 1 - 2022

Report details

Facility name	Eagle Gold Mine
Reporting period	2022
Version	1
Status	Submitted
Last modified	2023/03/28 12:15 (PDT)
Submission date	2023/03/28 12:25 (PDT)

Parent company

Parent company	Physical address
Victoria Gold Corp.	1000, 1050 West Pender, Street, Vancouver, British Columbia, V6E 3S7, Canada

History

Status	Version	Last modified	Submission date
Submitted	1	2023/03/28 12:15 (PDT)	2023/03/28 12:25 (PDT)

Identifying information

Reporting period	**2022**
Facility name	**Eagle Gold Mine**
Facility physical address	**1000, 1050 West Pender, Street, Vancouver, British Columbia, V6E 3S7, Canada**
Operator name (required)	Victoria Gold Corp.
Operator telephone number	
Operator extension	
Operator e-mail address	

Note	Date	User name
No data available		

Test results

Final discharge point **LDSP**

Final discharge point latitude **64.15639**

Final discharge point longitude **-135.50460**

Monthly mean concentrations, pH and volume of effluent

Month	As (mg/L)	Cu (mg/L)	CN (mg/L)	Pb (mg/L)	Ni (mg/L)	Zn (mg/L)	TSS (mg/L)	Ra-226 (Bq/L)	NH_3 [1] (mg/L expressed as nitrogen (N))	Lowest pH	Highest pH	Effluent volume (m^3)
Jan	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Feb	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Mar	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Apr	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
May	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Jun	0.0388	0.0025	0.0025	0.0012	0.002	0.0022	1.75	0.0027	0.0003	7.63	7.74	35177
Jul	0.0384	0.0021	0.0025	0.0005	0.0019	0.0015	2.175	0.0034	0.0003	7.7	7.8	73309
Aug	0.0441	0.0109	0.0131	0.0003	0.0039	0.0015	1	0.0025	0.0013	8.2	8.2	16607
Sep	0.0473	0.0107	0.0117	0.0002	0.0042	0.0015	1	0.01	0.001	8	8	39573
Oct	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Nov	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Dec	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP

[1]Note: The monthly mean concentration for un-ionized ammonia is calculated for collection dates as of June 1st, 2021.

Results of acute lethality tests

Date sample collected	Results for rainbow trout acute lethality tests (mean percentage mortality in 100% effluent test concentration)	Results for *Daphnia magna* monitoring / acute lethality tests (mean percentage mortality in 100% effluent test concentration)	Results for threespine stickleback acute lethality tests (mean percentage mortality in 100% effluent test concentration)
2022/06/25 15:50	0%	0%	
2022/07/01 11:05	0%	0%	
2022/07/11 10:25	0%	0%	

Date sample collected	Results for rainbow trout acute lethality tests (mean percentage mortality in 100% effluent test concentration)	Results for *Daphnia magna* monitoring / acute lethality tests (mean percentage mortality in 100% effluent test concentration)	Results for threespine stickleback acute lethality tests (mean percentage mortality in 100% effluent test concentration)
2022/08/29 09:40	0%	0%	
2022/09/01 14:30	0%	0%	

If effluent was non-compliant with the authorized limits set out in Schedule 4, or if the pH was less than 6.0 or greater than 9.5, or if effluent was determined to be acutely lethal, indicate the cause(s) of non-compliance and remedial measures that are planned or have been implemented.

Non-compliance information

Test results

Final discharge point	**FDP5**
Final discharge point latitude	**64.03333**
Final discharge point longitude	**-135.83583**

Monthly mean concentrations, pH and volume of effluent

Month	As (mg/L)	Cu (mg/L)	CN (mg/L)	Pb (mg/L)	Ni (mg/L)	Zn (mg/L)	TSS (mg/L)	Ra-226 (Bq/L)	NH_3 [1] (mg/L expressed as nitrogen (N))	Lowest pH	Highest pH	Effluent volume (m^3)
Jan	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Feb	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Mar	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Apr	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
May	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Jun	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Jul	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Aug	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Sep	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Oct	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Nov	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Dec	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP

[1]Note: The monthly mean concentration for un-ionized ammonia is calculated for collection dates as of June 1st, 2021.

Results of acute lethality tests

Date sample collected	Results for rainbow trout acute lethality tests (mean percentage mortality in 100% effluent test concentration)	Results for *Daphnia magna* monitoring / acute lethality tests (mean percentage mortality in 100% effluent test concentration)	Results for threespine stickleback acute lethality tests (mean percentage mortality in 100% effluent test concentration)
No data available			

If effluent was non-compliant with the authorized limits set out in Schedule 4, or if the pH was less than 6.0 or greater than 9.5, or if effluent was determined to be acutely lethal, indicate the cause(s) of non-compliance and remedial measures that are planned or have been implemented.

Non-compliance information

Test results

Final discharge point	**MWTP**
Final discharge point latitude	**64.03445**
Final discharge point longitude	**-135.85233**

Monthly mean concentrations, pH and volume of effluent

Month	As (mg/L)	Cu (mg/L)	CN (mg/L)	Pb (mg/L)	Ni (mg/L)	Zn (mg/L)	TSS (mg/L)	Ra-226 (Bq/L)	NH_3 [1] (mg/L expressed as nitrogen (N))	Lowest pH	Highest pH	Effluent volume (m^3)
Jan	-	-	-	-	-	-	-	-	-	-	-	-
Feb	-	-	-	-	-	-	-	-	-	-	-	-
Mar	-	-	-	-	-	-	-	-	-	-	-	-
Apr	-	-	-	-	-	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-	-	-	-	-	-
Jun	-	-	-	-	-	-	-	-	-	-	-	-
Jul	-	-	-	-	-	-	-	-	-	-	-	-
Aug	-	-	-	-	-	-	-	-	-	-	-	-
Sep	-	-	-	-	-	-	-	-	-	-	-	-
Oct	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Nov	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP
Dec	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP	NDEP

[1]Note: The monthly mean concentration for un-ionized ammonia is calculated for collection dates as of June 1st, 2021.

Results of acute lethality tests

Date sample collected	Results for rainbow trout acute lethality tests (mean percentage mortality in 100% effluent test concentration)	Results for *Daphnia magna* monitoring / acute lethality tests (mean percentage mortality in 100% effluent test concentration)	Results for threespine stickleback acute lethality tests (mean percentage mortality in 100% effluent test concentration)
No data available			

If effluent was non-compliant with the authorized limits set out in Schedule 4, or if the pH was less than 6.0 or greater than 9.5, or if effluent was determined to be acutely lethal, indicate the cause(s) of non-compliance and remedial measures that are planned or have been implemented.

Non-compliance information

VICTORIA GOLD CORP

Eagle Gold
Climate Data Report 2022

Project No. A610-1
24 March 2023

LORAX ENVIRONMENTAL

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1. Introduction

1 Introduction

1.1 Scope of Report

This report presents a summary of all climate data collected for the Eagle Gold Project (Project) since August 2007[1]. Monitoring data from two Project climate stations and four local snow courses are presented to characterize local conditions for the following variables:

- Air temperature;
- Rainfall;
- Snow depth and snow water equivalent (SWE);
- Barometric pressure;
- Relative humidity;
- Wind speed and direction, and;
- Solar radiation.

Measured data are also used to estimate potential evaporation for the Project site.

1.2 Previous Reports

The climate data collected at the Eagle Gold Project site from 2007, up to and including December 2021, have been previously summarized in the following reports:

- *Dublin Gulch Project - Climate and Hydrology Environmental Baseline Report* (2008), prepared by Jacques Whitford AXYS (Burnaby, BC) for StrataGold Corp. (Vancouver, BC), December 2008.
- *Snow Survey Environmental Baseline Report* (2009), prepared by Jacques Whitford Stantec AXYS (Burnaby, BC) for StrataGold Corp. (Vancouver, BC).
- *Eagle Gold Project, Environmental Baseline Report: Climate* (2010), prepared by Stantec (Burnaby, BC) for Victoria Gold Corp., February 2010.
- *Eagle Gold Project, Surface Water Balance Model Report* (2011), prepared by Stantec (Burnaby, BC) for Victoria Gold Corp., June 2011.

[1] Historic climate data collected during 1993 to 1996 for the Project area is summarized in *Eagle Gold Project, Environmental Baseline Report: Climate*, prepared by Stantec (Burnaby, BC) for Victoria Gold Corp., March 2012

- *Eagle Gold Project, Environmental Data Summary Report: Climate 2011 Update* (2011), prepared by Stantec (Burnaby, BC) for Victoria Gold Corp., June 2011.
- *Eagle Gold Project, Environmental Baseline Report: Climate* (2012), prepared by Stantec (Burnaby, BC) for Victoria Gold Corp., March 2012.
- *Victoria Gold Corp., Eagle Gold Project – Climate Baseline Data Summary. VA101-290/6-9* (2013), prepared by Knight Piesold Ltd. (Vancouver, BC) for Victoria Gold Corp., August 2013.
- *Victoria Gold Corp., Eagle Gold – Climate Baseline Report* (2016). Prepared by Lorax Environmental Services Ltd., October 2016. 34 pp.
- *Victoria Gold Corp. Eagle Gold Project – Hydrometeorology Report* (2017). A413-3, prepared by Lorax Environmental Services Ltd. (Vancouver, BC) for Victoria Gold Corp., March 2017.
- *Victoria Gold Corp., Eagle Gold – Climate Baseline Report – 2017* (2018). Prepared by Lorax Environmental Services Ltd., March 2018. 35 pp.
- *Victoria Gold Corp., Eagle Gold – Climate Data Report - 2018* (2019). Prepared by Lorax Environmental Services Ltd., March 2019. 34 pp.
- *Victoria Gold Corp., Eagle Gold – Climate Data Report – 2019* (2020). Prepared by Lorax Environmental Services Ltd., February 2020. 35 pp.
- *Victoria Gold Corp., Eagle Gold – Climate Data Report - 2020* (2021). Prepared by Lorax Environmental Services Ltd., March 2021. 31 pp.
- *Victoria Gold Corp., Eagle Gold – Climate Data Report - 2021* (2022). Prepared by Lorax Environmental Services Ltd., March 2022. 36 pp.

2. Climate Monitoring Locations

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2 Climate Monitoring Locations

2.1 Meteorological Stations

Climatic parameters are measured at the Project site by two weather stations. The Potato Hills station is situated near the eastern basin divide (1,420 m) and the original stations were installed in August 2007. The second station was originally installed near the camp at 823 m in August 2009, and subsequently was moved to its current location also near the camp in September 2010 (782 m) following construction of new camp facilities. Both weather stations were updated in 2020 by Campbell Scientific, who also perform annual maintenance on the stations.

The Potato Hills station installed in 2007 used an ONSET Hobo datalogger to measure air temperature, rainfall, wind speed and direction, barometric pressure, relative humidity, snow depth and solar radiation at 15-minute intervals. The recording interval was initially set to record at 60-minute intervals from August 14, 2007 to August 13, 2008 and then was switched to record at 15-minute intervals as of August 13, 2008.

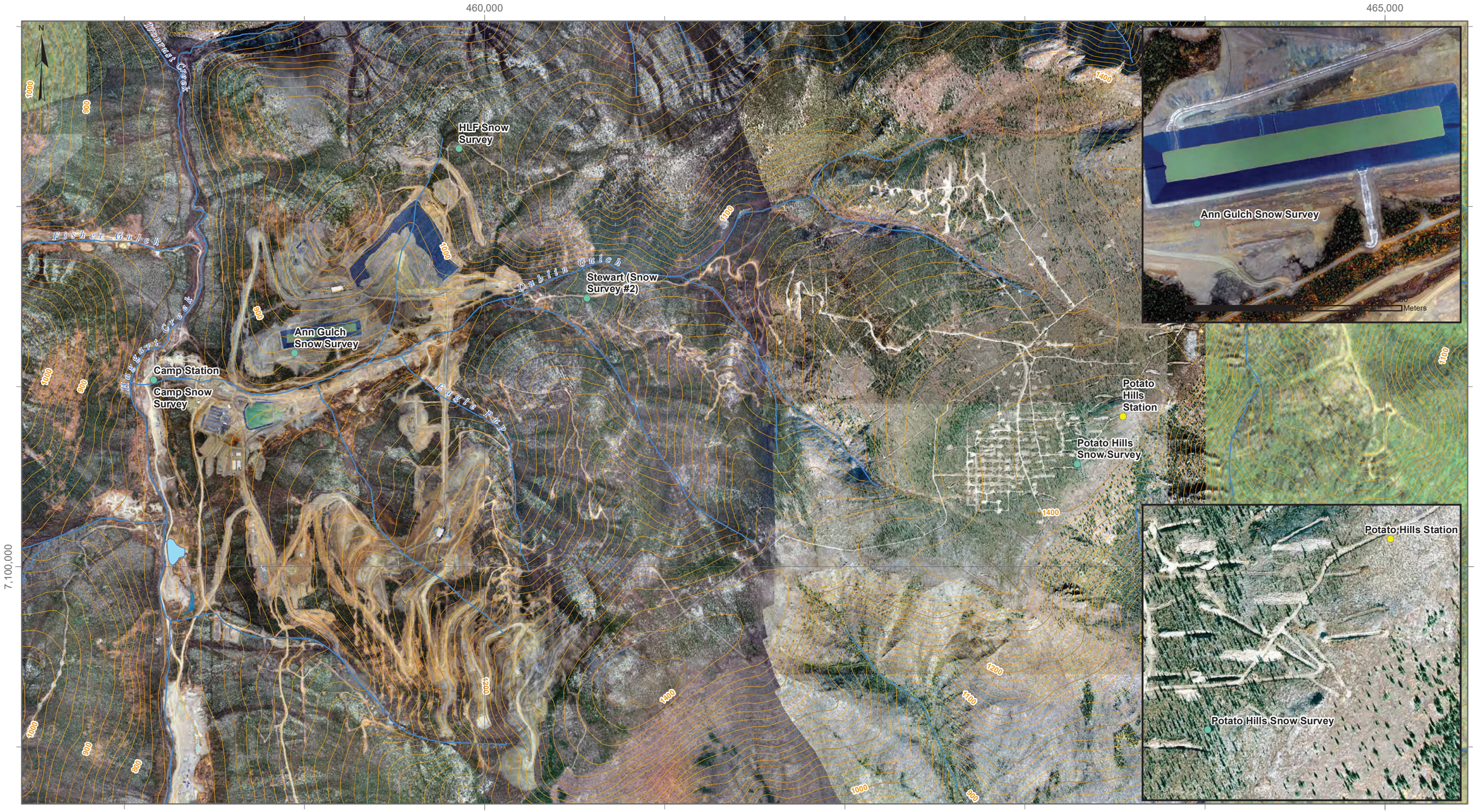
A snow sensor was added to the Potato Hills station in April 2011. However, since snow sensor installation, the continuous snow depth data have not been reliable and therefore are not presented in this report. The Potato Hills station experienced repeated failures in 2019 and was decommissioned in October 2019. A replacement all weather station was installed at Potato Hills in March 2020. The new station includes a Campbell Scientific CR1000X datalogger measuring air temperature, wind speed and direction, barometric pressure, snow depth, solar radiation and relative humidity at 15-minute intervals. All weather precipitation is monitored and reported on a daily basis.

The Camp station consists of a Campbell Scientific CR800 datalogger and sensors measuring air temperature, precipitation, wind speed and direction, barometric pressure, snow depth, solar radiation and relative humidity. All weather precipitation is monitored and reported on a daily basis while all other data are recorded at a 15-minute interval at this location. The snow sensor and pyranometer (measuring solar radiation) were added in April and October 2011, respectively, and a new Geonor precipitation gauge was installed in March 2020. Continuous snow depth data are provided herein for the Camp station, as are records of snow survey measurements for actively measured stations through spring 2022. Both the Camp and Potato Hills climate stations were serviced and calibrated in October 2022 by Campbell Scientific technicians.

The Project climate stations and snow survey locations are presented in Table 2-1 and Figure 2-1.

Table 2-1:
Climate station and snow survey locations.

Station	Elevation (m asl)	UTM E	UTM N	Record Period
Climate Stations				
Camp Station	782	458,164	7,101,036	2009-present
Potato Hills Station	1,420	463,544	7,100,833	2007-present
Snow Surveys				
Camp Snow Survey	782	458,164	7,101,036	2009-present
Ann Gulch Snow Survey	875	458,945	7,101,185	2012-2017
Stewart (Snow Survey #2)	995	460,570	7,101,490	Mar. 2012 only
HLF Snow Survey	1,078	459,859	7,102,319	2019-2022
Potato Hills Snow Survey	1,420	463,290	7,100,568	2009-present
1370 Bench	1,370	460,621	7,099,112	2021-present
HLF 3b (Bench and Slope)	1,066	459,295	7,102,063	2021
HLF 4b (Bench and Slope)	1,049	459,602	7,102,212	2021
HLF 5b (Bench and Slope)	1,048	459,580	7,102,207	2021
HLF1b-NW	1,056	459,315	7,102,094	2022
HLF1b	1,072	459,821	7,102,344	2022
HLF1b-NE	1,118	460,087	7,102,129	2022



LEGEND

- Climate Station
- Snow Survey Station
- Watercourse
- Waterbody
- Contour (100m)
- Contour (20m)

Notes:
1. Imagery around mine site taken September 16, 2019
2. Imagery near Potato Hills taken in 2010

DATE SAVED:	Feb 11, 2020
DRAWN BY:	GM
REVIEWED:	LF
VERSION:	1

Coordinate System: NAD 1983 UTM Zone 8N
Projection: Transverse Mercator
Datum: North American 1983
Units: Meter

1:20,000

0 200 400 Meters

CLIENT: Victoria GOLD CORP

LORAX ENVIRONMENTAL

PROJECT:

Eagle Gold Climate Data Report

TITLE: Project Site Climate Station and Snow Survey Locations

PROJECT #: A562-1

FIGURE: 1

P:\@Drafting\Eagle Gold\Drafting Figures\MXD\2020 Hydrology Report\Climate-Snow Survery Stations.mxd

2.1.1 Data Gaps for 2022

This section of the report summarizes data gaps in the climate record for the Potato Hills and Camp climate stations during the period January 2022 to December 2022. Data gaps prior to January 2022 are discussed in previous reports.

Potato Hills Station – The available data spans the period January 1 to December 31, 2022. Several data gaps greater than 24 hours are present in the Potato Hills climate station record for 2022:

- Data loss occurred from October 1 to October 5 during station maintenance.
- Air temperature data is outside the expected range from July 21 to September 30 due to assumed sensor malfunction. For the dates corresponding to the erroneous data, the measurements were replaced by the air temperature record from a Solinst barologger located adjacent to the weather station. with the exception of August as the barologger data was not available.
- The Barometric Pressure data record displayed unexpected values from January 1 to September 30. This data was also replaced with the nearby Solinst barologger record for the corresponding period.
- **Camp Station** – The data record for the Camp climate station spans January 1 to December 31, 2022. Only one data gap greater than 24 hours exists in the Camp climate station record for 2022:
- Data loss occurred from October 1 to October 5 during station maintenance.

2.2 Snow Surveys

Snow surveys were completed in 2022 at the Camp (Lower) snow course and Potato Hills (Upper) snow course. The location established in Ann Gulch upgradient from HLF Phase 1 construction activities (at 1,078 m asl) for the 2019 (HLF) snow survey season was revisited in 2022. In addition, four more snow surveys were initiated in spring of 2021, with three near the footprint of the HLF Phase 1b, relatively representative of snow accumulation on benches and slopes, and one to support cover trials just east of the 1370 bench of the Platinum Gulch WRSA (Table 2-1). These snow courses were surveyed again in 2022 to improve understanding of snow accumulation and melt on the HLF footprint and to support infiltration modelling for the ongoing cover trial. All snow surveys were generally conducted at, or near to the date that Water Resources Branch of Environment Yukon conducted their monthly surveys, which included the annual maximum snowpack. This peak in terms of SWE measurement typically occurs between late-March to mid-April in the Yukon.

Snow surveys are conducted following the guidelines set out in the *Snow Survey Sampling Guide* (BC Ministry of Environment, 1981). At each site, 10 sampling locations along a transect were sampled for depth and snow water equivalent [SWE] using a Federal snow sampler, and then averaged. As summarized in previous annual reports, snow courses were established at the Project site to discern effects of aspect and elevation gain on local snow accumulation (Table 2-1 and Figure 2-1).

3. Climate Data Summary

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3 Climate Data Summary

3.1 Temperature

Air temperatures at the Project site are consistent with those throughout the Yukon interior. Mean annual air temperature at site is -3.6°C at the Camp station (782 m) and -3.8°C at the Potato Hills station (1,420 m) over their respective periods of record.

Mean, maximum and minimum monthly (based on the daily average) temperatures for the entire periods of record are presented in Table 3-1 for both stations. At the Camp station, monthly average temperature ranges from -20.2°C in December to 13.4°C in July, and -15.7°C in December to 11.1°C in July at the Potato Hills station. The minimum (maximum) recorded daily average temperatures were -43.8°C (22.0°C) and -36.6°C (22.9°C) at the Camp and Potato Hills stations, respectively. The minimum (maximum) recorded 15-minute temperatures were -46.4°C (31.6°C) and -37.6°C (31.7°C) at the Camp and Potato Hills stations, respectively.

The monthly mean temperature signatures for both climate stations are shown in Figure 3-1, and the pattern is consistent with the larger regional picture. During the months of March to October inclusive, the standard lapse rate applies, with temperatures decreasing with rising elevation, and are approximately 3°C cooler at the upper station, on average. However, during the winter months of November to February, temperature inversions are common at the Project site, with temperatures approximately 2.5°C cooler on average in the valley bottom than at the height of land.

The spring/summer lapse rate of -3.7°C/1000 m is consistent with the saturated adiabatic lapse rate (SALR) of -5.0°C/1000 m. Minor deviation from the SALR is likely due to the increased frequency of precipitation during the summer months, when a larger portion of the annual precipitation falls, resulting in warmer and wetter air masses at the Project site. The winter lapse rate of +4.3°C/1000 m is consistent with that reported by Wahl *et al.* (1987), which states that during a temperature inversion, lapse rates can range from 3-5°C/1000 m of elevation gain.

Table 3-1:
Project site monthly air temperature record.

Climate Station	Elevation (m asl)	Temperature (°C)													
		Year		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Camp Station	782	2009	Mean	-	-	-	-	-	-	-	10.5	6.2	-2.6	-13.6	-17.3	-
			Maximum	-	-	-	-	-	-	-	14.0	11.2	2.3	-2.2	-2.8	-
			Minimum	-	-	-	-	-	-	-	6.6	-4.8	-9.7	-22.6	-31.3	-
		2010	Mean	-17.1	-10.8	-6.9	1.1	8.3	12.1	13.6	12.1	4.4	-3.4	-13.5	-24.1	-2.0
			Maximum	-6.7	1.0	1.4	9.4	16.9	15.7	18.0	20.5	11.8	7.1	4.0	-11.2	20.5
			Minimum	-33.4	-25.0	-17.7	-6.8	1.8	7.2	10.3	6.2	-6.1	-10.5	-28.4	-37.7	-37.7
		2011	Mean	-22.9	-21.3	-15.9	-3.2	7.7	11.5	12.8	9.2	5.1	-2.8	-20.7	M	-
			Maximum	-1.3	-1.4	2.1	2.7	16.1	16.1	18.2	14.3	9.7	0.3	-6.4	M	18.2
			Minimum	-38.5	-37.8	-30.3	-11.6	-2.2	7.0	9.5	5.7	0.9	-6.8	-39.1	M	-
		2012	Mean	-25.2	-12.2	-13.4	0.4	5.9	13.3	12.6	10.5	5.0	M	-24.1	-25.9	-
			Maximum	-7.2	0.7	-1.4	4.4	12.6	19.4	16.7	15.6	13.6	M	-10.3	-8.5	19.4
			Minimum	-40.4	-24.2	-24.4	-7.6	-0.4	8.7	8.7	4.5	-0.6	M	-37.1	-41.0	-41.0
		2013	Mean	-21.6	-13.3	-15.5	-8.6	5.0	14.2	14.0	11.9	5.5	-2.5	-18.7	-26.7	-4.7
			Maximum	-9.3	-4.4	0.3	2.9	14.1	22.0	18.5	18.0	14.5	4.9	-4.0	-11.6	22.0
			Minimum	-43.8	-20.9	-26.8	-16.6	-2.6	6.0	9.5	4.9	0.9	-9.9	-39.5	-40.7	-43.8
		2014	Mean	-14.9	-23.4	-13.8	-1.8	7.0	11.0	13.4	10.6	3.7	-3.5	-15.8	-15.2	-3.6
			Maximum	-1.8	-6.4	-3.8	4.5	12.9	16.5	18.6	15.1	9.4	3.4	-3.3	-4.6	18.6
			Minimum	-34.1	-36.8	-24.4	-12.4	2.5	5.4	8.7	4.5	-3.8	-11.9	-33.8	-26.4	-36.8
		2015	Mean	-19.4	-18.1	-11.5	-0.1	10.1	11.2	12.2	9.0	2.9	-1.5	-15.1	-15.2	-3.0
			Maximum	-2.9	-1.7	-1.0	4.4	17.5	15.5	16.8	15.4	7.3	3.4	-4.4	-6.0	17.5
			Minimum	-39.1	-38.3	-26.8	-4.8	-0.9	5.6	7.9	1.6	-4.3	-9.3	-33.1	-34.3	-39.1
		2016	Mean	-13.1	-13.5	-5.1	2.3	8.2	12.4	13.6	11.5	4.1	-8.3	-13.7	-21.9	-1.9
			Maximum	-2.0	-2.6	3.9	7.3	13.7	16.7	17.0	16.6	11.4	-0.7	0.8	-5.4	17.0
			Minimum	-25.4	-29.3	-10.3	-3.3	2.6	8.2	6.1	6.3	-2.5	-20.8	-31.3	-37.9	-37.9
		2017	Mean	-19.6	-18.8	-17.2	-1.4	7.3	M	M	11.8	6.3	-4.1	-22.9	-16.6	-
			Maximum	-3.3	0.1	0.5	5.2	14.3	M	M	16.9	12.5	6.3	-11.6	-0.8	-
			Minimum	-37.1	-28.3	-30.6	-8.6	1.9	M	M	6.6	0.1	-12.8	-36.1	-37.1	-37.1
		2018	Mean	-19.4	-24.3	-11.9	-3.7	5.9	11.8	13.8	9.9	1.9	-3.8	-12.8	-16.0	-3.9
			Maximum	3.0	-14.0	0.3	4.4	11.6	19.2	17.7	17.0	7.2	2.8	-0.3	1.2	19.2
			Minimum	-38.6	-35.8	-26.7	-15.0	-2.3	7.8	9.1	2.9	-2.9	-12.1	-26.4	-28.8	-38.6
		2019	Mean	-20.4	-23.1	-6.2	-0.9	8.7	13.0	15.2	8.6	5.3	-4.6	-14.4	-18.7	-3.1
			Maximum	-8.2	-15.0	4.7	4.0	16.6	19.6	18.9	17.5	10.5	4.9	-4.3	-4.3	19.6
			Minimum	-37.7	-36.3	-20.9	-11.8	-2.0	8.2	11.4	2.8	-3.8	-15.3	-29.7	-38.0	-38.0
		2020	Mean	-26.8	-20.2	-15.7	-3.4	7.0	10.9	11.9	11.1	4.8	-7.9	-19.7	-16.8	-5.4
			Maximum	-4.7	-6.2	-1.6	5.9	14.1	14.9	17.6	16.3	8.5	8.5	-7.4	1.6	17.6
			Minimum	-41.0	-37.8	-30.7	-14.9	0.0	6.9	9.3	7.0	1.6	-21.3	-32.3	-30.4	-41.0
		2021	Mean	-15.5	-25.6	-14.6	-5.4	5.9	14.1	13.9	10.9	3.7	-1.8	-17.0	-25.6	-4.8
			Maximum	-3.8	-11.8	-2.9	3.5	10.9	18.0	18.9	19.6	11.5	3.9	-4.5	-15.1	19.6
			Minimum	-34.8	-38.6	-23.2	-23.0	0.5	7.4	8.8	6.4	-3.6	-9.6	-34.2	-40.3	-40.3
		2022	Mean	-21.3	-18.7	-9.7	-4.2	5.8	14.0	13.8	11.3	5.3	-4.2	-15.2	-22.9	-3.8
			Maximum	-9.3	-6.2	-1.0	5.1	13.9	19.9	19.6	16.2	12.7	5.3	-3.4	-8.0	19.9
			Minimum	-40.5	-35.6	-24.5	-16.7	2.4	8.5	8.9	7.7	0.6	-15.2	-33.8	-41.0	-41.0
		All Years	Mean	-19.8	-18.7	-12.1	-2.2	7.1	12.5	13.4	10.6	4.6	-3.9	-16.9	-20.2	-3.6
			Maximum	3.0	1.0	4.7	9.4	17.5	22.0	19.6	20.5	14.5	8.5	4.0	1.6	22.0
			Minimum	-43.8	-38.6	-30.7	-23.0	-2.6	5.4	6.1	1.6	-6.1	-21.3	-39.5	-41.0	-43.8
Potato Hills Station	1,420	2007	Mean	-	-	-	-	-	-	-	-	1.0	-6.9	-12.0	-15.2	-
			Maximum	-	-	-	-	-	-	-	-	8.0	-1.5	-5.5	-9.4	-
			Minimum	-	-	-	-	-	-	-	-	-6.2	-13.8	-27.7	-24.2	-
		2008	Mean	-17.7	-17.2	-11.3	-4.8	3.3	8.7	8.1	5.3	1.9	-7.7	-10.8	-18.6	-5.1
			Maximum	-9.2	-3.4	-2.8	2.7	12.5	14.3	13.4	9.2	6.7	2.4	-5.4	-8.4	14.3
			Minimum	-33.1	-31.9	-29.6	-16.8	-0.6	4.6	2.8	1.7	-7.7	-21.3	-19.6	-27.2	-33.1
		2009	Mean	-19.3	-17.2	-16.7	-4.4	M	M	12.6	7.4	3.3	-5.3	-12.8	-11.9	-
			Maximum	-0.5	-10.4	-7.0	9.4	M	M	22.8	16.2	10.4	-1.9	-4.9	-3.8	-
			Minimum	-34.8	-30.3	-25.2	-13.0	M	M	6.6	3.1	-6.3	-14.2	-19.1	-21.2	-34.8
		2010	Mean	-14.5	-9.7	-9.4	-1.8	5.2	8.8	10.5	9.7	2.3	-5.3	-11.7	-18.2	-2.9
			Maximum	-5.1	-1.8	-2.9	6.3	15.1	13.4	15.2	19.5	8.8	3.1	-1.4	-8.8	19.5
			Minimum	-30.9	-26.4	-16.5	-8.3	-4.0	2.7	6.2	3.4	-9.3	-10.4	-23.1	-25.6	-30.9
		2011	Mean	-15.5	-18.3	-13.9	-5.6	4.8	8.8	10.3	7.0	4.1	-5.7	-18.0	-13.0	-4.6
			Maximum	-5.6	-3.6	-1.4	1.3	15.3	13.9	15.7	11.4	20.4	-1.2	-9.1	-8.8	20.4
			Minimum	-28.0	-30.2	-23.2	-13.0	-7.2	2.2	5.9	5.3	-5.5	-12.1	-29.0	-20.0	-30.2
		2012	Mean	-19.8	-11.1	-13.4	-1.9	3.1	11.3	10.9	-	-	-8.4	-18.8	-19.4	-
			Maximum	-6.8	-5.1	-1.7	1.8	9.5	18.5	17.9	-	-	3.3	-8.0	-6.5	-
			Minimum	-30.3	-19.5	-22.6	-8.0	-2.5	5.5	5.5	-	-	-16.8	-24.0	-29.2	-
		2013	Mean	-17.6	-11.3	-14.2	*-10.4*	*2.8*	12.1	11.6	11.0	3.0	-2.9	-16.0	-19.5	-4.3
			Maximum	-5.5	-4.9	-5.1	*-2.5*	*13.5*	22.2	17.4	19.9	10.2	1.3	-4.7	-3.4	22.2
			Minimum	-36.6	-15.5	-24.8	*-18.4*	*-6.2*	2.0	5.3	1.7	-1.8	-8.5	-28.9	-29.1	-36.6
		2014	Mean	-10.0	-15.9	-11.5	-3.4	*5.6*	8.7	11.8	8.7	2.1	-5.6	-11.6	-11.4	-2.7
			Maximum	0.6	-7.8	-5.1	3.2	*11.5*	17.6	15.6	13.9	8.5	0.9	-5.0	-5.4	17.6
			Minimum	-27.3	-26.3	-19.9	-13.5	*0.4*	1.7	7.4	1.7	-5.2	-12.1	-22.5	-19.2	-27.3
		2015	Mean	-14.4	-13.8	-9.6	*-2.3*	*8.6*	*8.6*	*9.5*	7.1	0.1	-3.7	-13.5	-13.6	-3.1
			Maximum	-3.9	-2.3	-0.5	*1.4*	*16.5*	*13.6*	*14.9*	17.0	4.9	2.0	-4.3	-5.6	17.0
			Minimum	-31.7	-32.7	-24.3	*-6.5*	*-3.2*	*1.9*	*4.4*	-2.0	-6.1	-10.7	-28.3	-25.3	-32.7
		2016	Mean	-9.2	-10.4	-6.2	-	7.2	12.0	12.2	9.3	2.8	-6.8	-10.1	-16.2	-
			Maximum	-4.4	-5.2	3.4	-	15.4	19.4	17.7	13.9	8.5	-0.7	-2.0	-8.8	-
			Minimum	-14.0	-20.4	-12.4	-	0.5	5.0	5.3	3.6	-3.4	-15.6	-18.2	-25.1	-
		2017	Mean	-13.0	-13.3	-16.7	-3.2	4.5	9.7	-	-	-	-	-17.4	-10.2	-
			Maximum	-3.4	-1.1	-3.6	3.9	11.9	16.7	-	-	-	-	-9.4	-1.6	-
			Minimum	-27.2	-21.5	-28.0	-12.4	-0.5	0.3	-	-	-	-	-26.5	-22.8	-
		2018	Mean	-14.4	-16.9	-12.0	-6.1	M	M	M	M	M	-3.3	-9.9	M	-
			Maximum	0.9	-10.8	0.6	1.5	M	M	M	M	M	1.3	-2.0	M	-
			Minimum	-26.0	-26.4	-22.9	-18.1	M	M	M	M	M	-13.4	-17.3	M	-
		2019	Mean	-16.0	M	-5.1	-3.5	M	11.1	13.6	8.9	M	M	-10.8	M	-
			Maximum	-6.9	M	3.8	2.4	M	17.1	18.0	22.9	M	M	-3.5	M	-
			Minimum	-28.0	M	-14.5	-16.8	M	2.1	7.7	4.6	M	M	-17.3	M	-
		2020	Mean	-17.4	-16.1	M	-6.0	M	8.3	8.9	8.6	2.8	-8.4	-14.9	-13.4	-
			Maximum	-5.5	-6.1	M	2.3	M	13.9	17.7	17.3	7.4	5.7	-8.3	-1.0	-
			Minimum	-27.8	-27.8	M	-15.2	M	3.5	4.6	3.0	-1.4	-20.3	-22.2	-29.6	-
		2021	Mean	-10.2	-14.1	-14.7	-7.6	2.5	11.0	12.2	8.4	1.3	-4.7	-14.9	-21.5	-4.4
			Maximum	-5.9	-14.0	-7.5	4.6	7.3	16.4	19.9	20.4	10.1	-0.9	0.1	-13.3	20.4
			Minimum	-18.0	-14.3	-22.4	-27.9	-3.6	3.4	5.2	2.0	-8.1	-9.5	-24.5	-28.5	-28.5
		2022	Mean	-17.0	-15.9	-10.9	-7.1	1.6	10.9	11.5	M	3.2	-6.2	-13.1	-17.4	-
			Maximum	-4.7	-6.3	-5.6	1.5	11.7	18.2	19.2	M	12.9	4.3	-3.9	-6.0	-
			Minimum	-32.3	-26.2	-24.7	-18.7	-2.5	3.9	6.6	M	-5.3	-15.4	-26.0	-28.0	-
		All Years	Mean	-15.1	-14.4	-11.8	-4.9	4.5	10.0	11.1	8.3	2.3	-5.8	-13.5	-15.7	-3.8
			Maximum	0.9	-1.1	3.8	9.4	16.5	22.2	22.8	22.9	20.4	5.7	0.1	-1.0	22.9
			Minimum	-36.6	-32.7	-29.6	-27.9	-7.2	0.3	2.8	-2.0	-9.3	-21.3	-29.0	-29.6	-36.6

Notes:
1. Values are calculated from average daily temperatures.
2. Data is considered missing for a month when there are less than 25 days of data available for that month (beginning of data record until end of 2022).
3. Monthly values in italics for the Potato Hills station, for the period of 2013 through 2015 have been infilled using monthly regression relationships with temperature data from the Camp station.
4. Monthly values at Potato Hills in gray for the period of June 2014 to March 2015, May through July 2016, November 2019, January to February 2020, July 2022 and August 2022 were recorded by a standalone HOBO temperature sensor.
5. 'M' denotes data missing due to a sensor/datalogger malfunction.
6. Monthly temperature lapse rates presented in Section 3.1 are based on a comparison of monthly average temperature data from the Camp and Potato Hills stations.

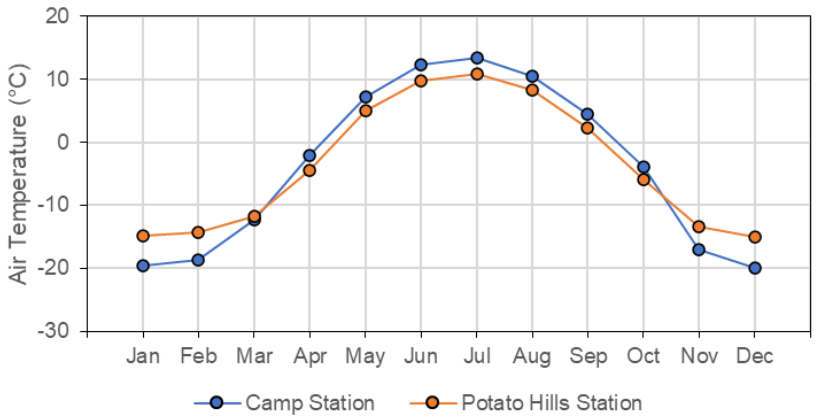

Figure 3-1: Monthly mean air temperature for the Project climate stations for the available period of record.

3.2 Rainfall

Historically, gauge precipitation data were collected at the Project site using tipping bucket rain gauges, which were not adapted to measure snowfall. Therefore, the precipitation data presented in Table 3-2 up to October of 2020 is for rainfall only, collected between the months of March and October, inclusive. The precipitation gauges were replaced with all-season instruments (Geonor weighing cell gauges) in 2020, and thus these data represent the collected solid phase precipitation. Generally, precipitation falls as snow from November through March, with precipitation falling as a mix of rain and snow in April and October. Rainfall data for March is included in the table below, where the temperature record indicates that precipitation would have fallen as rain (*i.e.*, daily average air temperature was above zero).

April to September monthly precipitation values for 2022 at the Camp Station were second highest on record, and were nearly two times higher than the historical average. Although April to September precipitation also remained elevated above normal at Potato Hills station, cumulative open water season precipitation was only slightly above the long-term average.

Notably, total annual precipitation was 656.0 mm at the Camp station, while it was lower at the Potato Hills station (427.2 mm), which is the inverse of the typical precipitation distribution with elevation (*i.e.*, increased precipitation at higher elevations). This divergence is driven primarily by rainfall events in late-July through mid-September, which suggests that convective rainfall events were more intense at lower elevations in 2022. In addition, hoarfrost buildup around the gauge orifice was noted on two separate occasions in the winter months of 2022. This phenomenon is expected to have reduced precipitation measurements within winter months in Potato Hills. The precipitation sensors at both stations will continue to be checked by Campbell Scientific technicians on an annual basis to mitigate the potential for erroneous data collection.

Table 3-2:
Project site monthly precipitation data.

Climate Station	Elevation (m asl)	Rainfall (mm)														
		Year		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Apr-Sept.
Camp Station	782	2009		-	-	-	-	-	-	-	-	35.0	*8.0*	S	S	-	
		2010		S	S	5.0	9.0	20.0	62.0	34.0	28.0	25.0	*12.0*	S	S	195.0	178.0
		2011		S	S	11.0	10.0	16.0	31.0	75.0	44.0	40.0	*9.0*	S	S	236.0	216.0
		2012		S	S	13.0	1.0	22.0	18.0	74.6	29.8	24.0	*4.8*	S	S	187.2	169.4
		2013		S	S	8.6	10.4	34.6	25.6	28.4	35.2	58.6	*25.2*	S	S	226.6	192.8
		2014		S	S	5.4	8.8	9.2	52.8	43.2	70.4	28.8	*23.2*	S	S	241.8	213.2
		2015		S	S	20.8	13.0	8.2	28.8	64.0	62.0	38.6	*13.4*	S	S	248.8	214.6
		2016		S	S	6.2	4.4	14.0	32.6	55.0	31.0	25.6	*2.6*	S	S	171.4	162.6
		2017		S	S	S	2.2	24.4	M	M	12.8	20.4	*6.0*	S	S	-	-
		2018		S	S	12.0	1.4	63.2	49.4	1.6	34.4	4.6	*12.4*	S	S	179.0	154.6
		2019		M	M	M	M	M	M	M	M	M	M	M	M	-	-
		2020		M	M	M	M	M	156.2	165.7	89.7	71.0	60.9	46.3	28.5	-	-
		2021		27.0	23.7	16.4	12.6	82.5	39.0	83.2	154.4	107.3	58.9	36.0	41.7	682.6	479.0
		2022		35.2	46.0	28.6	7.1	20.7	63.7	105.6	123.5	88.6	52.3	27.9	56.8	656.0	409.2
		All Years	Mean	S	S	12.7	7.3	28.6	50.8	66.4	59.6	43.6	22.2	36.7	42.4	302.4	238.9
			Maximum	S	S	28.6	13.0	82.5	156.2	165.7	154.4	107.3	60.9	46.3	56.8	682.6	479.0
			Minimum	S	S	5.0	1.0	8.2	18.0	1.6	12.8	4.6	2.6	27.9	28.5	171.4	154.6
Potato Hills Station	1,420	2007		S	S	S	M	M	M	M	24.0	100.8	*2.0*	S	S	-	-
		2008		S	S	3.4	4.8	58.4	52.0	201.2	130.0	11.2	*1.2*	S	S	462.2	457.6
		2009		S	S	S	3.0	M	50.8	12.6	75.4	44.4	*1.2*	S	S	-	-
		2010		S	S	1.0	6.2	16.4	77.2	45.8	39.4	4.2	*5.4*	S	S	195.6	189.2
		2011		S	S	0.2	7.2	21.2	38.0	92.8	83.8	34.4	*0.4*	S	S	278.0	277.4
		2012		S	S	S	0.6	9.6	24.2	64.8	37.8	21.0	*4.6*	S	S	162.6	158.0
		2013		S	S	2.2	0.2	29.6	33.2	18.0	18.2	63.8	*10.0*	S	S	175.2	163.0
		2014		S	S	S	M	M	M	M	M	M	*M*	S	S	-	-
		2015		S	S	S	M	M	M	M	48.5	27.1	*10.0*	S	S	-	-
		2016		S	S	D	D	14.5	23.0	38.3	42.6	24.6	*0.6*	S	S	-	-
		2017		S	S	D	D	16.2	25.8	46.3	21.8	53.0	*6.1*	S	S	-	-
		2018		S	S	D	D	D	46.5	13.5	77.0	4.0	*3.8*	S	S	-	-
		2019		S	S	D	D	D	D	18.5	D	D	D	S	S	-	-
		2020		S	S	D	D	D	101.2	103.5	68.5	63.7	44.2	18.3	19.0	-	-
		2021		*14.2*	21.0	58.7	10.9	60.3	29.8	68.2	112.3	66.4	43.5	15.6	25.1	526.1	347.9
		2022		7.8	21.3	12.7	6.7	25.8	35.8	86.8	75.2	64.8	59.1	17.7	13.4	427.2	295.3
		All Years	Mean	S	S	13.0	4.9	28.0	44.8	62.3	61.0	41.7	13.7	17.2	19.2	318.1	269.8
			Maximum	S	S	58.7	10.9	60.3	101.2	201.2	130.0	100.8	59.1	18.3	25.1	526.1	457.6
			Minimum	S	S	0.2	0.2	9.6	23.0	12.6	18.2	4.0	0.4	15.6	13.4	162.6	158.0

Notes:
1. Winter precipitation data (October through April in many years) are unreliable due to the majority falling as snow. The months where no rainfall was recorded due to freezing conditions are denoted by an 'S'. The exception is after October of 2020, following the installation of an all-season Geonor precipitation gauge at both climate stations.
2. Data for the month of October are in italics, as rainfall is not measured for the entire month.
3. 'M' denotes when there are less than 25 days of data available for that month.
4. In August 2015, the primary rain gauge at the Potato Hills Station was replaced by a standalone tipping bucket rain gauge. The replacement gauge is deployed each spring (*i.e.*, in April or May) then decommissioned in the autumn (October). Missing data at Potato Hills Station denoted by 'D' indicate time periods during which the standalone tipping bucket rain gauge was not functioning.
5. February 2021 precipitation value is estimated from the difference between the Feb. 1 and Mar. 1 Potato Hills snow water equivalent values.

3.3 Snow Water Equivalent and Continuous Snow Depth Data

As discussed in Section 2.2, snow data have been collected at three snow courses[2] at the Project site since 2009. Furthermore, the annual maximum snow water equivalent (SWE) value generally occurs in late-March or early-April at the Project site. Field measurements from site show that snow density is generally lower earlier in the season, corresponding to colder temperatures, but increases through winter as the snowpack deepens, consolidates and as snow melt progresses.

Project site snow survey data is summarized in Table 3-3 for period of record 2009 to 2022. Annual maximum SWE values range from 93 mm to 199 mm at the Camp snow course, 98 mm to 117 mm (shorter record) at the Ann Gulch snow course, 113 mm to 262 mm at the HLF snow course (shorter record), and from 190 mm to 431 mm at the Potato Hills snow course, which is at the highest elevation.

The Potato Hills snow survey was conducted in the immediate vicinity of the weather station from 2009 to 2011. However, due to the exposed location, snow redistribution resulted in variable measurements, and therefore the survey was moved to its current and more sheltered location in 2012, several hundred metres to the south-east (Figure 2-1). Note that high snowpacks did not allow access to the Potato Hills snow course in March 2012, and therefore the survey was conducted at Stewart Gulch (Snow Survey #2; see Figure 2-1). Snow surveys conducted at the Heap Leach facility in 2019 through 2022 were primarily above or below the interceptor ditch as indicated in Table 3-3. The 2022 Camp and Potato Hills snow surveys exhibited annual SWE maximums that were 30% and 50% above the historical average annual maximum value, respectively. Both stations exhibited second highest on record annual SWE maximums at 164mm (Camp) and 425mm (Potato Hills).

Additional SWE, snow depth and density data collected at HLF snow courses initiated in 2021 are presented in Table 3-4. This snow survey locations change year-over-year as the HLF is built out; However, the numbers are broadly comparable.

[2] See Note 1 in Table 3-3.

Table 3-3:
Project site snow survey data.

Year	Camp Station (782 m)				Ann Gulch (Snow Survey #2; 995 m)				HLF Station (1,078 m)				Potato Hills Station (1,420 m)			
	Survey Date	Depth (cm)	SWE (mm)	Density (%)	Survey Date	Depth (cm)	SWE (mm)	Density (%)	Survey Date	Depth (cm)	SWE (mm)	Density (%)	Survey Date	Depth (cm)	SWE (mm)	Density (%)
2009	2009-04-21	69	112	16%	-	-	-	-	-	-	-	-	2009-04-21	126	410	33%
2010	2010-03-31	50	99	20%	-	-	-	-	-	-	-	-	2010-03-31	103	278	27%
	2010-04-21	69	112	16%	-	-	-	-	-	-	-	-	2010-04-21	126	405	32%
2011	2011-03-28	55	93	17%	-	-	-	-	-	-	-	-	2011-03-28	105	251	24%
2012	2012-03-20	78	161	21%	-	-	-	-	-	-	-	-	2012-03-20	99	237	24%
	2012-04-20	56.4	79	14%	-	-	-	-	-	-	-	-	2012-04-22	117	262	22%
2013	-	-	-	-	2013-02-20	69.6	97	14%	-	-	-	-	2013-02-28	95.6	185	19%
	2013-03-02	60.9	108	18%	2013-03-02	66.9	115	17%	-	-	-	-	-	-	-	-
	2013-04-02	59.3	108	18%	2013-04-02	61.8	117	19%	-	-	-	-	2013-04-03	90	190	21%
	2013-05-05	57.6	106	18%	2013-04-16	62.2	85	14%	-	-	-	-	-	-	-	-
	-	-	-	-	2013-05-03	58	105	18%	-	-	-	-	2013-05-05	116.8	167	14%
2014	2014-03-12	56.8	126	22%	2014-03-12	51	94	18%	-	-	-	-	2014-03-11	97.5	276	28%
	2014-04-02	54.6	100	18%	2014-04-02	46	98	21%	-	-	-	-	2014-04-02	96.2	275	29%
	-	-	-	-	-	-	-	-	-	-	-	-	2014-05-08	69.6	258	37%
2016	2016-03-02	53	118	22%	2016-03-02	52.6	117	22%	-	-	-	-	2016-03-02	95.4	214	22%
	2016-04-09	38	140	37%	2016-04-09	22.2	115	52%	-	-	-	-	2016-04-10	107.4	257	24%
	-	-	-	-	-	-	-	-	-	-	-	-	2016-05-03	95.0	226	24%
2017	2017-03-17	50.9	89	17%	2017-03-17	50.3	100	20%	-	-	-	-	2017-03-17	84.0	206	25%
	2017-04-13	46	117	25%	2017-04-13	30.1	82	27%	-	-	-	-	2017-04-13	98.0	244	25%
	2017-05-04	7	28	40%	2017-05-04	0	0	NA	-	-	-	-	2017-05-03	89.0	236	27%
2018	2018-02-28	53	100	19%	-	-	-	-	-	-	-	-	2018-02-28	85.1	203	24%
	2018-04-04	53.9	109	20%	-	-	-	-	-	-	-	-	2018-04-04	90.5	219	24%
	2018-05-16	-	-	-	-	-	-	-	-	-	-	-	2018-05-16	80.7	226	28%
2019	2019-03-02	48.3	94	20%	-	-	-	-	2019-03-02	56.2	119	21%	2019-03-02	78.7	205	26%
	2019-04-01	25.3	72	31%	-	-	-	-	2019-04-02	37.2	93	25%	2019-04-01	79.3	171	22%
	2019-04-30	0.0	0	-	-	-	-	-	2019-04-30	31.7	71	18%	2019-04-30	91.0	200	22%
	2019-05-16	0.0	0	-	-	-	-	-	-	-	-	-	2019-05-16	48.3	111	23%
	2019-06-01	0.0	0	-	-	-	-	-	-	-	-	-	2019-06-01	0.0	0	-
2020	2020-03-07	89.8	157	18%	-	-	-	-	2020-03-07	108.7	229	21%	2020-03-13	188.5	431	23%
	2020-04-05	93.9	199	22%	-	-	-	-	2020-04-10	108.1	262	24%	2020-04-10	140.5	297	21%
	2020-05-02	40.1	142	35%	-	-	-	-	2020-05-02	50.3	176	35%	2020-05-02	130.3	384	29%
2021	2021-01-15	51.2	74	15%	-	-	-	-	-	-	-	-	-	-	-	-
	2021-01-30	50.3	77	15%	-	-	-	-	-	-	-	-	2021-02-03	92.6	216	23%
	2021-02-26	63.1	108	17%	-	-	-	-	2021-02-26	75.3	140	19%	2021-02-28	100.1	237	24%
	2021-03-30	62.3	113	18%	-	-	-	-	2021-03-30	78.1	116	15%	2021-03-29	108.9	168	15%
	2021-04-28	38.0	95	26%	-	-	-	-	-	-	-	-	2021-04-28	95.6	230	24%
	-	-	-	-	-	-	-	-	-	-	-	-	2021-06-01	16.4	70	32%
2022	2022-01-29	66.8	130	19%	-	-	-	-	2022-01-29	38.3	66	18%	2022-01-30	128.7	251	20%
	2022-02-27	77.1	157	20%	-	-	-	-	2022-02-27	39	68	18%	2022-02-28	134.6	328	24%
	2022-03-28	74.6	164	22%	-	-	-	-	2022-03-28	48.1	113	24%	2022-03-26	148.2	422	29%
	2022-04-27	55.1	145	26%	-	-	-	-	2022-04-27	23.7	78	42%	2022-05-02	137.7	425	31%

Notes:
1. Snow survey data for Potato Hills collected on 2012-03-20 is from the Stewart Gulch survey (Snow Survey #2) at 995 m asl (see Figure 2-1).
2. No snow surveys were conducted at site in 2015.
3. Snow survey data for Heap Leach Facility collected on 2019-04-02 from above and below the diversion ditch.
4. Snow survey data for Heap Leach Facility collected on 2019-04-30 from above the diversion ditch.
5. The Potato Hills Station SWE value for 2020-03-13 was estimated from the average March snow density value (22%) and the measured snow depth on this date, to correct for an error in the SWE measurements.

Table 3-4:
Snow survey data for heap leach facility snow courses initiated in 2021.

Year	Elevation (m)	Latitude (°)	Longitude (°)	Snow Survey	Survey Date	Depth (cm)	SWE (mm)	Density (%)
2021	1,370	64.0166	-135.8056	1370 Bench	2021-04-01	22.3	46	21%
	1,066	64.0429	-135.8335	HLF 3b (Bench)	2021-01-16	21.5	42	14%
				HLF 3b (Slope)	2021-01-16	29	52	18%
				HLF 3b (Bench)	2021-02-27	29.4	80	19%
				HLF 3b (Bench)	2021-03-30	27.5	72	17%
	1,049	64.0443	-135.8273	HLF 4b (Bench)	2021-01-16	96.2	247	26%
				HLF 4b (Slope)	2021-01-16	33.6	60	18%
				HLF 4b (Bench)	2021-01-30	93.9	302	32%
				HLF 4b (Bench)	2021-02-27	100.2	266	27%
				HLF 4b (Bench)	2021-03-30	105.9	297	28%
	1,048	64.0442	-135.8277	HLF 5b (Bench)	2021-01-16	67.4	121	18%
				HLF 5b (Slope)	2021-01-16	59	89	15%
				HLF 5b (Bench)	2021-01-30	62.1	124	20%
				HLF 5b (Bench)	2021-02-27	71.1	161	23%
				HLF 5b (Bench)	2021-03-30	75.9	188	25%
	1,056	64.0432	-135.8331	HLF1b-NW	2022-01-29	63.5	180	28%
	1,098	64.0470	-135.8200	HLF1b-N	2022-02-21	100.9	255	26%
				HLF1b-N	2022-02-27	112.5	330	29%
				HLF1b-N	2022-04-27	87.6	331	39%
	1,118	64.0436	-135.8173	HLF1b-NE	2022-02-21	34.3	71	20%
				HLF1b-NE	2022-02-27	35.6	66	19%
				HLF1b-NE	2022-03-28	37.9	104	28%
				HLF1b-NE	2022-04-27	16.4	56	35%

3.3-1 Continuous Snow Depth Data

Continuous snow depth data is summarized for the Camp climate station in Figure 3-2.

The upper panel of Figure 3-2 shows the evolution of the snowpack for the 2012 to 2022 time-period, with pack depth showing initial and appreciable accumulation through the months of November and December, typically reaching maximum depth by mid-March each year. These data then show that snowpack depth remains deep and relatively stable to April. The March and April 2022 snow depths were comparable to 2015 and 2021 during the same period. The 2022 peak snow depth, occuring on Feburary 23, was greater than those expressed during 2015 and 2021 and also second highest on record, below only that of the 2020 peak snow depth. With respect to the 2020 snow depth data, erratic values were

recorded beginning on March 9,2020 and continued for the remainder of the snowmelt season. The onset of the questionable data coincided with station servicing.

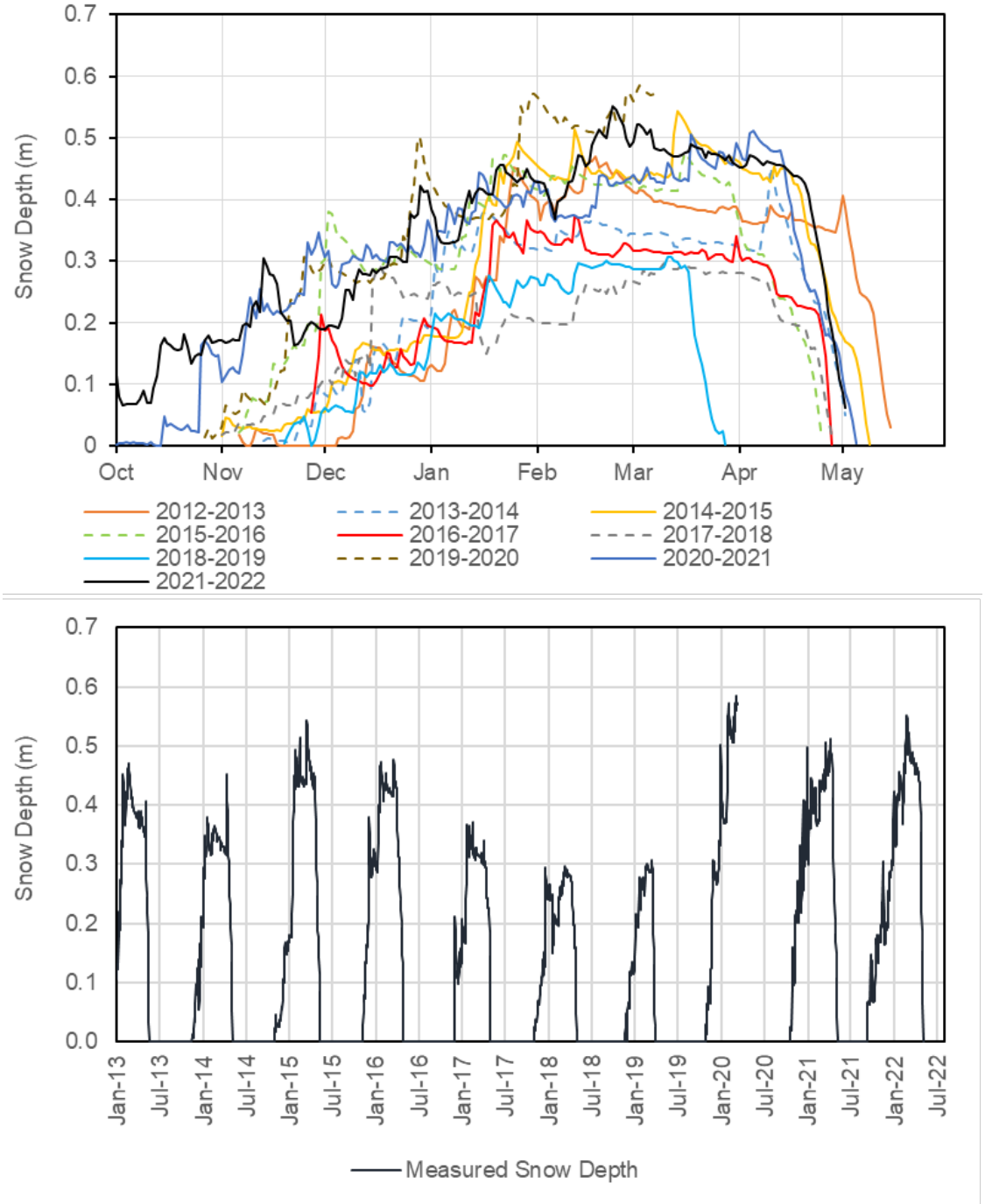

Figure 3-2: Summary of recent (2012-2022) continuous snow depth data for the Camp climate station.

The lower panel of Figure 3-2, illustrates the timing and rate of snowpack loss for the Camp climate station. While variable from year to year, these data show snowpack losses typically begin in earnest by mid- to late-April, with the duration of melt lasting 15-20 days. The timing of melt onset, and the duration of melt in 2022 were fairly typical (April 20 to May 2; 13 days) although approximately half of the duration of 2021.

3.4 Barometric Pressure

Barometric pressure provides a measure of the weight exerted by the atmosphere on the earth's surface at a point and provides a direct indication of changes in the synoptic weather pattern (*e.g.*, dropping barometric pressure can indicate the approach of a warm front). As expected, barometric pressure decreases with elevation at site, and is generally elevated during the summer months in comparison to the winter season (Table 3-5). When the Potato Hills climate station experienced a malfunction between May 2014 and July 2015, Table 3-5 was populated with data recorded by a standalone HOBO temperature/pressure logger for this period. Similarly, a standalone HOBO sensor measured barometric pressure at the Potato Hills station in January and February 2020. The sensor was replaced, and data collected for January to August, and November 2021. A similar issue occurred in January to July, and September in 2022. The sensor was recalibrated during the station maintenance visit in October 2022, and collected accurate data after that site visit. Annual average barometric pressure is 91.9 kPa at the Camp station, and 84.9 kPa at the Potato Hills station.

Table 3-5:
Project site monthly average barometric pressure data.

Climate Station	Elevation (m asl)	Barometric Pressure (kPa)												
		Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Camp Station	782	2009	-	-	-	-	-	-	-	91.6	91.3	91.7	90.1	91.9	-
		2010	91.2	91.2	90.5	91.2	91.9	91.5	91.8	91.8	91.8	91.2	91.7	91.9	91.5
		2011	91.8	92.2	91.9	91.6	92.1	91.9	91.8	91.8	91.4	91.3	91.1	91.2	91.7
		2012	91.2	91.5	90.9	91.9	91.8	91.3	92.2	92.2	91.8	92.5	92.1	91.5	91.7
		2013	91.9	91.2	92.3	92.2	92.2	92.4	92.5	92.0	91.4	91.9	92.1	92.5	92.1
		2014	91.7	92.3	92.0	91.6	92.4	92.0	92.2	92.1	92.0	91.3	92.3	91.6	92.0
		2015	92.2	92.5	91.9	91.4	92.5	92.2	92.1	92.0	91.6	91.7	91.3	91.0	91.9
		2016	91.3	91.6	91.5	91.8	92.4	92.1	92.2	92.5	92.0	92.1	91.1	92.0	91.9
		2017	91.8	91.7	92.0	92.0	91.9	M	M	91.9	91.9	91.7	92.1	92.3	-
		2018	91.9	92.6	92.3	91.9	91.9	91.9	92.7	92.0	92.9	91.9	91.9	91.2	92.1
		2019	91.9	92.9	92.3	91.8	92.1	92.3	92.3	92.5	91.9	91.9	91.9	91.0	92.1
		2020	91.5	91.6	92.3	92.0	92.6	91.9	92.1	91.8	92.1	92.2	91.4	91.2	91.9
		2021	91.1	92.1	91.5	92.4	92.1	92.0	92.3	92.0	91.4	91.0	91.2	91.6	91.7
		2022	92.0	92.0	91.8	92.2	92.0	92.3	92.0	92.0	91.7	91.3	92.3	92.1	92.0
		Average	91.6	92.0	91.8	91.8	92.2	91.9	92.2	92.0	91.8	91.7	91.6	91.6	91.9
Potato Hills Station	1,420	2007	-	-	-	-	-	-	-	85.5	85.1	84.1	84.7	84.0	-
		2008	84.1	84.3	84.6	84.9	85.4	85.4	85.2	85.4	85.3	84.4	84.3	85.0	84.9
		2009	84.7	84.8	84.5	85.3	85.4	86.0	85.8	85.4	85.0	85.1	83.4	85.1	85.0
		2010	84.4	84.5	83.9	84.7	85.5	85.2	85.5	85.5	85.3	84.3	84.6	84.4	84.8
		2011	84.9	84.8	84.6	84.6	85.3	85.2	85.2	85.2	84.6	84.5	83.7	84.4	84.8
		2012	83.8	83.3	84.0	84.9	84.5	84.8	85.3	85.5	85.0	85.4	84.8	84.1	84.6
		2013	84.6	84.1	85.1	84.9	85.4	85.8	85.8	85.4	84.7	85.0	84.8	85.0	85.1
		2014	84.6	85.0	84.8	84.7	85.8	85.1	85.6	85.4	85.2	84.5	85.4	84.8	85.1
		2015	85.2	85.6	85.0	85.6	M	M	85.9	85.3	84.8	84.8	84.2	83.9	-
		2016	84.3	84.5	84.5	M	M	M	M	85.9	85.2	85.1	84.0	84.7	-
		2017	84.6	84.6	84.7	85.1	85.1	85.3	M	M	M	M	84.7	85.2	-
		2018	84.7	85.2	85.2	84.9	M	M	M	M	M	85.0	84.7	M	-
		2019	84.6	M	85.3	84.9	M	85.7	85.8	M	M	M	84.8	M	-
		2020	84.3	84.4	M	M	M	M	M	M	M	M	M	M	-
		2021	84.1	84.8	84.4	85.4	85.3	85.3	85.7	85.3	M	M	83.9	M	-
		2022	84.8	84.9	84.8	85.2	85.2	85.3	85.2	85.1	84.7	84.1	85.0	84.6	85.8
		Average	84.5	84.6	84.7	85.0	85.3	85.4	85.6	85.4	85.0	84.7	84.4	84.6	84.9

Notes:
1. Monthly values in gray for the period of June 2014 to March 2015, November 2019 , January to February 2020, January 2022 to September 2022 were recorded by a standalone HOBO barometric pressure sensor.
2. 'M' denotes data missing when there are less than 25 days per month due to a sensor malfunction.

3.5 Relative Humidity

Relative humidity is a measure of the water vapour content of an air parcel, expressed as a percentage of the total water vapour required for the air to be fully saturated at a given temperature. Therefore, at colder temperatures, less water vapour is required to achieve a high relative humidity, and conversely at higher temperatures, more water vapour is required to obtain the same relative humidity value.

Given that air temperatures are well below zero during the winter, relative humidity values are elevated throughout the winter, and lower during the summer. With respect to monthly patterns for relative humidity, the annual minimum is expected to occur in the month of May. All monthly average relative humidity values from both climate stations are provided in Figure 3-3 and Table 3-6. Annual average relative humidity is 70% at the Camp station, and 78% at the Potato Hills station.

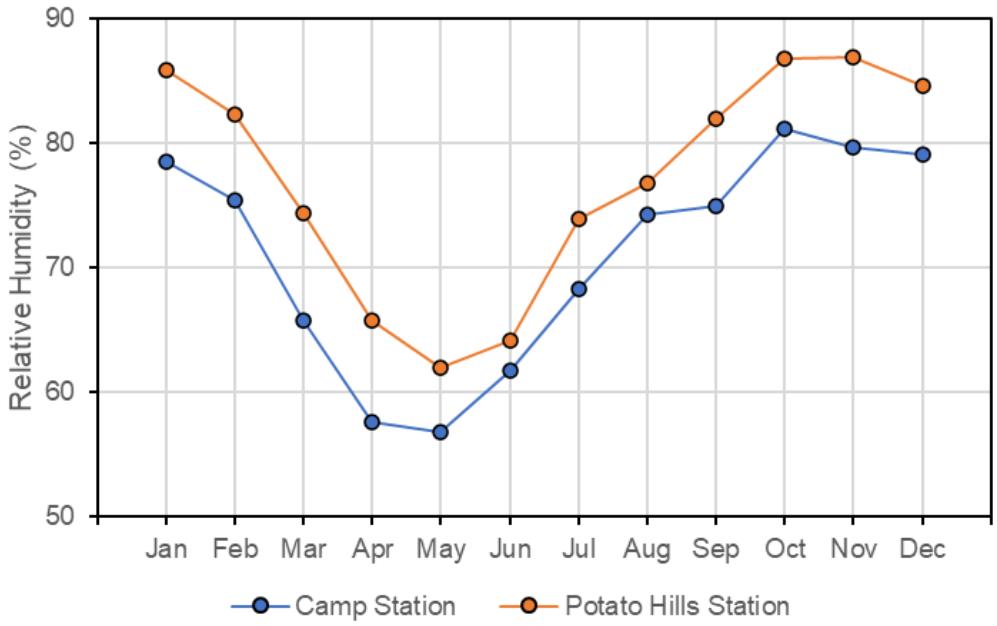

Figure 3-3: Project site average monthly relative humidity for the period of record.

Table 3-6:
Project site monthly average relative humidity measurements.

Climate Station	Elevation (m asl)	Relative Humidity (%)												
		Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Camp Station	782	2009	-	-	-	-	-	-	-	82	76	73	80	79	-
		2010	77	76	60	54	49	66	68	66	65	79	80	73	68
		2011	76	71	62	61	56	64	74	77	73	81	75	81	71
		2012	73	75	66	59	57	59	70	70	71	75	70	73	68
		2013	75	80	64	52	61	60	63	70	76	84	77	71	69
		2014	83	71	59	58	53	59	67	76	71	82	78	82	70
		2015	80	78	68	62	49	62	71	75	75	84	80	82	72
		2016	82	79	71	62	55	59	72	73	72	75	82	75	71
		2017	78	73	59	56	58	M	M	70	79	83	75	81	-
		2018	76	72	64	51	64	65	61	77	64	76	82	79	69
		2019	77	72	67	55	52	54	62	64	73	83	78	77	68
		2020	72	74	67	63	56	74	74	79	84	84	86	87	75
		2021	89	80	73	57	68	61	67	81	85	89	84	83	77
		2022	84	81	75	58	62	58	71	80	85	89	88	85	76
		Average	79	75	66	58	57	62	68	74	75	81	80	79	71
Potato Hills Station	1,420	2007	-	-	-	-	-	-	-	63	83	88	81	88	-
		2008	82	79	74	69	67	60	77	82	83	91	90	74	77
		2009	76	80	81	70	37	68	53	85	85	82	91	86	75
		2010	86	83	75	65	55	72	75	71	72	90	89	86	76
		2011	85	80	64	75	63	67	77	82	79	90	90	89	78
		2012	93	90	87	73	73	69	74	71	73	84	82	86	80
		2013	87	94	73	65	63	62	67	70	86	92	87	85	78
		2014	91	72	59	66	59	M	M	M	M	M	M	M	-
		2015	M	M	M	M	M	M	85	80	88	96	95	94	-
		2016	88	90	86	M	M	M	M	78	77	81	92	86	-
		2017	86	83	73	66	67	61	M	M	M	M	89	84	-
		2018	84	77	73	61	M	M	M	M	M	80	89	M	-
		2019	89	M	72	67	M	59	67	73	M	M	M	M	-
		2020	M	M	M	66	M	73	75	79	81	84	84	83	-
		2021	*89*	M	75	56	71	58	63	77	84	88	78	78	75
		2022	80	78	77	57	65	57	101	87	91	85	80	82	78
		Average	86	82	74	66	62	64	74	77	82	87	87	85	77

Notes: 1'M' denotes data missing for at least 14 days in the month due to a sensor malfunction.

3.6 Wind Speed and Direction

The predominant wind direction at the climate stations is north, and west-northwest, for the Camp and Potato Hills stations, respectively. Wind speeds averaged 1.2 m/s at the Camp station, and 2.5 m/s at the Potato Hills station, on an annual basis (Table 3-7; Figure 3-4).

The maximum recorded gust speed at the Camp station was 23.5 m/s over a 15-minute interval (August 15, 2016). At the Potato Hills station, wind speeds averaged 23.5 m/s over a 1-hour period (November 3, 2010; 15-min maximum gust of 23.9 m/s), and during the same event, wind speeds in excess of 20 m/s were recorded for a 4.5-hour period. As shown in Table 3-7, the mean monthly wind speeds for both stations are higher in the spring, summer, and autumn months, and lower in the winter, with annual average monthly minimums occurring in December, and annual maximum winds in April and May.

Table 3-7:
Project site monthly average wind speed data.

Climate Station	Elevation (m asl)	Wind Speed (m/s)													
		Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Camp Station	782	2009	-	-	-	-	-	-	-	1.4	1.2	1.2	1.1	0.7	-
		2010	1.2	1.1	2.2	2.0	1.9	1.5	1.4	1.3	1.5	1.2	0.7	1.0	1.4
		2011	0.6	1.2	1.3	1.8	1.7	1.5	1.3	1.2	1.4	0.9	0.9	0.2	1.2
		2012	0.9	1.2	1.6	1.4	1.9	1.3	1.4	1.3	1.5	1.1	1.3	0.7	1.3
		2013	0.8	0.9	1.2	2.2	1.5	1.7	1.5	1.3	1.6	0.8	0.7	0.7	1.2
		2014	0.1	0.8	1.3	1.5	1.8	1.6	1.5	1.2	1.2	1.3	0.9	0.5	1.2
		2015	0.2	0.3	1.1	1.4	1.6	1.6	1.2	1.2	1.3	1.1	0.7	0.0	1.0
		2016	0.7	0.7	1.4	1.5	1.7	1.5	1.2	1.3	1.2	1.2	0.5	0.5	1.1
		2017	R	R	1.6	1.7	1.6	2.1	1.3	1.2	1.0	0.8	0.5	R	-
		2018	0.5	0.7	1.3	1.7	1.5	1.5	1.5	1.4	1.4	1.1	0.7	0.8	1.2
		2019	0.3	0.8	1.3	1.8	1.7	1.8	1.5	1.5	1.2	1.0	1.0	1.1	1.3
		2020	1.1	1.0	1.4	1.6	1.9	1.4	1.4	1.3	1.0	1.1	0.8	1.0	1.2
		2021	0.7	1.0	1.4	1.6	1.6	3.5	1.4	0.3	1.1	0.8	1.4	0.5	1.3
		2022	0.9	0.9	1.5	1.6	1.9	1.6	1.3	1.2	1.1	1.3	0.9	0.5	1.2
		Average	0.7	0.9	1.4	1.7	1.7	1.7	1.4	1.2	1.3	1.1	0.9	0.6	1.2
Potato Hills Station	1,420	2007	-	-	-	-	-	-	-	2.3	2.3	3.0	3.0	0.8	-
		2008	2.8	3.7	3.6	3.6	3.6	3.1	3.1	2.8	1.7	1.3	2.6	3.1	2.9
		2009	3.2	2.5	3.2	3.0	3.1	2.7	2.9	2.0	2.0	3.4	2.3	2.1	2.7
		2010	2.1	2.1	3.9	3.6	2.7	2.0	2.6	2.7	3.0	2.8	1.5	1.0	2.5
		2011	2.0	3.2	3.4	3.2	3.4	2.0	1.8	2.3	1.2	0.4	2.0	1.4	2.2
		2012	0.0	0.2	1.4	2.0	2.9	1.8	1.9	2.0	2.9	2.5	2.6	0.7	1.7
		2013	1.7	0.7	2.9	4.8	2.6	2.3	2.5	1.8	2.9	2.2	2.1	2.2	2.4
		2014	1.6	2.6	2.5	3.0	2.7	M	M	M	M	M	M	M	-
		2015	M	M	M	M	M	M	0.9	1.8	2.5	1.4	0.0	0.0	-
		2016	1.3	2.7	2.8	M	M	M	M	2.1	2.1	1.6	1.3	0.6	-
		2017	2.2	2.8	2.5	3.1	2.6	2.5	M	M	M	M	1.6	1.0	-
		2018	2.8	2.7	2.7	3.2	M	M	M	M	M	2.5	0.7	M	-
		2019	0.7	M	3.0	3.1	M	2.8	2.0	M	M	M	M	M	-
		2020	M	M	M	2.7	M	2.3	2.5	2.4	2.6	2.2	2.5	2.7	-
		2021	2.3	M	2.6	3.1	2.7	2.9	2.1	2.4	2.0	2.9	3.9	2.6	2.9
		2022	2.0	2.0	2.9	3.5	3.3	2.5	2.1	2.3	2.5	2.5	2.6	1.5	2.5
		Average	1.9	2.5	2.9	3.2	3.0	2.4	2.2	2.2	2.3	2.2	2.1	1.5	2.5

Notes:
1. Zero value for the Potato Hills Station in January 2012 is likely due to icing of the wind sensor.
2. 'M' denotes data missing when there are less than 25 days per month due to a sensor malfunction and R an indicator the wind sensor affected by rime.

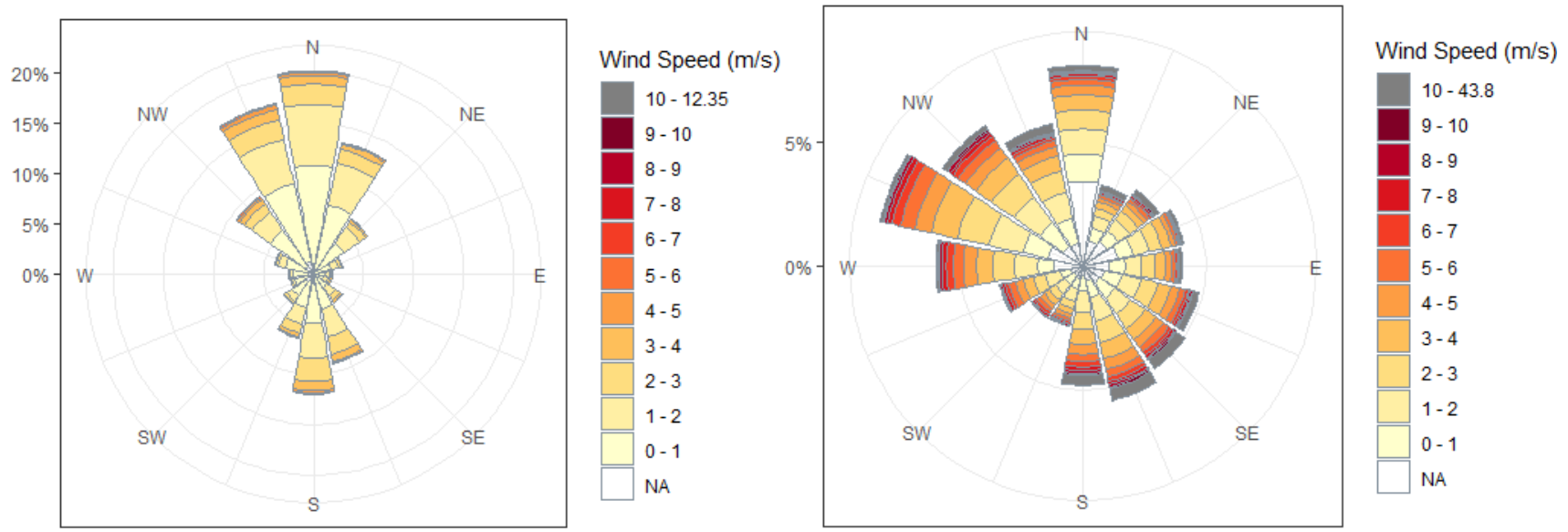

Figure 3-4: Project site wind roses for the Camp station (left) and the Potato Hills station (right). Wind roses are based on hourly averages of 15-minute readings of wind speed and direction.

3.7 Solar Radiation

Solar radiation (or solar irradiance) is a measure of the power per unit area provided by the Sun, in watts per square meter (W/m^2). Given the high-latitude location of the Project site, day length, and therefore solar radiation, fluctuate greatly on a seasonal basis. The average annual minimum of 1 W/m^2 (Camp station) and 3 W/m^2 (Potato Hills station) occur in the month of December, while the average annual maximum of 237 W/m^2 and 218 W/m^2 occurs in June at the Camp and Potato Hills stations, respectively. The Camp station location in the valley bottom results in slightly lower incident solar radiation, presumably due to the shading effect of the surrounding terrain. The monthly average and maximum solar radiation values for both stations are presented in Table 3-8 for their periods of record.

Table 3-8:
Project site monthly maximum and average incoming solar radiation data.

Climate Station	Elevation (m asl)	Maximum Solar Radiation (W/m²)												
		Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Camp Station	782	2011	-	-	-	-	-	-	-	-	-	194	214	28	-
		2012	28	272	716	917	951	801	1022	832	708	423	172	119	1022
		2013	181	291	718	748	951	920	1005	810	741	461	191	38	1005
		2014	35	123	579	838	937	954	913	791	731	403	203	29	954
		2015	39	398	629	845	950	991	965	867	634	470	215	8	991
		2016	142	358	628	852	951	999	951	826	659	391	158	78	999
		2017	28	388	563	904	961	M	M	859	688	381	129	34	-
		2018	224	238	561	833	969	1008	926	885	684	382	84	36	1008
		2019	31	589	617	815	944	954	873	891	644	438	70	73	954
		2020	136	333	827	1087	1150	1224	1239	1094	986	530	190	44	1239
		2021	305	294	986	1447	1596	1760	1647	1409	1152	629	229	118	1760
		2022	69	473	1101	1399	1640	1708	1523	1475	1138	476	215	24	1708
		Maximum	305	589	1101	1447	1640	1760	1647	1475	1152	629	229	119	1760
Potato Hills Station	1,420	2007	-	-	-	-	-	-	-	954	714	517	206	67	-
		2008	148	484	564	988	1047	1159	1162	1117	863	344	197	51	1162
		2009	179	302	856	976	979	1118	1086	908	768	488	188	69	1118
		2010	109	396	704	971	1069	1112	1079	944	838	472	247	77	1112
		2011	184	377	802	957	1136	1174	1124	1037	767	441	201	131	1174
		2012	31	34	126	1042	1126	1216	1251	934	897	483	163	78	1251
		2013	124	252	938	787	1071	1199	1233	1026	838	564	243	103	1233
		2014	162	356	667	1127	1021	M	M	M	M	M	M	M	-
		2015	M	M	M	M	M	M	662	1096	766	536	101	71	-
		2016	177	344	823	M	M	M	M	M	M	M	M	M	-
		2017	M	M	M	M	M	M	M	M	M	M	M	M	-
		2018	M	M	M	M	M	M	M	M	M	M	M	M	-
		2019	M	M	M	M	M	M	M	M	M	M	M	M	-
		2020	M	M	M	645	M	758	791	731	545	275	173	74	-
		2021	113	M	612	943	1132	1093	1136	961	862	451	160	76	1136
		2022	97	356	781	997	1140	1091	1000	1024	812	472	264	29	1140
		Maximum	184	484	938	1127	1140	1216	1251	1117	897	564	264	131	1251

Climate Station	Elevation (m asl)	Average Solar Radiation (W/m²)												
		Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Camp Station	782	2011	-	-	-	-	-	-	-	-	-	40	12	2	-
		2012	3	44	165	263	237	174	184	153	84	42	10	2	113
		2013	4	18	108	181	201	225	198	154	77	36	9	1	101
		2014	2	10	106	162	204	208	183	128	96	23	11	1	95
		2015	2	14	86	155	242	210	176	144	80	32	5	1	96
		2016	4	27	76	150	200	228	170	148	102	49	7	2	97
		2017	2	25	97	173	192	M	M	147	82	28	6	1	-
		2018	6	21	93	178	178	195	204	128	117	44	4	1	98
		2019	2	24	89	162	208	224	203	152	91	30	5	2	99
		2020	5	23	119	245	345	250	264	196	120	53	7	2	136
		2021	6	29	135	275	266	332	296	190	112	34	10	2	141
		2022	2	23	127	262	293	330	248	208	118	27	8	1	137
		Average	3	23	109	200	233	237	213	159	98	36	8	1	111
Potato Hills Station	1,420	2007	-	-	-	-	-	-	-	162	87	37	11	2	-
		2008	9	38	98	163	193	222	180	132	83	22	10	3	96
		2009	7	35	95	184	250	228	244	116	81	42	8	3	108
		2010	6	34	96	183	233	210	191	178	115	35	10	3	108
		2011	8	35	106	187	250	221	199	152	100	46	13	7	110
		2012	1	2	6	110	163	189	203	168	93	46	11	3	83
		2013	7	16	112	171	246	245	218	169	82	36	11	3	110
		2014	7	43	122	178	234	M	M	M	M	M	M	M	-
		2015	M	M	M	M	M	M	185	163	89	35	5	1	-
		2016	5	34	94	M	M	M	M	M	M	M	M	M	-
		2017	M	M	M	M	M	M	M	M	M	M	M	M	-
		2018	M	M	M	M	M	M	M	M	M	M	M	M	-
		2019	M	M	M	M	M	M	M	M	M	M	M	M	-
		2020	M	M	M	M	M	180	176	134	78	29	11	2	-
		2021	4	M	86	181	176	242	213	134	71	24	10	3	98
		2022	4	27	78	179	206	222	170	132	77	23	12	1	94
		Average	6	30	89	171	217	218	198	149	87	34	10	3	101

Notes:
1. Solar radiation is zero at night.
2. Maximum values are based on an hourly/sub-hourly recording interval, and are calculated based on all available data, including months with fewer than 25 days of data.
3. Zero values are included in the calculation of averages.
4. 'M' denotes data missing when there are less than 25 days per month due to a sensor malfunction

3.8 Potential Evaporation

15-minute potential evaporation rates were computed for the Camp station using available climate and the Ref-ET calculator – a compiled, stand-alone computer program that calculates reference evapotranspiration (ASCE, 2005). For the period of available record (January 2013 to December 2022), a 15-minute climate input file was prepared for the Eagle Gold site. The input variables required by Ref-ET are: maximum air temperature, minimum air temperature, relative humidity, incoming solar radiation, atmospheric pressure, and wind speed. Albedo values were estimated to be 0.6 during winter and 0.18 for snow-free months.

From the assembled climate inputs, Ref-ET returned potential evaporation (PE) computations at daily time-step based on an array of evaporation models (*e.g.,* Penman-Monteith model, Priestley-Taylor formulation). Presented in Table 3-9 (monthly tabulations) are resulting outputs from Ref-ET for months March to October. May to end-September PE for the Camp station is estimated to range from 367-448 mm with the Priestley-Taylor equation resulting in average PE estimates similar to values calculated using the Penman-Monteith equation. 2022 PE estimates using the Priestley-Taylor equation substantially exceeded the historical average, a similar result to that noted in the 2020 and 2021 data following sensor servicing and calibration. A potential reason for this increase is the abnormally high solar radiation measured at Camp station during this period and the considerable influence exerted by solar radiation in the Priestley-Taylor equation. The highest monthly rates of PE are expected in May, June, July and August of each year.

Table 3-9:
Potential evaporation (PE) estimates for the Camp station.

Period	Method	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Average (2012-2022)
Mar	PM	---	17	21	17	24	18	20	24	17	10	13	18
	P-T	---	16	19	16	16	13	25	19	19	12	15	17
Apr	PM	---	40	47	47	57	56	51	50	59	53	50	51
	P-T	---	40	46	46	48	50	59	47	70	65	61	53
May	PM	---	78	91	113	106	97	78	96	76	82	94	91
	P-T	---	82	85	108	86	80	83	92	89	103	113	92
Jun	PM	---	114	98	97	126	---	94	113	95	137	133	112
	P-T	---	116	96	97	109	---	99	109	116	162	158	118
Jul	PM	87	102	91	80	91	---	108	106	108	120	102	100
	P-T	93	102	90	86	86	---	113	107	130	147	125	108
Aug	PM	69	74	55	61	79	83	60	69	75	65	70	69
	P-T	70	73	56	63	67	68	67	65	90	85	89	72
Sep	PM	36	30	33	27	45	34	44	34	32	24	25	33
	P-T	26	24	28	23	30	25	49	30	38	32	31	30
Oct	PM	6	3	10	10	12	5	14	4	7	1	1	7
	P-T	4	3	4	5	5	4	17	4	6	2	3	5
Total (Mar-Oct)	PM	---	461	441	455	541	---	470	496	469	493	488	480
	P-T	---	453	419	440	447	---	511	473	558	608	596	496
Total (May-Sep)	PM	---	397	367	378	448	---	384	418	386	428	424	405
	P-T	---	397	354	378	378	---	410	403	463	529	517	421

Notes:
1. PM and P-T Indicate potential evaporation (PE) estimates based on Penman–Monteith and Priestley–Taylor approaches respectively.
2. PE Estimates computed using Eagle Camp/Lower 15-min climate data (*i.e.*, air temperature, relative humidity, wind speed, precipitation, solar radiation, and atmospheric pressure measurements) and Ref-Et software

4. Closure

Victoria
GOLD CORP

4 Closure

We trust that this report meets your expectations at this time. Please contact the undersigned with any questions or comments.

Sincerely,

LORAX ENVIRONMENTAL SERVICES LTD.

Prepared by:

Amrit Lally, B.Sc.
Project Hydrologist

Reviewed by:

Scott Jackson, M.Sc., P.Geo.
Senior Hydrologist

Engineers and Geoscientists British Columbia Permit to Practice Number: 1001840.

References

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ASCE, 2005. ASCE Standardized Reference Evapotranspiration Equation. American Society of Civil Engineers. 216 p.

British Columbia Ministry of Environment. 1981. *Snow Survey Sampling Guide*. Published by the Water Management Branch, Surface Water Section. 31 pp.

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Appendix A.1: Camp Climate Station Maintenance Report

CAMPBELL SCIENTIFIC WHEN MEASUREMENTS MATTER		**Field Services - Maintenance/Installation Checklist**							
		Station Name:			Camp Station				
Date	2022OCT04	**CSC Technician**	Chris Austin						
1. Meta Data									
Site Location	N/A	**Site GPS**	N/A	**Site Elevation**	N/A	**Site Notes (surroundings, vegetation, site access, parking, etc.)**			
Station Type	Met	**QDP System**	No	**Station Power**	Solar	The site is located down the hill from the camp, The station is on a hill of rocks and there is parking infront of the station.			
Station Structure	10ft Tripod	**Station Mounting Location**	N/A						
Weather Conditions									
Sky Cover	**Precipitation (Y/N)**	**Precip Type**	**Temperature**	**Wind**					
Overcast	No	N/A	1	Calm					
2. Client Information									
Company Name	Victoria Gold	**Contact Name:**	Victoria Gold	**Contact Number:**	N/A	**Email Address:**	N/A		
Maintenance Contract:	No	**Contract Term**	N/A	**Term Year**	N/A	**Site Visit Frequency**	Yearly		
3. Station Check List									
Completed	**Task**	**Notes - Comments. If 'No', WHY: (Do not leave any item empty)**							
Yes	Pre-maintenance site pictures taken as required (e.g. document site condition)	All photos captured							
Yes	Establish direct connection to datalogger, and collect/save pre-maintenance data	Functions normally							
Yes	Save station program and datalogger/device settings (as required)	N/A							
Yes	Complete visual inspection of sensor hardware, mounts and cable condition	N/A							
Yes	Complete on-site calibration/maintenance of station equipment (where applicable)	N/A							
N/A	Remove existing equipment for factory calibration/maintenance	N/A							
N/A	Re-level sensors/mounts as required	N/A							
Yes	Cleaned sensors/hardware as required	N/A							
Yes	Sensor cables zip tied with dew loops, and coiled/secured neatly	N/A							
Yes	Confirm battery functionality with load test	N/A							
Yes	Confirm station properly grounded	N/A							
Yes	Replace enclosure desiccant with new packs (if required)	N/A							
Yes	Replace enclosure humidity indicator card (if required)	N/A							
Yes	Replace enclosure port putty as required and ensure port properly sealed	N/A							
N/A	Upload revised station program and/or datalogger/device settings (if applicable)	N/A							
Yes	Collect and save post install/maintenance data (includes Status and Public tables)	N/A							
Yes	Review post collected data and confirm valid sensor outputs (No NAN, INF, etc..)	N/A							
N/A	Review Status table for skipped scans, watchdog errors, lithium batt voltage, etc..	N/A							
Yes	Confirm direct and remote connection to datalogger (if applicable)	N/A							
N/A	Confirm station updated wiring diagram secured inside station enclosure	N/A							
Yes	Post maintenance site pictures taken	All photos captured							
Yes	Site cleaned of all garbage/debris, and any hazardous material properly disposed	N/A							
4. Recommended or Planned Next CS Site Visit									
Next Site Visit	Recommended	**Site Visit Type**	Annual (requires approval)	**Season**	Fall	**Month**	Oct	**Year:**	2023
5. Follow Up Action Items:									
Item Category	**Component ID**	**Priority**	**Description/Notes**						
N/A	N/A	N/A	The station currently has a CS251 Temp / RH probe . The new HygroVue10 will not fit in the rad shield.						
6. Sign Off **(Applicable for all included station sheets)**									
Completed by	**Signature**	**Date of completion**	**Reviewed by:**	**Signature**	**Date of Review**				
Chris Austin Campbell Scienitific Canada	CA	2022OCT04	Chelsea Fry Campbell Scientific Canada	CF	20-Dec-22				

CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

Site Acceptance Test

Station Name:	Camp Station

1. Data Verification

Sensor Type	Data	Field Value #1	Field Value #2	Reference Value#1	Pass/Fail	Pass/Fail Threshold
Temperature	DegC	2.33	2.76	2.20	0.56	+/- 5degC
RH	%	92.90	91.64	87.70	3.94	+/- 5%
BP	hPA	931.22	931.22	930.30	0.92	+/- 10hPA
Wind Speed	m/s	1.12	1.31	1.29	0.02	+/- 5m/s
Wind Direction	Deg N	0.09	0.10	0.00	0.1	Pass is between 357-3 Degrees
Wind Direction	Deg E	91.81	91.57	90.00	1.57	Pass is between 87-93 Degrees
Wind Direction	Deg W	269.45	269.88	270.00	-0.12	Pass is beetween 267-273 Degrees
Wind Direction	Deg S	179.67	179.66	180.00	-0.34	Pass is between 177-183 Degrees
Precipitation	P_Type	1036	1311	1133	Pass	N/A
					0	+/- 5degC
					0	+/- 5degC
					0	+/- 5degC
					0	+/- 5degC
					0	+/- 5degC

2. System Check

Datalogger/Power/Communications Notes:

Battery box was 1/3rd full of water when completed PrePM photos and the battery tests 13.15V @ 4.00Ah.

Sensor/Cable Notes:

The station currently has a CS251 Temp / RH probe. The new HygroVue10 will not fit in the rad shield.

Mounting Structure/Hardware Notes:

Tripod mounted.

SAT CS Reference Unit

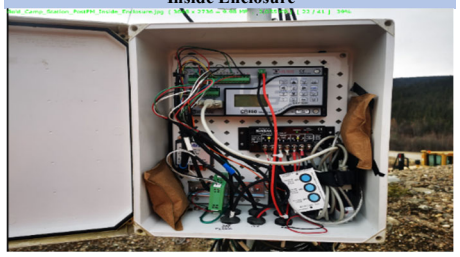
Item	Model	Manufacturer	Serial No.	Calibration Date	Calibration Interval (years)
Datalogger	CR310	CSC	16420	2023-07-04	4
All in one	92000	RMYoung	4292	N/A	2
Surface temp gun	TG45	FLIR	15-TG54-0004280	N/A	2
Multimeter	117	Fluke	51785599MV	N/A	2

CAMPBELL SCIENTIFIC WHEN MEASUREMENTS MATTER	**Post Installation Station Photos**	
	Station Name:	Camp Station

1. Site Photos

Outside Enclosure

Inside Enclosure



Station - North Facing

Station - East Facing

Station - South Facing

Station - West Facing CS215

T-200B

05103-10

Individual Sensor SN (relabel with sensor Type)

CMP3

SR50A

N/A

Appendix A.2: Potato Hills Climate Station Maintenance Report

CAMPBELL SCIENTIFIC WHEN MEASUREMENTS MATTER			**Field Services - Maintenance/Installation Checklist**						
			Station Name:			Potato Hills station			
Date		2022OCT05	**CSC Technician**	Chris Austin					
1. Meta Data									
Site Location		N/A	**Site GPS**	N/A	**Site Elevation**	N/A	**Site Notes (surroundings, vegetation, site access, parking, etc.)**		
Station Type		Met	**QDP System**	No	**Station Power**	Solar	64.0325299, -135.7463736 is the station location. There is lots of snow and trees surrounding the area. There is a turn around area to park in.		
Station Structure		10ft Tripod	**Station Mounting Location**	N/A					
Weather Conditions									
Sky Cover		**Precipitation (Y/N)**	**Precip Type**	**Temperature**	**Wind**				
Scattered		No	N/A	-2	Light				
2. Client Information									
Company Name		Victoria Gold	**Contact Name:**	Victoria Gold	**Contact Number:**	N/A	**Email Address:**	N/A	
Maintenance Contract:	-Select-	No	**Contract Term**	N/A	**Term Year**	N/A	**Site Visit Frequency**	Yearly	

3. Station Check List

Completed	Task	Notes - Comments. If 'No', WHY: (Do not leave any item empty)
Yes	Pre-maintenance site pictures taken as required (e.g. document site condition)	All photos captured
Yes	Establish direct connection to datalogger, and collect/save pre-maintenance data	Functions normally
Yes	Save station program and datalogger/device settings (as required)	N/A
Yes	Complete visual inspection of sensor hardware, mounts and cable condition	N/A
Yes	Complete on-site calibration/maintenance of station equipment (where applicable)	N/A
N/A	Remove existing equipment for factory calibration/maintenance	N/A
N/A	Re-level sensors/mounts as required	N/A
Yes	Cleaned sensors/hardware as required	N/A
Yes	Sensor cables zip tied with dew loops, and coiled/secured neatly	N/A
Yes	Confirm battery functionality with load test	N/A
Yes	Confirm station properly grounded	N/A
Yes	Replace enclosure desiccant with new packs (if required)	N/A
Yes	Replace enclosure humidity indicator card (if required)	N/A
Yes	Replace enclosure port putty as required and ensure port properly sealed	N/A
N/A	Upload revised station program and/or datalogger/device settings (if applicable)	N/A
Yes	Collect and save post install/maintenance data (includes Status and Public tables)	N/A
Yes	Review post collected data and confirm valid sensor outputs (No NAN, INF, etc..)	N/A
N/A	Review Status table for skipped scans, watchdog errors, lithium batt voltage, etc..	N/A
Yes	Confirm direct and remote connection to datalogger (if applicable)	N/A
N/A	Confirm station updated wiring diagram secured inside station enclosure	N/A
Yes	Post maintenance site pictures taken	All photos captured
Yes	Site cleaned of all garbage/debris, and any hazardous material properly disposed	N/A

4. Recommended or Planned Next CS Site Visit

Next Site Visit	Site Visit Type	Season	Month	Year:
Recommended	Annual (requires approval)	Fall	Oct	2023

5. Follow Up Action Items:

Item Category		Component ID	Priority	Description/Notes
N/A		N/A	N/A	The battery needs replacement as it reads 14.40 V @ 3.82Ah

6. Sign Off
(Applicable for all included station sheets)

Completed by	Signature	Date of completion	Reviewed by:	Signature	Date of Review
Chris Austin	CA	2022OCT05	Chelsea Fry	CF	20-Dec-22
Campbell Scienitific Canada			Campbell Scientific Canada		

CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

Site Acceptance Test

Station Name:	Potato Hills station

1. Data Verification

Sensor Type	Data	Field Value #1	Field Value #2	Reference Value#1	Pass/Fail	Pass/Fail Threshold
Temperature	DegC	2.28	2.13	2.30	-0.17	+/- 5degC
RH	%	65.14	65.11	65.50	-0.39	+/- 5%
BP	hPA	858.00	857.51	856.80	0.71	+/- 10hPA
Wind Speed	m/s	4.84	3.70	0.42	3.28	+/- 5m/s
Wind Direction	Deg N	1.10	0.97	0.00	0.97	Pass is between 357-3 Degrees
Wind Direction	Deg E	90.53	90.66	90.00	0.66	Pass is between 87-93 Degrees
Wind Direction	Deg W	269.41	269.85	270.00	-0.15	Pass is beetween 267-273 Degrees
Wind Direction	Deg S	180.77	180.56	180.00	0.56	Pass is between 177-183 Degrees
Precipitation	P_Type	1333.6	1061.6	1058.1	3.5	N/A
					0	+/- 5degC
					0	+/- 5degC
					0	+/- 5degC
					0	+/- 5degC
					0	+/- 5degC

2. System Check

Datalogger/Power/Communications Notes:

The battery needs replacement as it reads 14.40 V @ 3.82Ah, The program was adjusted to display non-corrected BP values for the 15Min table.,

Sensor/Cable Notes:

The CMP3, HMP155A, Wind speed bearings, T200B Fluid Replaced, Conduit putty was placed around the sensor connections., Wind bearing replaced and functions normally, Anti-Freeze fluid changed and the precipitation sensor functions normally, Temp/RH sensor replaced and functioning normally, BP sensor functioning normally and program changed.

Mounting Structure/Hardware Notes:

Tripod mounted station

SAT CS Reference Unit

Item	Model	Manufacturer	Serial No.	Calibration Date	Calibration Interval (years)
Datalogger	CR310	CSC	16420	2023-07-04	4
All in one	92000	RMYoung	4292	N/A	2
Surface temp gun	TG45	FLIR	15-TG54-0004280	N/A	2
Multimeter	117	Fluke	51785599MV	N/A	2

CAMPBELL SCIENTIFIC WHEN MEASUREMENTS MATTER	**Post Installation Station Photos**	
	Station Name:	Potato Hills station

1. Site Photos

Outside Enclosure	**Inside Enclosure**	**Station - North Facing**

Vegetation and Soil Monitoring Report

Eagle Gold 2022

March 2023

Prepared for:

Victoria Gold Corp

CORE GEOSCIENCE SERVICES INC.

Report prepared by:

David Krug
Environmental Scientist

21-MAR-2023
DATE

Report prepared by:

Jared Lapierre
Environmental Scientist

21-MAR-2023
DATE

Report reviewed by:

Ethan Allen
Principle, Environmental Geochemist.

21-MAR-2023
DATE

EXECUTIVE SUMMARY

The EMSAMP vegetation and soil monitoring program has been designed to evaluate changes to vegetation and soil during the life of the Eagle Gold Project. Specifically, metal burden in and on plant tissues, and in soils is measured annually (plants), and bi-annually (soils) to help identify whether any trends in metal uptake or deposition may be attributed to the Project. The 2022 survey is the fifth year of the program. Five sampling plots (D-1B, D-2B, D-3B, D-4B & D5) were visited during a site visit between July 20th-21st, 2022. D-3B was established in 2022 approximately 10 m to the east of D3 as it had been disturbed by road construction. D-1B and D-3B are in the Subalpine Zone while D-2B, D-4B and D-5 are in the Forested Zone.

The EMSAMP states that foliar samples of willow (*Salix* spp.), sedge (*Carex* spp.), bluejoint (*Calamagrostis canadensis*) and northern rough fescue (*Festuca altaica*) are to be collected within five two-meter diameter plots at the centre and each of the four cardinal directions within each sampling site. Due to their presence at most of the plots, and the fact they also have reasonable surface area for dust deposits, dwarf birch (*Betula glandulosa*) leaves were also sampled. As in previous years (except for the original location of D-4 in 2018) sedge and bluejoint were not present in sufficient collectable amounts at any of the sites. Other species were substituted that were present at the plots. At each site, a single soil sample was collected from eight meters south of the rebar that marks the centre of the plot, as per the method outlined in EMSAMP 2020-01. Soil samples were collected from the surface soil horizon between 0 and 0.5 m depths. Sixty-eight foliar samples and six soil samples were collected and analyzed by an ALS laboratory. Duplicate vegetation and soil samples were taken for QA/QC purposes.

Potential emissions related to the gold recovery process include arsenic, cadmium, chromium, mercury, and lead (EMSAMP, 2020-01). The concentration of these constituents in all foliar samples was well below the MTL. Arsenic exceedances in soil samples were observed in all plots except D-1B. The concentration of all other constituents except arsenic was well below the MTL. While samples collected in 2022 were analyzed for a suite of 36 metals including mercury, special attention was paid to metals of concern There are no territorial or federal guidelines regarding metal concentrations in vegetation or soil with respect to wildlife consumption. As an alternate means to characterize potential ingestion effects for wildlife, the metal data for vegetation has been compared to the maximum tolerable levels (MTL) for cattle and rodents (NRC 2005). For most of the metals, concentrations in the 2022 foliar samples were well below these levels. For foliar tissue, manganese exceeded the MTL (2000 mg/kg) in Dwarf Birch Leaves at plot D1-B (2364 mg/kg) and D3-B (2030 mg/kg). Selenium (MTL: 5 mg/kg) was present in Salix leaves (5.225 mg/kg) and Horsetail (13.29 mg/kg) at plot D2-B. Elevated levels were observed for arsenic, barium, iron, lead and vanadium in soil samples from some or all plots. Exceeding the MTL in soil does not present a direct hazard to the wildlife but may increase the quantities available in plant tissue in the future if there is plant uptake of these metals.

Duplicate foliar samples had high variability for some metal concentrations. Several mechanisms may explain this, including variation in atmospheric deposition on foliar surface (impacted by leaf position, precipitation, sample handling) and intra/inter species variation in metal uptake.

There was a slight decrease in arsenic concentrations in all plant tissue at D-1 but most of the other metals increased slightly in concentration in 2022 in all tissue types, compared to 2021 values. There were some

minor fluctuations throughout all tissue types at D-2B. Arsenic is potentially a parameter of concern in the Eagle Gold Project area. The soil samples collected to date indicate high naturally occurring levels of arsenic in the area however, these relatively high soil concentrations generally did not result in elevated arsenic concentrations in plant tissues.

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1 INTRODUCTION & BACKGROUND

The EMSAMP vegetation and soil monitoring program has been designed to monitor for any potential impact of the Eagle Gold Project to the receiving environment. It aims to proactively identify any influences through early detection allowing for the implementation of any corrective action if warranted. Specifically, the monitoring program objective is to evaluate changes to vegetation and soil during the life of the Eagle Gold Project, through analysis of metal burden in plant tissues, and in soils. Sampling has been performed annually (plants), and bi-annually (soils) during the growing season to help identify whether any trends in metal uptake or deposition may be attributed to the Project. The 2022 survey is the fifth year of the program.

As part of the monitoring program, plant tissue and soil samples are collected at five locations. These sites are also the locations of dust fall monitoring installations. Due to unforeseen circumstances, the location of the historical sites was changed, and a new location (D-5) was added in 2020.

Below is a timeline for the establishment and re-location of sampling sites:

- The four original sites were D-1, D-2, D-3 and D-4. These sites were identified and established in early August of 2018 (Laberge, 2018a).
- In 2019, sites D-1 and D-3 were sampled.
- In 2019, sites D-2 and D-4 were relocated:
    - Site D-2B is now 70 m from original site (sampled on July 10, 2019)
    - Site D-4B is now 300 m south of original site (sampled on July 12, 2019)
- In 2020, Site D-1 was impacted by a snowplough and had to be relocated:
    - Site D-1B is now 40 m south of original site.
- In 2020, Site D-5 was created and it is located by the dust fall collection station near the confluence of Haggart and Lynx Creek.
- In 2022, Site D-3 was relocated:
    - Site D-3B is now 10 m east of the original location

As the general location of the sites did not change significantly, they are representative of the same conditions as the original sites. For the exact location of current sample sites, see Figure 1.

2 METHODS

CoreGeo, in Partnership with Yukon Seed and Restoration (YSR), conducted a site visit to the Eagle Gold Mine between July 20th-21st, 2022 to conduct EMSAMP monitoring and sampling activities. Sites D-1B, D-2B, D-3, D-4B and D-5 were visited and assessed. It was discovered that site D-3 has been partially disturbed by road widening activities near the site. As such, site D-3 was moved directly east, so that the original “east” marker now sits at the centre of the plot. This new site is labelled D-3B.

Descriptions and locations are detailed in Table 2-1 and displayed on Figure 1. The coordinates of each site represent the centre point for that site. Four corner points were then established in cardinal directions 10

metres from the centre. For each plot the five points were identified with fluorescent painted half-inch diameter rebar, 50 cm long. Plot layout is presented in Figure 2.

Table 2-1: Location and Description of Vegetation Sites

Site #	Easting*	Northing*	Aspect	Elevation (m)	Site Description
D-1B	463530	7100794	Level	1437	Potato Hills near climate station, 40 m South of the original site D-1**.
D-2B	458256	7100972	West	791	Upslope of the air quality station and the camp climate station. South side of Eagle Cr. within influence.
D-3B	460598	7099079	South-West	1356	Above Platinum Gulch, above waste rock storage area. Within influence.
D-4B	458279	7097731	East	751	On the West side of the access road South of the Haggart Cr. culverts and the power line, and down wind of influence.
D-5	457857	7095962	Level	720	Near surface water quality site W5, Haggart Cr. upstream of Lynx Cr. and downwind of influence.

** NAD 83 Zone 8W*
***Considered control site.*

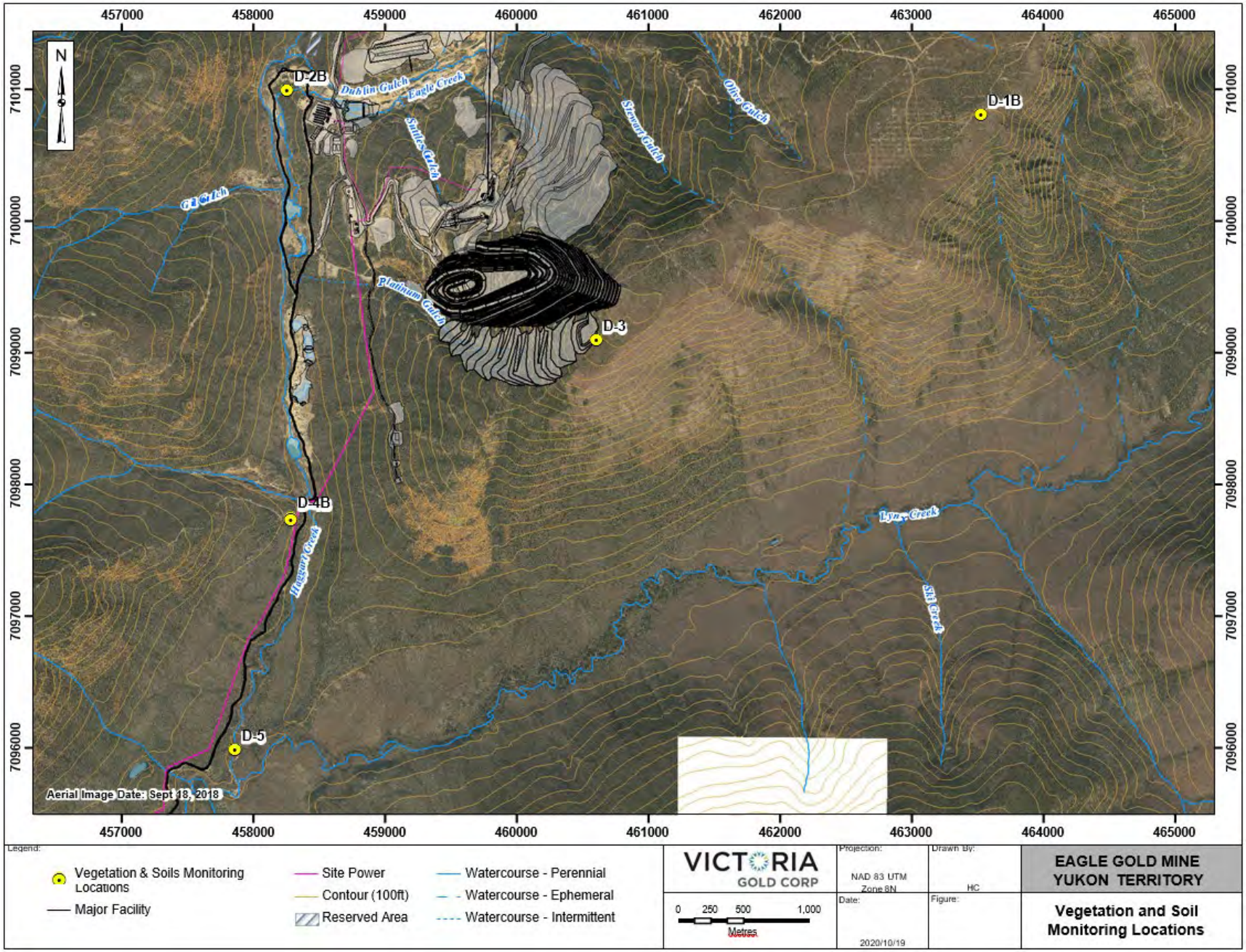

Figure 1: Plot location at the Eagle Gold Mine.

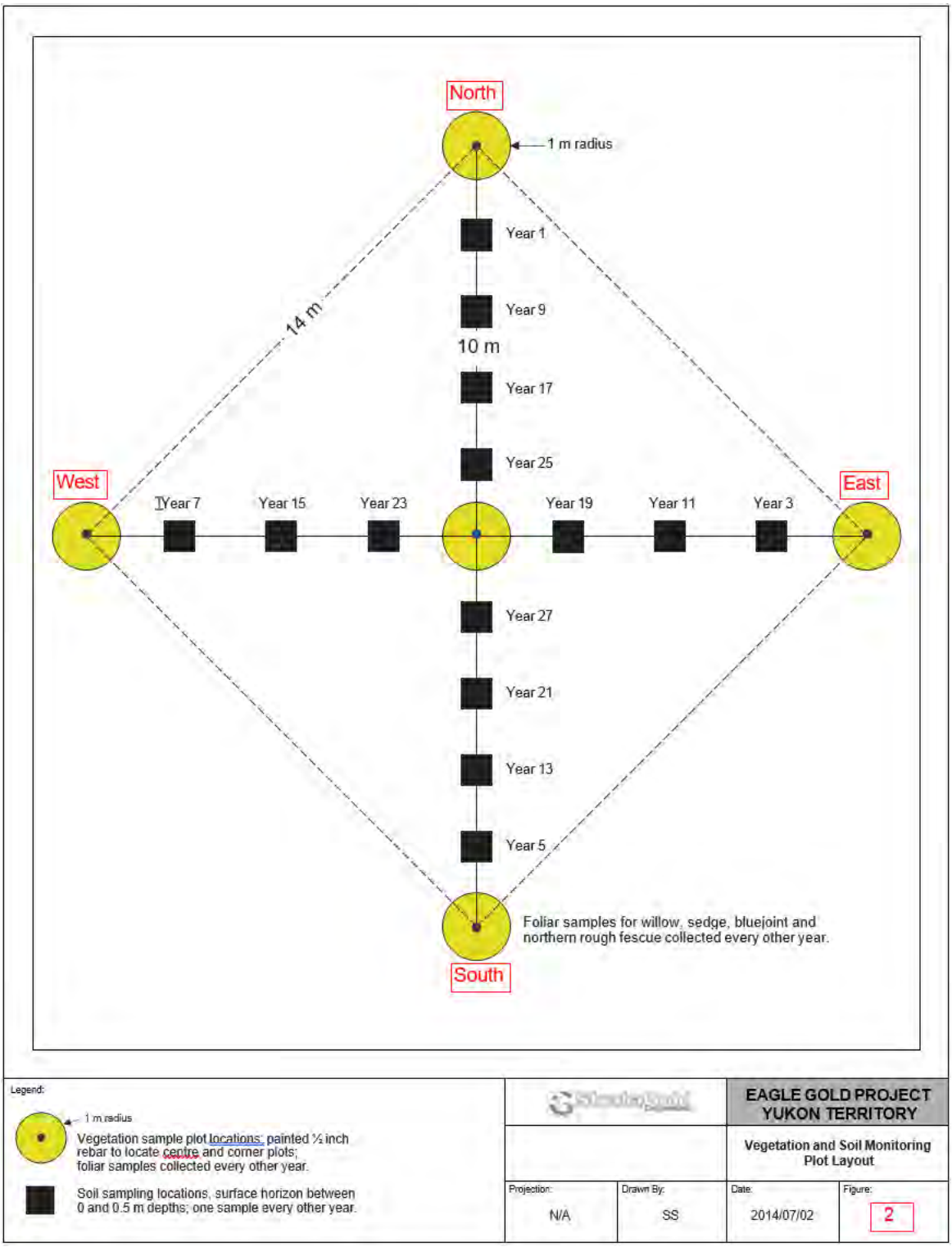

Figure 2: Sampling plot layout.

2.1 VEGETATION ASSESSMENTS

At each site, circle plots of one-meter radius, were flagged around each of the rebars that were located at the centre, north, south, east, and west points. The EMSAMP states that foliar samples of willow (*Salix* spp.), sedge (*Carex* spp.), bluejoint (*Calamagrostis canadensis*) and northern rough fescue (*Festuca altaica*) are to be collected within these five two-meter diameter plots. Not all species were present at each site and substitutions were made where applicable, based on the most abundant and dominant vegetation present. Species were not collected if collection would significantly decrease the plants population or biomass. Duplicate samples of willow leaves, dwarf birch leaves (*Betula glandulosa)* and horsetail (*Equisetum spp*.) were collected at various plots during the survey for the purpose of quality assurance/quality control (QA/QC) of laboratory analytical techniques, sample collection and transport.

New disposable nitrile gloves were worn for each collection and tissues were placed in new resealable plastic bags. Where possible, separate samples were collected for willow leaves and the current season's growth of twigs. Due to their presence at most of the plots, and the fact they also have relatively high surface area for dust to accumulate, dwarf birch (*Betula glandulosa*) leaves were also sampled. If sample collection would reduce the population of a plant species within a plot by >10% those species are determined to have insufficient biomass availability for collection. As in previous years (except for the original location of D-4 in 2018) sedge and bluejoint were not present in collectable quantities at any of the sites. Fescue biomass was sufficient for collection at D-1B only. Other species were substituted that were present at the plots. Table 2-2 lists the foliar samples that were collected and analyzed per plot. Based on the species availability, foliar samples were altered between sites.

Table 2-2: Foliar Samples Collected Per Plot

Site #	Plot #	Willow Leaves	Willow Twigs	Dwarf Birch Leaves	Horsetail	Fescue	Paper Birch Leaves	Paper Birch Twigs	Labrador Tea Leaves	Poplar Leaves	Poplar Twigs
D-1B	Centre	x *	x	x		x					
	North	x	x	x							
	East	x *	x	x							
	South	x *	x	x							
	West	x	x	x							
D-2B	Centre	x	x		x						
	North	x	x		x						
	East						x	x			
	South	x	x	x							
	West	x	x		x						
D-3B	Centre	x	x	x							
	North	x	x	x							
	East	x	x	x							
	South	x	x	x							
	West	x	x	x							
	Centre			x					x *		

Site #	Plot #	Willow Leaves	Willow Twigs	Dwarf Birch Leaves	Horsetail	Fescue	Paper Birch Leaves	Paper Birch Twigs	Labrador Tea Leaves	Poplar Leaves	Poplar Twigs
D-4B	North	x *	x		x						
	East	x		x					x		
	South	x	x								
	West			x					x		
D-5	Centre	x			x *						
	North	x			x						
	East									x	x
	South				x					x *	x
	West	x			x						
# of Samples		20	16	14	8	1	1	1	3	2	2

** Indicates that a duplicate was collected for QA/QC.*

A total of 68 foliar samples were collected and kept cool until delivered to the ALS depot in Whitehorse, Yukon. Plant material was collected from several different plants within the boundaries of the respective sampling subplot to create a composite sample. Labeled samples were frozen and shipped to the ALS laboratory in Burnaby, BC for analysis. Analysis was performed on unrinsed tissues as in the past surveys, and thus data includes any dust which may have accumulated on the plants and metal uptake from the soil within plant tissues.

The foliar samples were homogenized and sub-sampled prior to hot-block digestion with nitric and hydrochloric acids, in combination with hydrogen peroxide. Metals were analyzed using inductively coupled plasma-mass spectrometry with collision cell technology. Analysis for mercury was done by atomic fluorescence or atomic absorption spectrophotometry.

2.2 SOIL ASSESSMENTS

At each site, a soil sample was collected as per the method outlined in EMSAMP 2020-01. Soil samples were collected from the A and B horizons between 0 and 0.5 m depths. The sample depth is chosen to be representative of the root zone of the plant species identified within the plots. Spruce and willow species can have tap roots that extend down to depths of 1 or 2 m; however, the most active root zone is within the top 0.5 m of soil. Five permanent soil sampling sites were established in conjunction with the vegetation sampling plots, labeled by year in Figure 2. During the 2022 sampling, year five was used to determine the soil sampling locations. Therefore, at each of the five vegetation plots, soil samples were collected from eight meters south of the rebar that marks the centre of the plot. A duplicate sample of soil was collected from one of the five plots during the survey for the purpose of QA/QC of laboratory analytical techniques.

New disposable nitrile gloves were worn for each collection and soil samples were placed in new glass jars with Teflon lids. After they were logged in, the samples were frozen and shipped to the ALS laboratory in Burnaby, BC for analysis of pH, physical properties, metals, and nutrients. During transport, samples were kept in a cooler with ice packs and delivered within the “hold-time” as requested by ALS to maintain the validity of the analysis methods.

At the analytical laboratory, the soil samples were homogenized and sub-sampled prior to deionized water leach pH testing and particle size analysis by sieve and pipette. Metals were analyzed primarily through inductively coupled plasma mass spectrometry. Total nitrogen was analyzed by combustion of the sample and measurement of the nitrous oxide gas produced. Available nitrate and nitrite are extracted using a diluted calcium chloride solution. All nitrate was reduced to nitrite by passing the sample through a copperized Cadmium column. The nitrite was then determined by diazotizing with sulfanilamide followed by coupling with N-(1-naphthyl) ethylenediamine dihydrochloride. The resulting solution has a magenta colour which measured colourimetrically at 520 nm.

3 RESULTS

3.1 DESCRIPTION OF SAMPLING SITES

The five 200 m^2 established sites lie within two ecological zones; the Subalpine Zone where the elevation is greater than 1225 meters above sea level (masl) and the Forested Zone which includes the treed areas on the mountain slopes and the valley bottoms (Stantec, 2011b). D-1B and D-3B are in the Subalpine Zone while D-2B, D-4B and D-5 are in the Forested Zone. Selected photographs of the sites are presented in Appendix A.

D-1B

Stantec (2011b) conducted ecosystem mapping throughout the Eagle Gold Project area in 2009. The polygon that contains D-1B is classified as 50% dwarf birch and lichen, 40% dwarf birch and northern rough fescue and 10% subalpine fir, dwarf birch, crowberry, and lichens (Stantec, 2011b, Appendix 11, Part 1).

Within the boundary of D-1B, as observed in previous years, dwarf birch was the dominant species followed by willow. Tree species were solitary sporadic subalpine fir. There was some exposed rock and talus throughout the site with the majority encrusted with lichen. A diversity of forbs was noted. The following plants were identified within D-1B:

Table 3-1: Plants Identified within D-1B

Common Name	Scientific Name
Subalpine Fir	*Abies lasiocarpa*
White Spruce	*Picea glauca*
Dwarf Birch	*Betula glandulosa*
Willow	*Salix planifolia*
Diamond Leaf Willow	*Salix pulcha*
Willow	*Salix richardsonii*
Northern Labrador Tea	*Rhododendron tomentosum*
Low Bush Cranberry	*Vaccinium vitis-idaea*
Blueberry	*Vaccinium uliginosum*
Arctic White Heather	*Cassiope tetragona*
Crowberry	*Empetrum nigrum*
Colt's Foot	*Petasites frigidus* var. *sagittatus*

Common Name	Scientific Name
Lupine – some with pods	*Lupinus arcticus*
Mountain Sagewort	*Artemisia norvegica*
Anemone	*Anemone narcissiflora*
Richardson's Anemone	*Anemone richardsonii*
Labrador lousewort	*Pedicularis labradorica*
Spike Trisetum	*Trisetum spicatum*
Northern rough fescue	*Festuca altaica*
Heron bill moss	*Dicranum sp. – D. acutifolium*
Red-stemmed feather moss	*Pleurozium schreberi*
Haircap moss	*Polytrichum sp.*
Arctic butterfingers lichen	*Dactylina arctica*
Star reindeer lichen	*Cladina stellaris*
Grey reindeer lichen	*Cladina rangiferina*
Club lichen	*Cladonia* spp.
Arctic kidney lichen	*Nephroma arcticum*
Alpine foam lichen	*Stereocaulon alpinum*
Rockstripe lichen	*Umbilicaria torrefacta*
Green crusticose lichen	*Aspicilia caesiocinerea*
Common freckle pelt lichen	*Peltigera aphthosa*
Caribou horn tumbleweed lichen	*Masonhalea richardsonii*

D-2B

D-2B is located east of the camp weather station on the south side of Eagle Creek, approximately 70 m south of the original D-2. Stantec (2011b) classified the polygon where D-2B is located as 80% black spruce, Labrador tea, and feathermoss and 20% subalpine fir, crowberry and lichen.

Tree species found within the boundary of site D-2B consisted of spruce, aspen, poplar, and birch varieties, which is consistent with the D-2 site located approximately 70 m north that was sampled in 2018. Willows were the dominant shrub species. Horsetail (*Equisetum spp.)* and grasses were the dominant ground cover. Forbs and other shrubs were also present. Moose scat and hare pellets were observed throughout the plot.

The following plants were identified at D-2B:

Table 3-2: Plants Identified within D-2B

Common Name	Scientific Name
Balsam poplar	*Populus balsamifera*
Trembling aspen	*Populus tremuloides*
White spruce	*Picea glauca*
Alaska paper birch	*Betula neoalaskana*
Black spruce	*Picea mariana*
Green alder	*Alnus viridis* subsp*. crispa*

Common Name	Scientific Name
Kinnikinnick	*Arctostaphylos uva-ursi*
Black crowberry	*Empetrum nigrum*
Diamond Leaf Willow	*Salix pulchra*
Scouler's Willow	*Salix scouleriana*
Felt-leaf willow	*Salix alaxensis*
Little-tree willow	*Salix arbusculoides*
Grey-leaved willow	*Salix glauca*
Blueberry willow	*Salix myrtillifolia*
Dwarf Birch	*Betula glandulosa*
Labrador Tea	*Rhododendron groenlandicum*
Low Bush Cranberry	*Vaccinium vitis-idaea*
Bog blueberry	*Vaccinium uliginosum*
Prickly rose	*Rosa acicularis*
Soapberry	*Shepherdia canadensis*
Alpine milk-vetch	*Astragalus alpinus*
Fireweed	*Chamerion angustifolium*
Alpine sweet vetch	*Hedysarum alpinum*
Arctic sweet coltsfoot	*Petasites frigidus*
Wintergreen	*Pyrola sp.*
Grass-of-Parnassus	*Parnassia palustris*
Northern green bog orchid	*Habenaria hyperborea*
Small tofieldia	*Tofieldia pulsilla*
Hedysarum	*Hedysarum alpina*
Common horsetail	*Equisetum arvense*
Dwarf scouring rush	*Equisetum scirpoides*
Small sedge	*Carex* sp.
Altai fescue	*Festuca altaica*
Fire moss	*Ceratadon purpureus*
Step moss	*Hylocomium splendens*
Red-stemmed feather moss	*Pleurozium schreberi*
Star reindeer lichen	*Cladina stellaris*
Grey reindeer lichen	*Cladina rangiferina*
Club lichen	*Cladonia* spp.
Crinkled snow lichen	*Flavocetraria nivalis*
Common freckle pelt lichen	*Peltigera apthosa*
Alpine foam lichen	*Stereocaulon alpinum*

D-3B

D-3B is in a subalpine setting above Platinum Gulch. The site itself has not been disturbed; however, the waste rock dump has encroached closer to the site over the past couple of years. The ecosystem

classification in the polygon where D-3B is situated is 50% dwarf birch and northern rough fescue, 40% dwarf birch and lichen, and 10% subalpine fir, dwarf birch, crowberry, and lichens (Stantec, 2011b).

As observed in 2018, 2019 and 2020 within the boundaries of D-3, dwarf birch was the dominant species with scattered subalpine fir and white spruce. Willows, berry bushes, lichens and moss were also present.

The following plants were identified at D-3B:

Table 3-3: Plants Identified within D-3

Common Name	Scientific Name
Subalpine Fir	*Abies lasiocarpa*
White Spruce	*Picea glauca*
Grey-leaved Willow	*Salix glauca*
Diamond Leaf Willow	*Salix pulchra*
Dwarf Birch	*Betula glandulosa*
Low Bush Cranberry	*Vaccinium vitis-idaea*
Blueberry	*Vaccinium uliginosum*
Crowberry	*Empetrum nigrum*
Labrador tea	*Rhododendron groelandicum*
Labrador Lousewort	*Pedicularis labradorica*
Anemone	*Anemone narcissiflora*
Mountain sagewort	*Artemisia norvegica*
Caespitose fleabane	*Erigeron caespitosus*
Labrador lousewort	*Pedicularis labradorica*
Northern rough fescue	*Festuca altaica*
Alpine bluegrass	*Poa alpina*
Woodrush	*Luzula parviflora*
Glow moss	*Aulacomnium palustre*
Broom moss	*Dicranum* sp. – *D. acutifolium*
Haircap moss	*Polytricum* sp.
Red-stemmed feather moss	*Pleurozium schreberi*
True Iceland lichen	*Cetraria islandica*
Club lichens	*Cladonia* spp.
Crinkled snow lichen	*Flavocetraria nivalis*
Arctic kidney lichen	*Nephroma arcticum*
Star reindeer lichen	*Cladina stellaris*
Caribou horn	*Masonhalea richardsonii*
Common freckle pelt lichen	*Peltigera aphthosa*

D-4B

D-4B is in the Forested Zone downstream of the Haggart Creek culverts on the west side of the road just past the power line in an undisturbed area of the natural forest. The ecosystem classification in the polygon in which D-4B is situated is 60% subalpine fir, crowberry, and lichens, 30% black spruce, Labrador tea and feathermoss and 10% Alaska paper birch, white spruce, and willow (Stantec 2011b). This is somewhat different to the classification of D-4, sampled in 2018, which was in the Haggart Creek floodplain, and classified as river/creek system with gravel bars and 20% as an ecosystem type of White Spruce and Horsetail and therefore comparisons between these two sites will be irrelevant.

Alaska paper birch, white spruce, black spruce, and trembling aspen were the tree species identified within the boundaries of plot D-4B. Many species of shrubs dominated the site notably willows and dwarf birch. Moss and lichens were common. Bog blueberry, cranberry, crowberry, and bearberry shrubs were fruit bearing. Moose scat was observed in the plot.

The following plants were identified at D-4B:

Table 3-4: Plants Identified within D-4B

Common Name	Scientific Name
Alaska paper birch	*Betula neoalaskana*
White spruce	*Picea glauca*
Black spruce	*Picea mariana*
Trembling aspen	*Populus tremuloides*
Green alder	*Alnus viridis* subsp. *crispa*
Red bearberry	*Arctos rubra*
Glandular scrub birch	*Betula glandulosa*
Water birch	*Betula occidentalis*
Shrubby cinquefoil	*Dasiphora fruticosa*
Black crowberry	*Empetrum nigrum*
Labrador tea	*Rhododendron groenlandicum*
Prickly rose	*Rosa acicularis*
Arctic willow	*Salix arctica*
Barclay's willow	*Salix barclayi*
Bebb's willow	*Salix bebbiana*
Grey-leaved willow	*Salix glauca*
Blueberry willow	*Salix myrtillifolia*
Diamond leaved willow	*Salix pulchra*
Net-veined willow	*Salix reticulata*
Small cranberry	*Vaccinium oxycoccos*
Bog blueberry	*Vaccinium uliginosum*
Lowbush cranberry	*Vaccinium vitis-idaea*
Twinflower	*Linnaea borealis*
Arctic lupine	*Lupinus arcticus*
Tall bluebells	*Mertensia paniculata*
Labrador lousewort	*Pedicularis labradorica*

Common Name	Scientific Name
Arctic sweet coltsfoot	*Petasites frigidus*
Hooded ladies' tresses	*Spiranthes romanzoffiana*
Common false asphodel	*Tofieldia pulsilla*
Common horsetail	*Equisetum arvense*
Dwarf scouring rush	*Equisetum scirpoides*
Woodland horsetail	*Equisetum sylvaticum*
Bristly clubmoss	*Lycopodium annotinum*
Polar grass	*Arctagrostis latifolia*
Bluejoint	*Calamagrostis canadensis*
Bigelow sedge	*Carex consimilis*
Glow moss	*Aulacomnium palustre*
Bryum family moss	*Bryacease* sp. – *Pohlia nutans*
Broom mosses	*Dicranum* spp.
Red-stemmed feather moss	*Pleurozium schreberi*
Haircap moss	*Polytricum* sp.
Narrow-leaved peat moss	*Sphagnum angustifolium*
Warnstorf's peat moss	*Sphagnum warnstorfii?*
Golden fuzzy fen moss	*Tomenthypnum nitens*
True Iceland lichen	*Cetraria islandica*
Grey reindeer lichen	*Cladina rangiferina*
Star reindeer lichen	*Cladina stellaris*
Club lichens	*Cladonia* spp.
Crinkled snow lichen	*Flavocetraria nivalis*
Candy lichen	*Icmadophila ericetorum*
Reindeer tumbleweed lichen	*Masonhalea richardsonii*
Arctic kidney lichen	*Nephroma arcticum*
Common freckle pelt lichen	*Peltigera apthosa*
Undulating pelt lichen	*Peltigera neopolydactyla*

D-5

D-5 is in the Forested Zone near Haggart Creek and water quality station W-5. According to Stantec's ecosystem mapping (2011) site D-5 lies in the 100% white spruce horsetail unit within the active floodplain. D-5 was set up so that one of the plots was in the riparian zone. Balsam poplar saplings were common. Shrubs and forbs were common in the forested section and horsetail was the dominant ground cover.

The following plants were identified at D-5:

Table 3-5: Plants Identified within D-5

Common Name	Scientific Name
White spruce	*Picea glauca*
Balsam poplar	*Populus balsamifera*

Common Name	Scientific Name
River alder	*Alnus incanna*
Grey-leafed willow	*Salix glauca*
Little-tree willow	*Salix arbusculoides*
Shrubby cinquefoil	*Potentilla fruticosa*
Soapberry	*Shepherdia canadensis*
Kinnikinnick	*Arctostaphylos uva-ursi*
Crowberry	*Empetrum nigrum*
Blueberry	*Vaccinium uliginosum*
Hedysarum	*Hedysarum alpinum*
Pussytoes	*Antennaria microphylla*
Fireweed	*Chamerion angustifolium*
Jacob's ladder	*Polemonium pulcherrimum*
Wintergreen	*Pyrola sp*
Bearberry	*Arctos rubra*
Bastard toadflax	*Geocaulon lividum*
Green kidney lichen	*Nephroma arcticum*
Common freckle pelt lichen	*Peltigera aphthosa*
Tree lichen	*Parmelia sulcata*
Common horsetail	*Equisetum arvense*
Feather moss	*Pleurozium schreberi*

It should be noted that no invasive plant species were identified at any of the plots during the 2022 survey.

3.2 2022 METALS IN VEGETATION

Foliar samples were collected from each site and where possible from each of the five plots at each site (Table 2-2). Willows were the most collected species from all the sites and present at most of the individual plots, followed by dwarf birch. Many of the willows were *Salix pulchra* (diamond leaf willow) and this species was present at all the sites. There was insufficient biomass for the collection of fescue (*Festuca altaica*) except at site D1-B where the grass sample was gathered throughout the site. A total of 68 tissue samples were collected for analysis.

The analytical tissue reports for monitored vegetation species and plots are presented in Appendix B. Samples were analyzed for a suite of 36 metals including mercury.

Note that tellurium, and zirconium were not detected in any of the tissues at any of the sites. There are no territorial or federal guidelines regarding metal concentrations in vegetation with respect to wildlife consumption (e.g., moose, caribou and/or bear). As an alternate means to characterize potential ingestion effects for wildlife, the metal data have been compared to the maximum tolerable levels (MTL) for cattle and rodents (NRC 2005). Maximum tolerable levels are defined as the dietary level that, when consumed over time, will not impair health or performance. These MTL values are listed in Appendix B (Tables B-1 & B-3).

For most of the metals, concentrations in the 2022 foliar samples were well below the MTL. Manganese exceeded the MTL (2000 mg/kg) in Dwarf Birch Leaves at plot D1-B (2364 mg/kg) and D3-B (2030 mg/kg). Similarly, manganese exceedances were found in Dwarf Birch leaves in D1-B (3350 mg/kg) and D3 (B) (2780 mg/k) in 2021. Exceedances in the MTL for selenium (5 mg/kg) were found in Salix leaves (20.9 mg/kg) and Horsetail (26.5 mg/kg) at plot D-2B North. A high concentration of selenium was similarly found in Horsetail tissue in plot D-2B north in 2019 (26.7 mg/kg), 2020 (29.2 mg/kg) and 2021 (31.1 mg/kg). Horsetail has been shown to have high accumulations of selenium in other studies where concentrations are typically greater than that of other vegetation tissues (Ozkutlu et al, 2011, Patorczyk-Pytlik, B. 2009, Shawl and Reynolds, 1985).

Salix spp. leaves and twigs are a preferred browse for moose. Moose will browse on dwarf birch although willow is preferred. Bear and snowshoe hare will also browse on the leaves and twigs of dwarf birch, and ptarmigan and grouse will eat the buds and catkins. Bears and moose will eat horsetail (*Equisetum* sp.).

Potential emissions related to the gold recovery process include arsenic, cadmium, chromium, mercury, and lead (EMSAMP, 2020-01). These metals were graphed per vegetation type for the five collection plots at each site (Appendix B).

Tissues collected from D1-B had the lowest arsenic levels (0.07-0.312 mg/kg). The greatest concentration of arsenic in tissue samples was at D-4B (0.901-4.22 mg/kg). This concentration is well below the MTL (cattle and rodent) for arsenic (30 mg/kg).

Tissues collected from D-4B had the lowest cadmium levels (0.0058-1.29 mg/kg). The greatest concentration of cadmium in tissue samples was at D-1B (0.13-5.62 mg/kg). This concentration is well below the MTL (cattle and rodent) for cadmium (10 mg/kg).

Tissues collected from D-1B had the lowest chromium levels (0.06-0.091 mg/kg). The greatest concentration of chromium in tissue samples was at D-3B (0.136-0.449 mg/kg). This concentration is well below the MTL (cattle and rodent) for chromium (100 mg/kg).

Tissues collected from D-3B had the lowest mercury level recorded (0.005 mg/kg) which is the detection limit for mercury. The greatest concentration of mercury in a tissue sample was at D-2B (0.0089 mg/kg). This concentration is well below the MTL (rodent only) for mercury (0.2 mg/kg).

Tissues collected from D-5 had the lowest lead levels (0.034-0.212 mg/kg). The greatest concentration of lead in tissue samples was at D-2B (0.044-1.04 mg/kg). This concentration is well below the MTL for rodents (10 mg/kg) and cattle (100 mg/kg) for lead.

3.3 PREVIOUS VEGETATION DATA

Foliar samples for tissue analysis have previously been collected in 2018, 2019, 2020 and 2021. The selected metal concentrations in the tissue samples have been tabulated per site, per year, per tissue type, in Table B-3 in Appendix B. Foliar samples have been collected for four years; however not all sites have been in consistent locations. Site D-3B and D-1B both moved short distances from their original locations due to disturbance from road construction activities. As the general location of the sites did not change significantly, they are representative of the same conditions as the original sites (D-3 & D-1). Site D-5 now has three sets of data. General observations of the data with some discussions are listed below:

- There was a slight decrease in arsenic concentrations in all plant tissue at D-1 but most of the other metals increased slightly in concentration in 2022 in all tissue types.
- There were some minor fluctuations throughout all tissue types at D-2B.
- Five consecutive years of data exist for D-3B, with the caveat that the plot moved a short distance (~10 m) from its original location. There was an increase each year of all the selected metals in the willow leaves, willow twigs and dwarf birch leaves up to 2020 with concentrations decreasing somewhat in 2021. The Platinum Gulch waste rock storage area (WRSA) has encroached closer to D-3 over this period. It is possible that dust generated from the off-loading of waste rock to the storage area, or increased truck activity, have led to the increase in tissue concentrations observed in 2020. The July 2021 precipitation data from the Potato Hills and Camp Climate stations show that 23 mm and 37 mm of rain respectively, fell from July 15th to 24th, and may have created a rinsing effect of the foliage. No dust accumulations were observed on the vegetation during the collection process. Mercury, which always had concentrations near the detection limit, had a slightly higher concentration in 2022. This will need to continue to be monitored to determine if this result was an unusual increase or a trend that it is worth investigating.
- Data was generally similar each year with some fluctuation over the three years at D-4B.
- Site D-5 now has three sets of data. Metal concentrations show minor fluctuations in all tissue types.

3.4 2022 METALS IN SOIL

Soil samples were collected from each of the five sites and analysed for physical tests (pH, particle size), nutrients (nitrogen, nitrate & nitrite, phosphate) and a suite of metals, including mercury. A duplicate soil sample was collected for QA/QC purposes. D-1B is characterized as a silty loam (8% Clay, 30.6% Sand, 61.4% Silt), D-2B is characterized as a silty loam (7.3% Clay, 33.4% Sand, 59.2% Silt), D-3B is characterized as a silty loam (7% Clay, 37% Sand, 65.9% Silt), D-4B is characterized as a sandy loam (3.6% Clay, 68.2% Sand, 28.2% Silt), D-5 is characterized as a sandy loam (1.8% Clay, 67.6% Sand, 30.6% Silt) The graphical results of the laboratory analysis of the soil samples are presented in Appendix C.

Note that boron, sulfur, and tin were not detected in any of the soil samples at any of the sites. There are no territorial or federal guidelines regarding metal concentrations in soil with respect to effects on vegetation and subsequent wildlife consumption (e.g., moose, caribou and/or bear). As an alternate means to characterize potential ingestion effects for wildlife, the metal data have been compared to the maximum tolerable levels (MTL) for cattle (NRC 2005). Maximum tolerable levels are defined as the dietary level that, when consumed over time, will not impair health or performance. If the metal concentrations in soil exceeds the MTL of the dietary vegetation, there could be an increased risk of the vegetation exceeding the MTL in the future through uptake from the soil. Exceeding the MTL in soil however does not present a direct hazard to the wildlife. These MTL values are listed in Appendix C (Table C-2).

For most of the metals, concentrations in the 2022 soil samples were well below the MTL levels. Aluminum is present in high concentration in the soil, with the highest concentration at D1-B (16100 mg/kg) and the lowest concentration at D5 (6160 mg/kg). Arsenic exceeds MTL concentration levels at all plots except D1-B, with the highest concentration at D5 (127 mg/kg). At plots D4 and D-5, 2022 had the highest recorded Arsenic concentrations, whereas at plots D2-B and D-3, concentrations were lower but comparable to previous years. Barium exceeded the MTL at D2-B (278 mg/kg). Iron concentrations in the soil were all greater than 20000 mg/kg which exceeds the MTL. Lead exceeded the

rodent MTL at all plots with the lowest concentration at D2-B (18 mg/kg), and the highest concentration at D-5 (33 mg/kg). Vanadium exceeded the MTL for cattle (50 mg/kg) at D1-B (51 mg/kg).

Potential emissions related to the mining and/or mineral recovery process include arsenic, cadmium, chromium, mercury, and lead (EMSAMP, 2020-01). Soil collected from D1-B had the lowest arsenic levels (18 mg/kg). The greatest concentration of arsenic in soil samples was at D5 (127 mg/kg). The concentration of arsenic at all plots except D1-B exceeded the MTL (30 mg/kg for both cattle and rodents). While the maximum historical high arsenic concentration was recorded in 2022 at plot D-5, arsenic concentrations at plots D1, D2 and D3 showed a tendency to decrease. Soil collected from D1-B had the lowest cadmium levels (0.148 mg/kg). The greatest concentration of cadmium in soil samples was at D2-B (0.702 mg/kg). This concentration is well below the MTL for cadmium (10 mg/kg for both cattle and rodents). Soil collected from D2-B had the lowest chromium levels (14 mg/kg). The greatest concentration of chromium in soil samples was at D1-B (41 mg/kg). This concentration is well below the MTL for chromium. Soil collected from D4-B has the lowest levels of mercury (<0.032 mg/kg). The greatest concentration of mercury was at D3-B (0.08 mg/kg). This concentration is well below the MTL for mercury.

3.5 PREVIOUS SOIL DATA

Soil samples have previously been collected in 2018 (north plot) and 2020 (east plot). The selected metal concentrations in the soil samples have been tabulated per site, per year in Table C-2 in Appendix C. Metal concentration fluctuated across all plots and metals. A graphical comparison of arsenic, cadmium, chromium, mercury, and lead across all sampling years is presented in Appendix C (2018-2022 Soil Metal Comparison).

Arsenic concentrations in 2022 were lower than 2020 values for plots D-1B, D-2B, and D-3B, and were greater than 2020 values in plots D-4B and D-5. As mentioned previously, arsenic concentrations in all plots except D-1B are above the MTL (30 mg/kg) for cattle. Cadmium concentrations in 2022 were greater than 2020 values for plots D-2B, D-3B, and D5, and were lower than 2020 values in plots D-1B and D-4B (Appendix C). All values across all 3 sampling years have been well below the MTL for cadmium (10 mg/kg for rodents and cattle). Chromium concentrations in 2022 were lower than 2020 values for plots D-2B, D-3B and D-4B and were greater than 2020 values for plots D-1B and D-5 (Appendix C). The only MTL exceedance for chromium was observed in 2020 in plot D-4B (121 mg/kg, MTL=100 mg/kg for rodents and cattle). Mercury concentrations in 2022 were greater than 2020 values for plots D-2B, D-3B and D-5 and were lower than 2020 values for plots D-1B and D-4B (Appendix C). No exceedance of the MTL were observed in any sampling years (MTL= 0.2 mg/kg for rodents, NA for cattle). Lead concentrations in 2022 were lower or equal to 2020 values for plots D-1B, D-3B and D-5 and were slightly greater than 2020 values for plots D-2B and D-4B (Appendix C). All samples across all 3 sampling years, except of the sample from D-4B in 2018, exceeded the MTL for rodents (10 mg/kg). No samples exceeded the MTL for cattle (100 mg/kg).

3.6 QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC)

As a measure of QA/QC, seven duplicate samples (representing ~10% replication) of the main vegetation types were collected and analyzed, along with a single soil duplicate.

Relative percent difference (RPD) was calculated for each parameter, according to the following formula:

$$\boldsymbol{RPD} = \frac{\left|\boldsymbol{Result_{Sample}} - \boldsymbol{Result_{Replicate}}\right|}{\left(\frac{\boldsymbol{Result_{Sample}} + \boldsymbol{Result_{Replicate}}}{\mathbf{2}}\right)} \boldsymbol{x}\mathbf{100}\%$$

An RPD of 20% was used as a benchmark for analyte variability, such that an RPD greater than 20% warranted further comment or investigation. If the RPD of an analyte was greater than 20%, the results were compared to the laboratory detection limit (DL) to determine if the practical quantitation limit (PQL) was met. Typically, as analytes approach their detection limit, high variability is more likely to occur. The PQL is defined as the minimum concentration that can be measured within specified limits of precision and accuracy and was calculated as five times the DL. Both the sample and replicate results for a particular analyte needed to be greater than five times the DL for the PQL to be met. If one result from the sample or replicate is greater than five times the DL and the other result is less than five times the DL, the PQL was not met. If the analyte PQL was not met, the constituent being analyzed was not present in a sufficient amount to be reliably quantified. These data are presented in Table B-2 of Appendix B. Table 3-6 provides an overview of those duplicate results where the RPD is greater than 20% and have a PQL greater than five times the DL.

Table 3-6: Duplicate sample IDs and associated parameters that had RPD >20% and PQL > 5x DL.

Sample ID	Parameters
DUP-1: D1-B Centre Salix	Barium, Cesium, Rubidium
DUP-2: D1-B East Salix	Barium, Lead
DUP-3: D1-B South Salix	Arsenic
DUP-4: D4-B Centre Lab Tea	Aluminum, Arsenic, Cesium, Copper, Manganese, Thallium, Uranium
DUP-5: D4-B North Salix	Aluminum, Arsenic, Iron, Lead
DUP-6: D5 Centre Equisetum	Antimony, Arsenic, Cadmium, Cesium, Cobalt, Iron, Manganese, Zinc
DUP-7: D5 South Poplar	Aluminum, Arsenic, Manganese, Nickel, Rubidium

Based on these results, it appears that Labrador tea leaves and equisetum (Horsetail) species had the highest variability in metal concentrations, as a function of the number of different metals that had RPD > 20%. The high instance of variability between duplicate samples could be a caused by several contributing factors. Foliar tissue was not rinsed prior to analysis to consider atmospheric metal deposition. Therefore, spatial variation in the location, size, and shape of leaves from within a single plot, and sample handling could all have impacted the concentration of metals from atmospheric deposition. As for metals accumulated in the plant tissue, various physiological processes are involved including metal mobilization, root uptake, xylem loading, root-to-shoot transport, cellular compartmentation, and sequestration (Yan et al. 2020). Intra and Interspecies variation of these processes is generally not well understood, limiting the ability to make conclusions regarding why certain samples had high variability in certain metals.

4 CONCLUSIONS AND RECOMMENDATIONS

The levels of metals found in the foliar samples collected in 2022 represent the fifth year of assessment for sites D-1(B) and D-3(B), fourth year for sites D-2B and D-4B and third year for D-5. The data gives a general idea of the total metal burden (uptake from soil in tissues as well as through dust deposition) in various species in different ecological zones. Variation in metal concentrations in both vegetation and soil were minor and disparate and no apparent trends are discernible. Further, with the limited time scale of metal concentration data, the limitations associated with separating metal uptake by plants and dust deposition, and no air modeling study to determine the dilution and deposition areas and quantities of dust from the project, assessing trends accurately is not feasible, which limits the ability to make conclusions about project impacts at this time.

Arsenic is potentially a parameter of concern in the Eagle Gold Project area. The soil samples collected to date indicate high naturally occurring levels of arsenic in the area. Arsenic is associated with the gold bearing anomalies in the district and these initial concentrations reflect the natural mineralization of the Project area. However, these relatively high soil concentrations have not translated to high levels of arsenic in plant tissue samples. This incongruity may be related to the bioavailability associated with arsenic speciation. It is a consensus that arsenic is not essential for plants. The concentration of arsenic in plants is usually less than 1.0 mg/kg (Abbas, 2018). Arsenic concentrations were less than 6 mg/kg in the 67 individual tissue samples analyzed in 2022. These concentrations are well below the MTL of 30 mg/kg arsenic in a dietary source. The toxicity of arsenic to biota depends upon the speciation with inorganic forms generally thought to be more toxic than organic forms. Arsenate [As(V)] is the dominant form of arsenic in aerobic soils (Meharg et al, 2002). Due to its structural similarity to phosphate, arsenic can mimic phosphate and compete for its uptake by the plant, thereby reducing the assimilation of an essential macronutrient. Processes within the plant convert arsenate to the more toxic arsenite [As(III)]. Trivalent arsenic (arsenite) is 5 to 10 times more toxic than pentavalent arsenic (arsenate). Elemental arsenic is non-toxic. There was no visible sign of stress in any of the vegetation in the plots. It is not known what species of arsenic are present in the Project's soils or the species present in the plant tissues. External investigations into the speciation of arsenic in plant tissues have shown more than one species present (Meharg et al, 2002). Therefore, the arsenic present in the soil may not be bioavailable to plants or the availability may be limited by the mycelium associated with the vegetation types, which effectively screen out toxins at the root hairs.

Finally, it is recommended that future sampling methods differentiate between plant tissue and dust deposits on plant leaves. QA/QC results from this sampling event showed high variance across all species in metal content among duplicate plant tissue samples taken from the same site. As discussed in section 3.6, this variance may be due to several factors, including the sampling procedure and sample handling, variability in atmospheric dust fall on vegetation, and variability in metal uptake processes in plants. Established field and lab procedure is to not rinse vegetation samples prior to processing, which was designed to include metals from atmospheric dust fall. Future sampling regimes that include duplicate samples for which some are rinsed prior to processing would help better understand the mechanisms causing the variance in metal concentrations in the vegetation samples.

For example, if two duplicate samples, both of which are rinsed, are compared, and show low variance in relation to two samples that are unrinsed, it is more likely that variability in atmospheric dust fall on the vegetation is the cause of this variance. Distinguishing between metal from atmospheric dust fall and metals within plant tissue will be useful when trying to make conclusions about mine impacts on vegetation. Additionally, comparing dust fall data collected from nearby dust cannisters might be more useful in determining atmospheric dust fall in the vegetation sampling area.

5 CLOSURE

We trust this work meets your requirements. If you desire any additional information regarding the contents of this memo or wish to discuss any of the results, please contact CoreGeo at (867) 334-2673.

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7 APPENDICES

Appendix A – Photo Log

Photo 1: Plot D-1B.

Photo 2: Plot D-1B soil sample location.

Photo 3: Plot D-1B soil sample hole.

Photo 4: Plot D-1B staff collecting vegetation samples.

Photo 5: Plot D-2B marking location of soil sample.

Photo 6: Plot D-2B soil sample location.

Photo 7: Plot D-2B vegetation samples.

Photo 8: New plot D-3B. Road widening caused disturbance to original plot.

Photo 9: Original centre marker for plot D-3, now the easts marker for plot D-3B.

Photo 10: Plot D-3B.

Photo 11: Plot D-3B soil sample location.

Photo 12: Plot D-4B south marker.

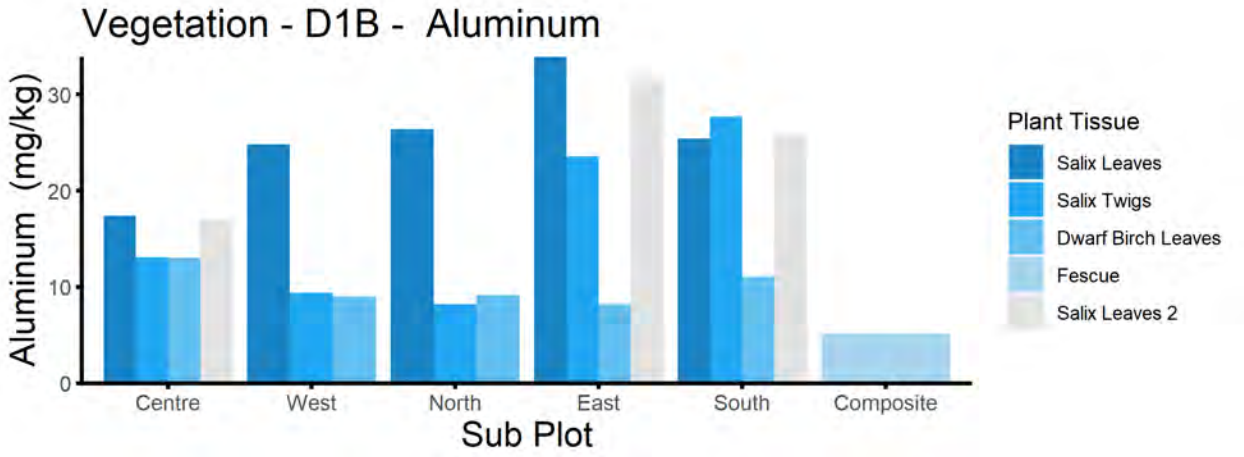
Photo 13: Staff taking soil sample from plot D-4B.

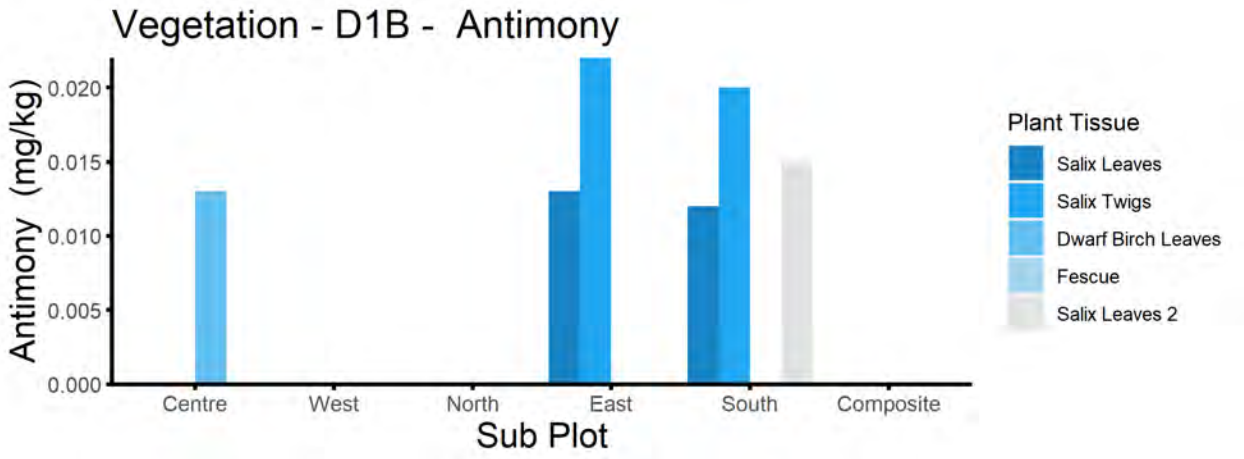
Photo 14: Staff collecting vegetation sample from plot D-4B.

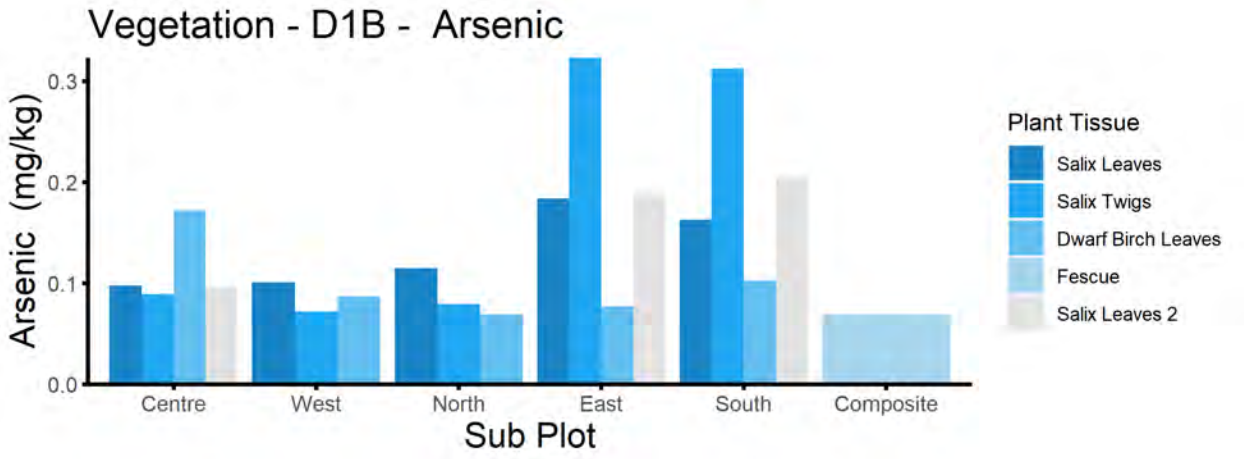
Photo 15: Plot D-5.

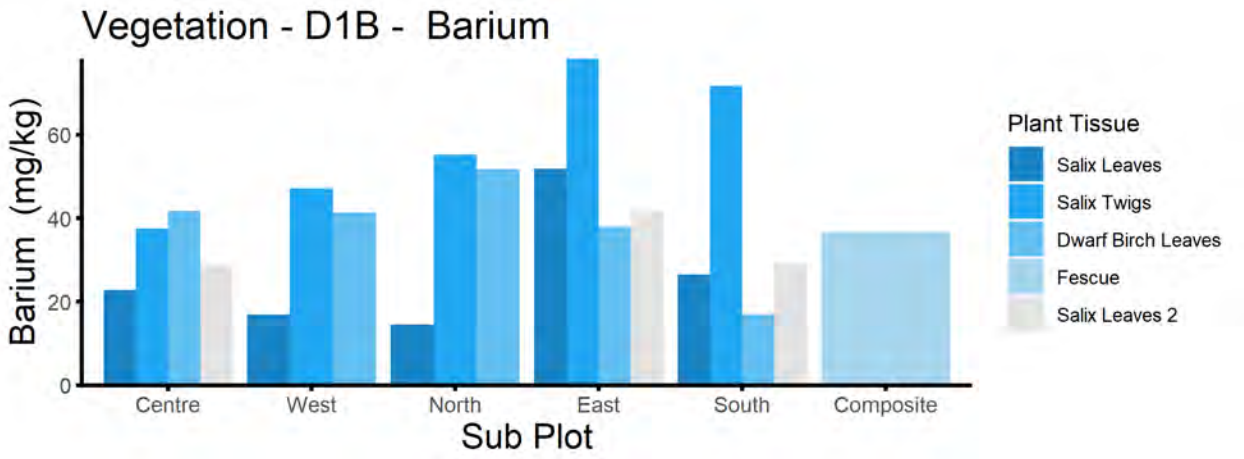
Photo 16: Plot D-5 south marker.

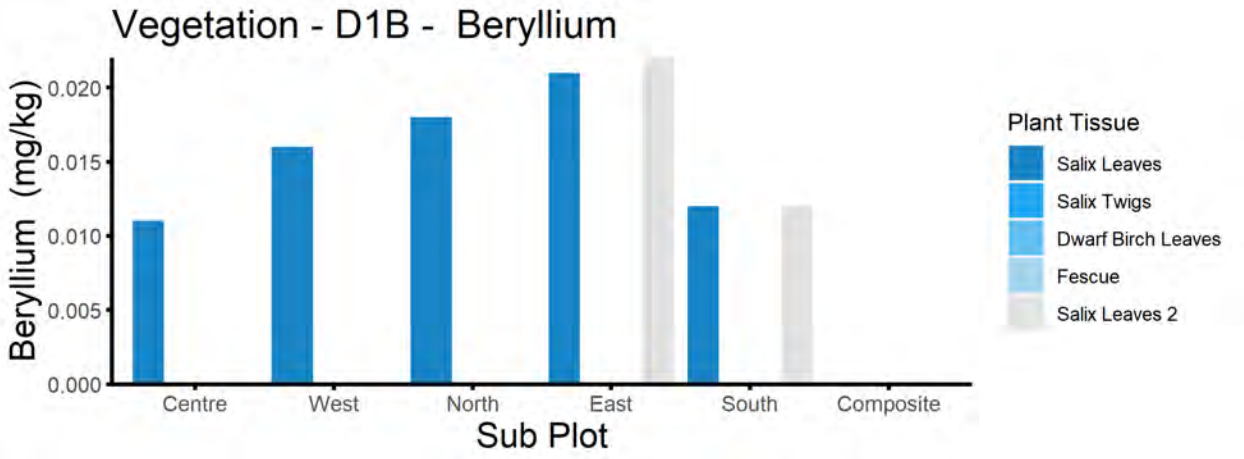
Appendix B – Vegetation Analysis

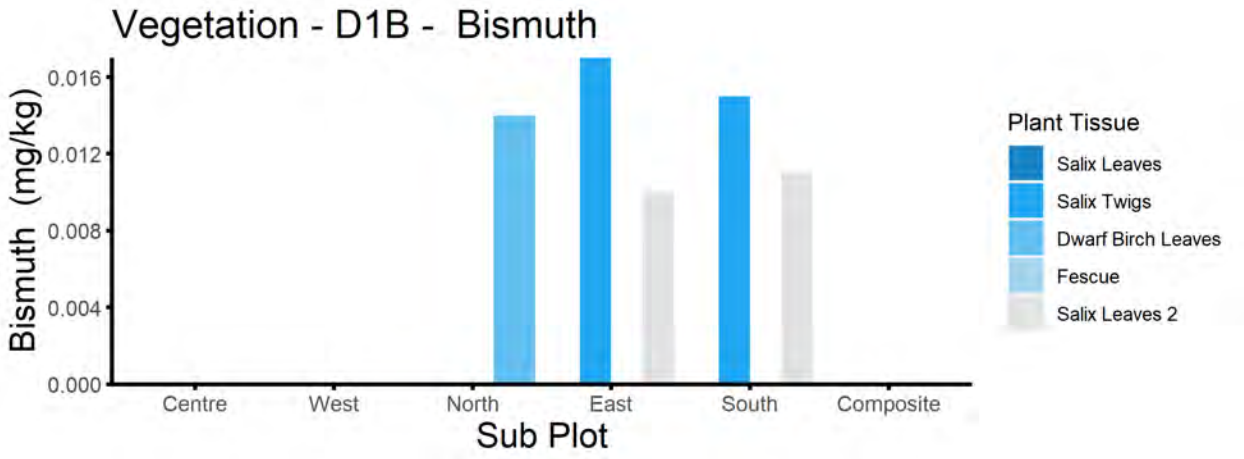

Vegetation - D1B - Aluminum
Aluminum (mg/kg)
30
20
10
0
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

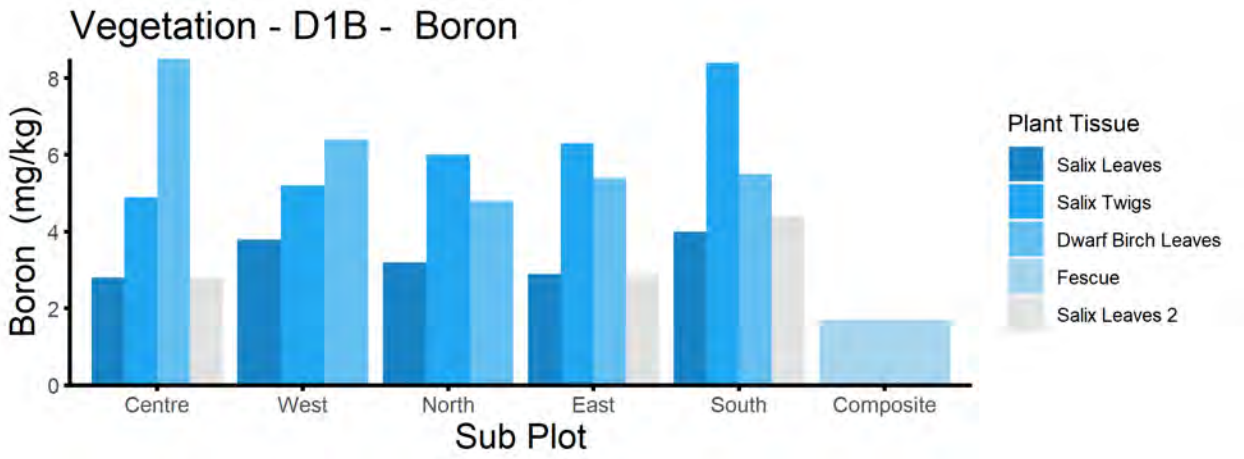

Vegetation - D1B - Antimony
Antimony (mg/kg)
0.020
0.015
0.010
0.005
0.000
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

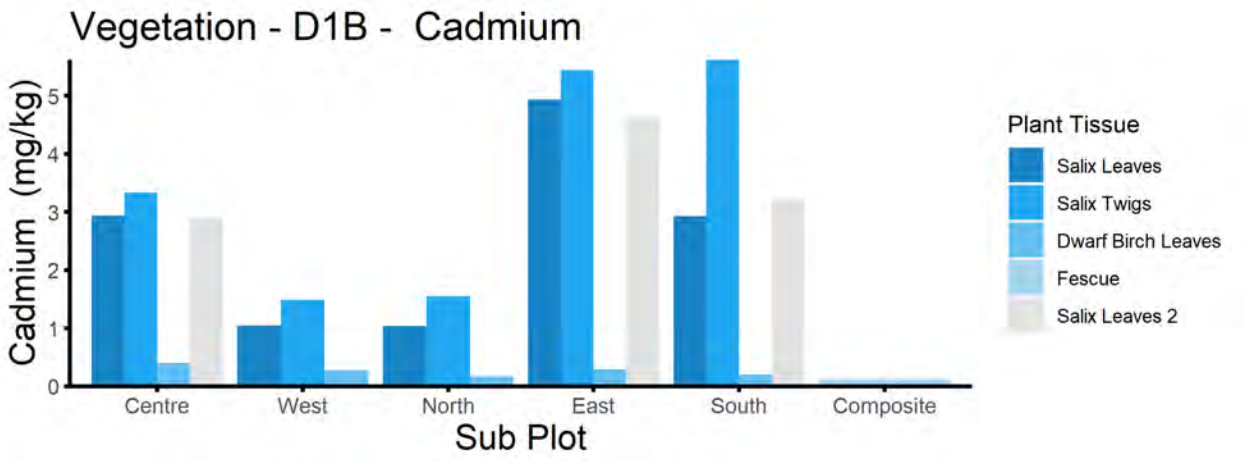

Vegetation - D1B - Arsenic
Arsenic (mg/kg)
0.3
0.2
0.1
0.0
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

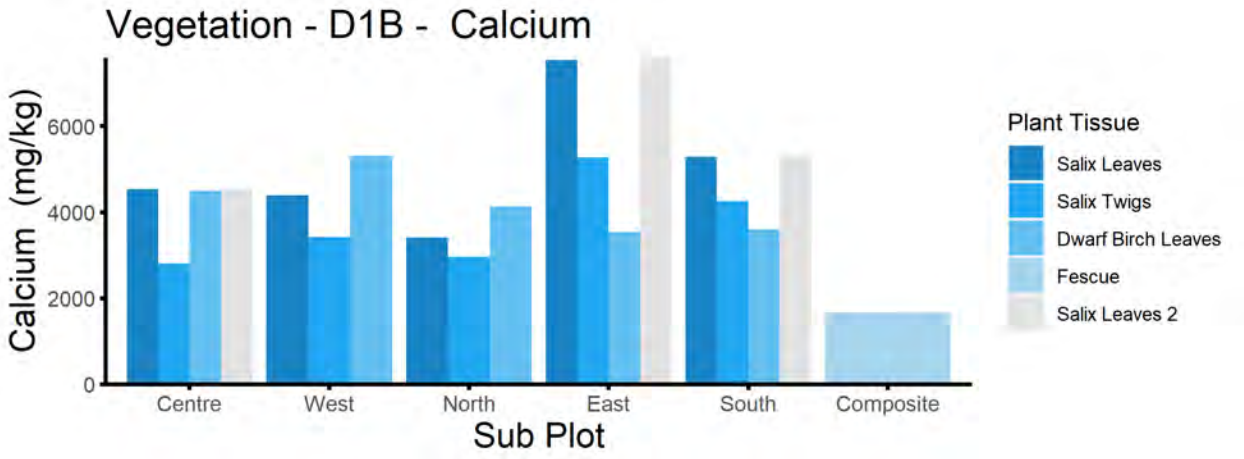

Vegetation - D1B - Barium
Barium (mg/kg)
0
20
40
60
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

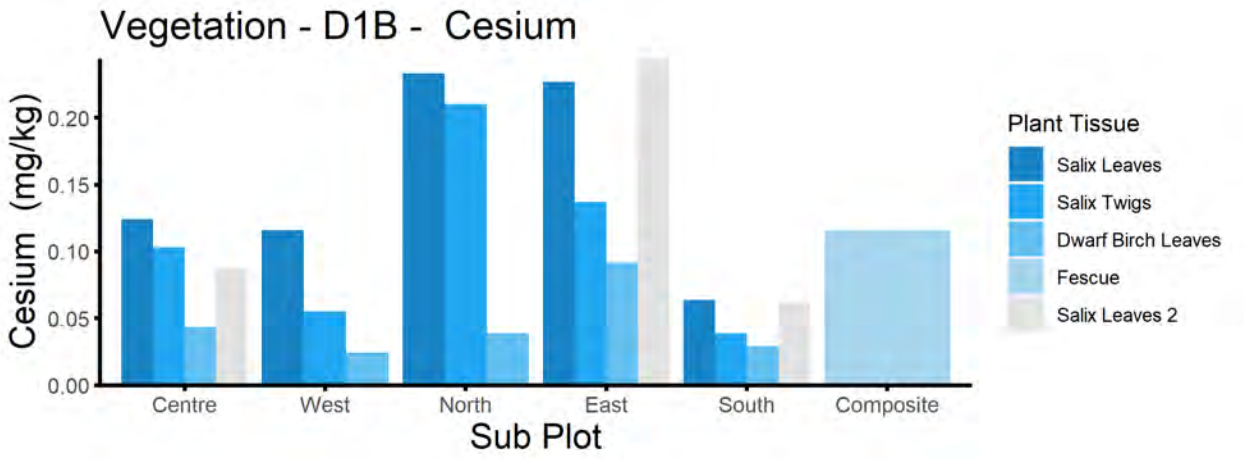

Vegetation - D1B - Beryllium
Beryllium (mg/kg)
0.000
0.005
0.010
0.015
0.020
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

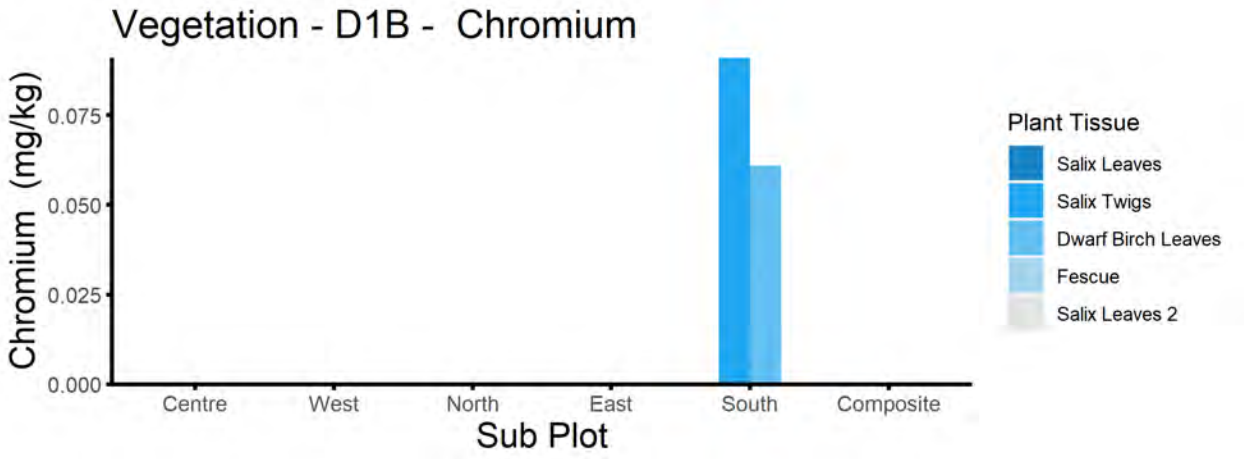

Vegetation - D1B - Bismuth
Bismuth (mg/kg)
0.000
0.004
0.008
0.012
0.016
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

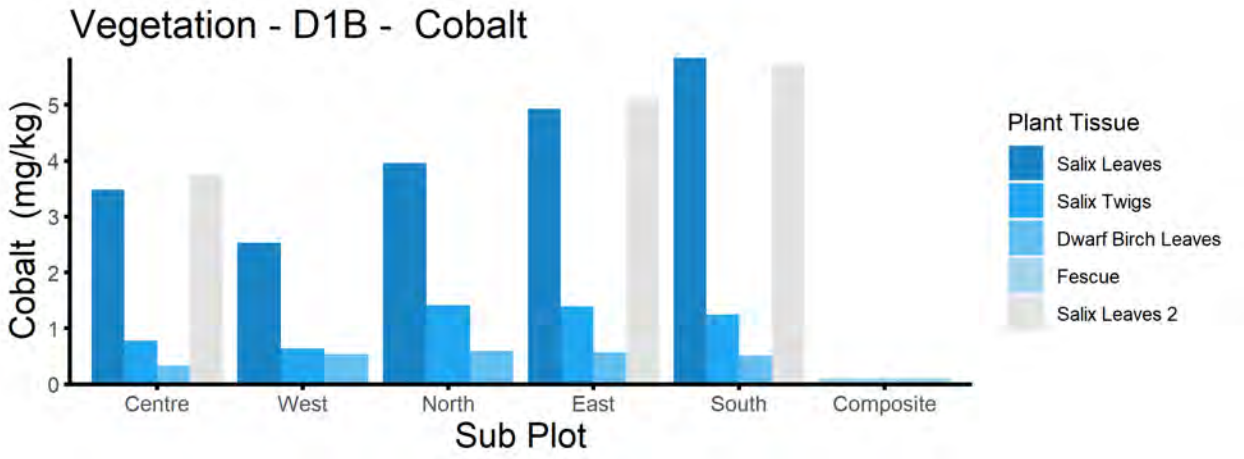

Vegetation - D1B - Boron
Boron (mg/kg)
0
2
4
6
8
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

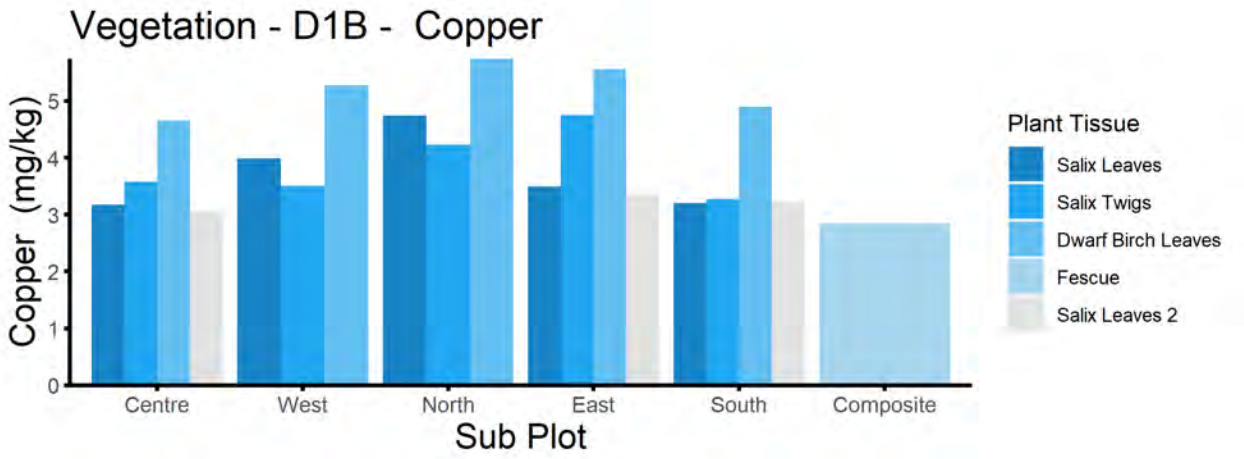

Vegetation - D1B - Cadmium
Cadmium (mg/kg)
0
1
2
3
4
5
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

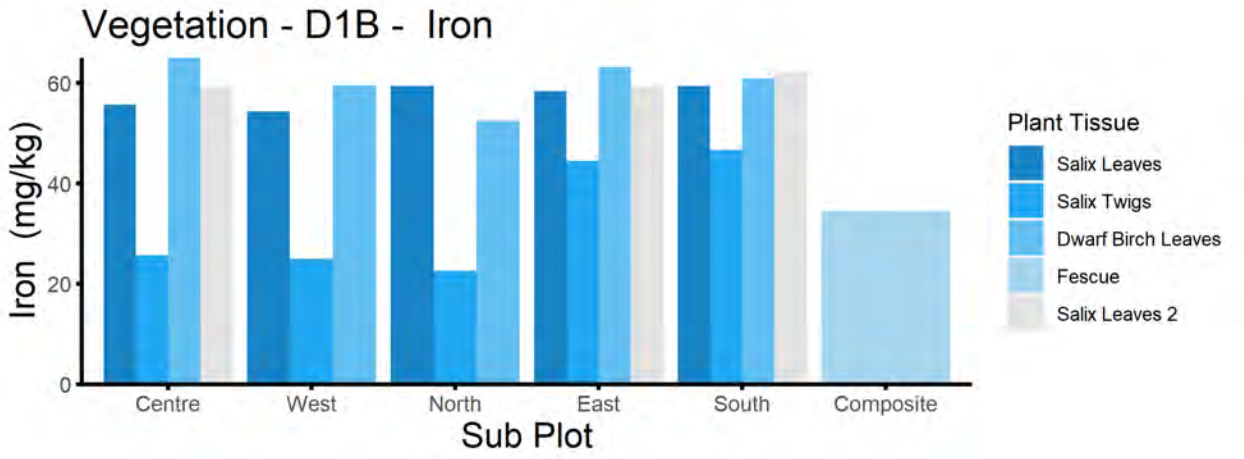

Vegetation - D1B - Calcium
Calcium (mg/kg)
0
2000
4000
6000
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

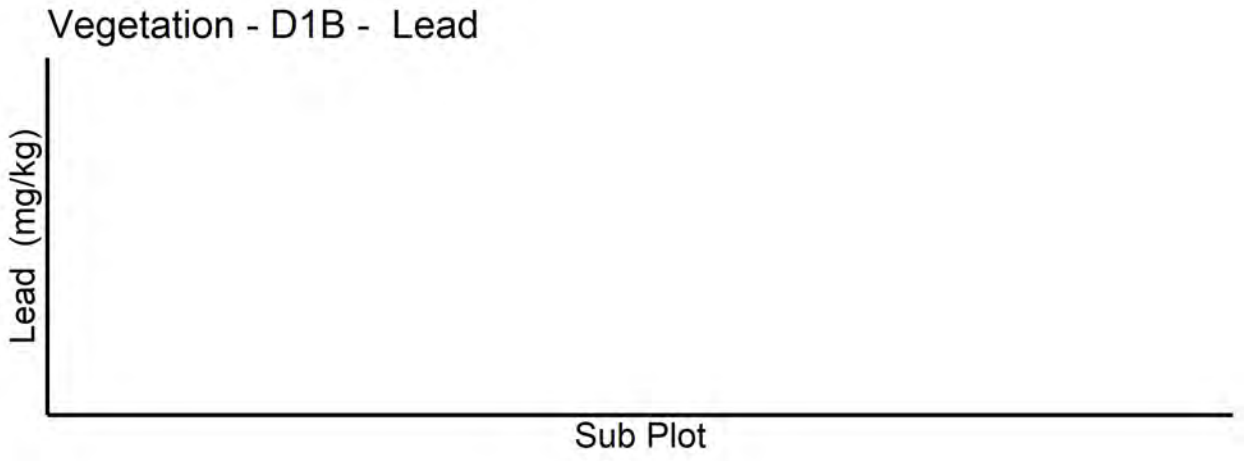

Vegetation - D1B - Cesium
Cesium (mg/kg)
0.20
0.15
0.10
0.05
0.00
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

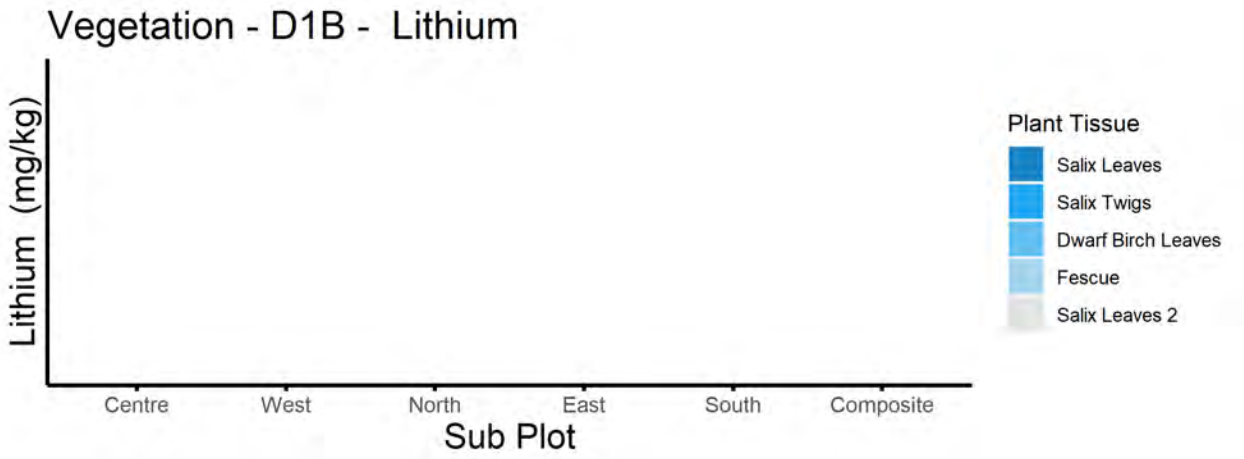

Vegetation - D1B - Chromium
Chromium (mg/kg)
0.075
0.050
0.025
0.000
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

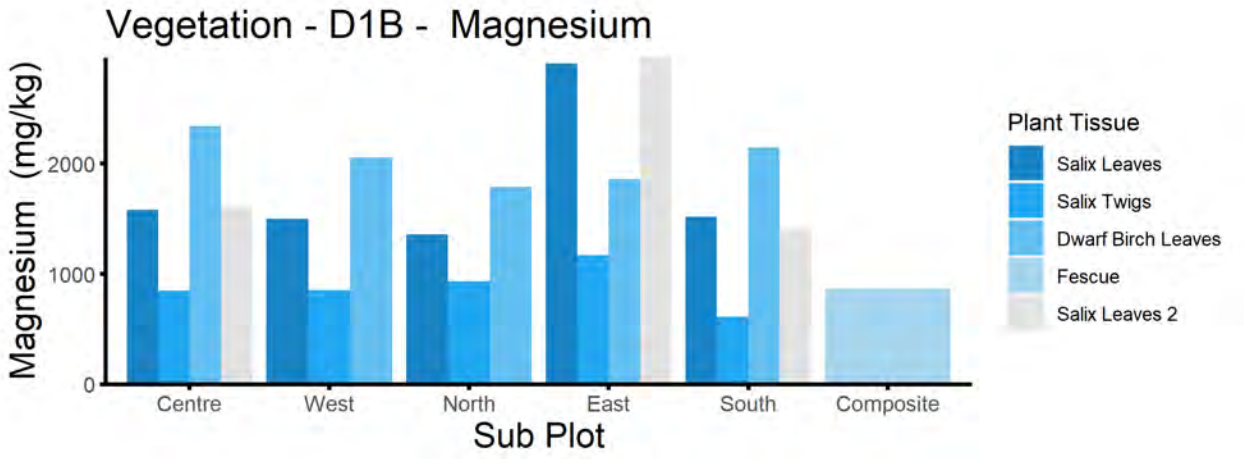

Vegetation - D1B - Cobalt
Cobalt (mg/kg)
5
4
3
2
1
0
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

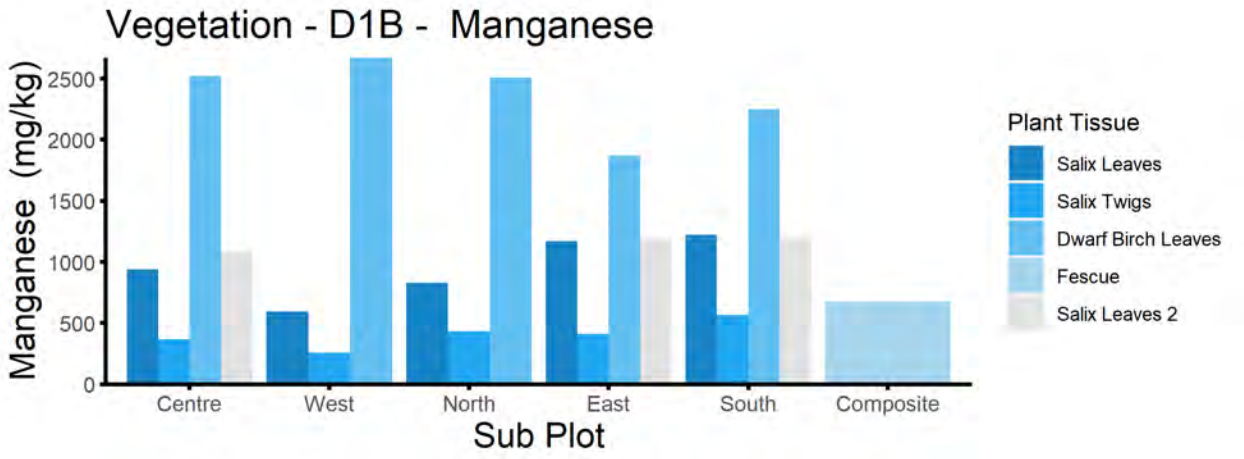

Vegetation - D1B - Copper
Copper (mg/kg)
0
1
2
3
4
5
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

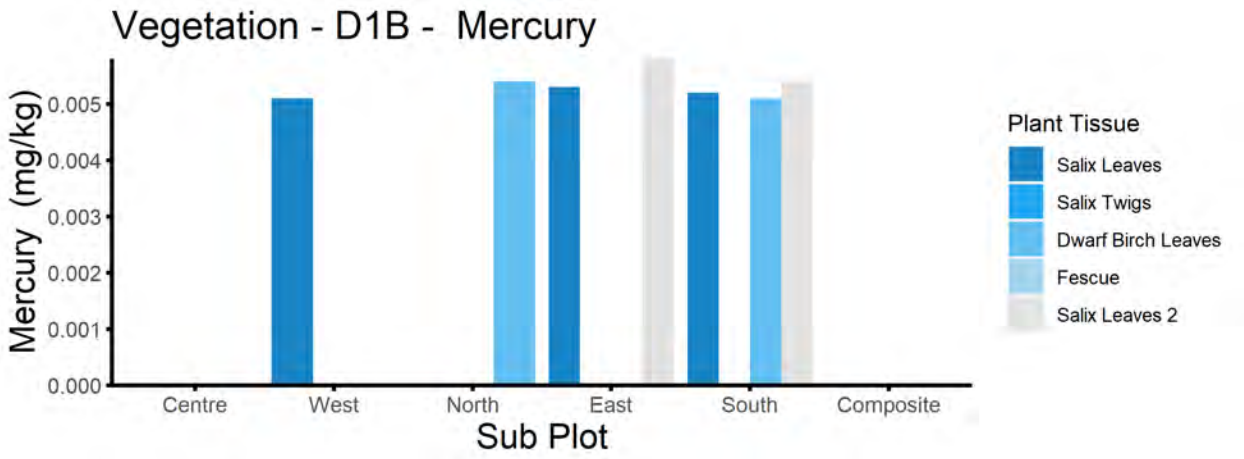

Vegetation - D1B - Iron
Iron (mg/kg)
0
20
40
60
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

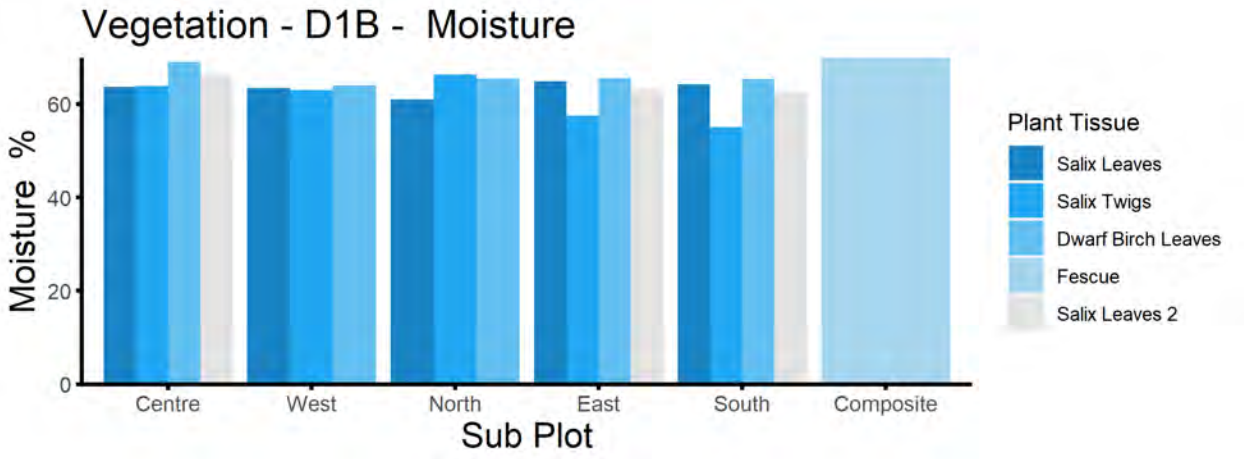

Vegetation - D1B - Lead
Lead (mg/kg)
Sub Plot

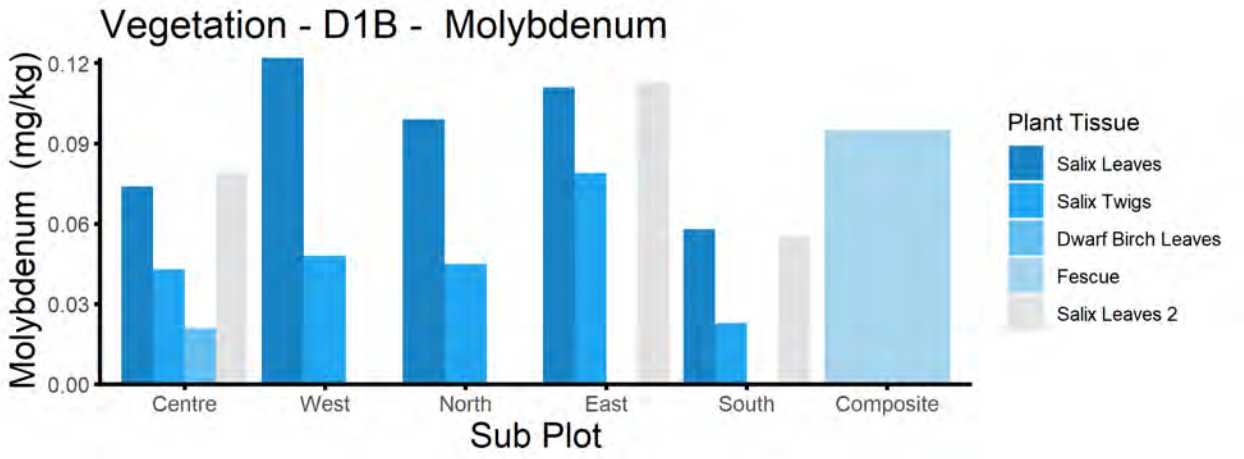

Vegetation - D1B - Lithium
Lithium (mg/kg)
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

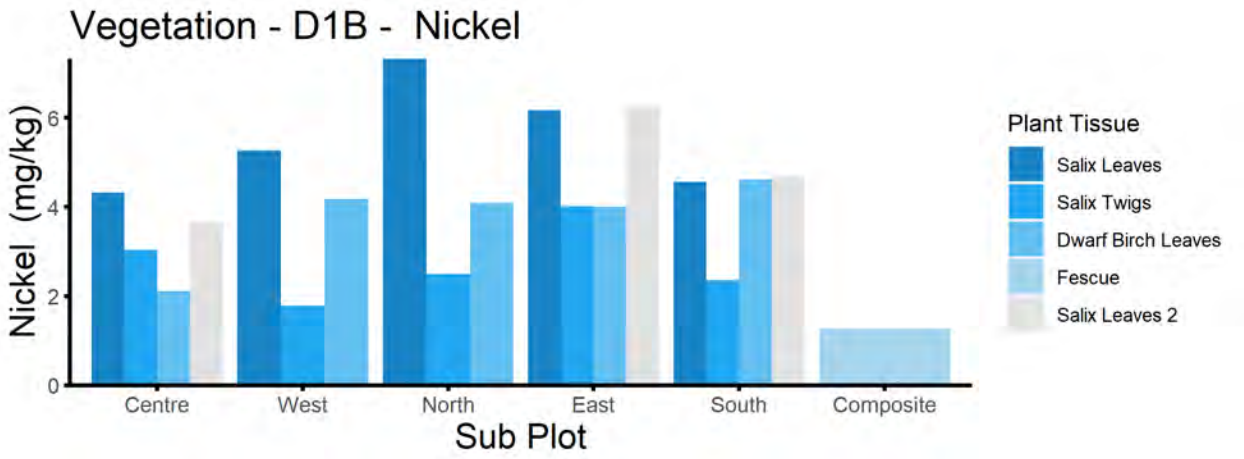

Vegetation - D1B - Magnesium
Magnesium (mg/kg)
2000
1000
0
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

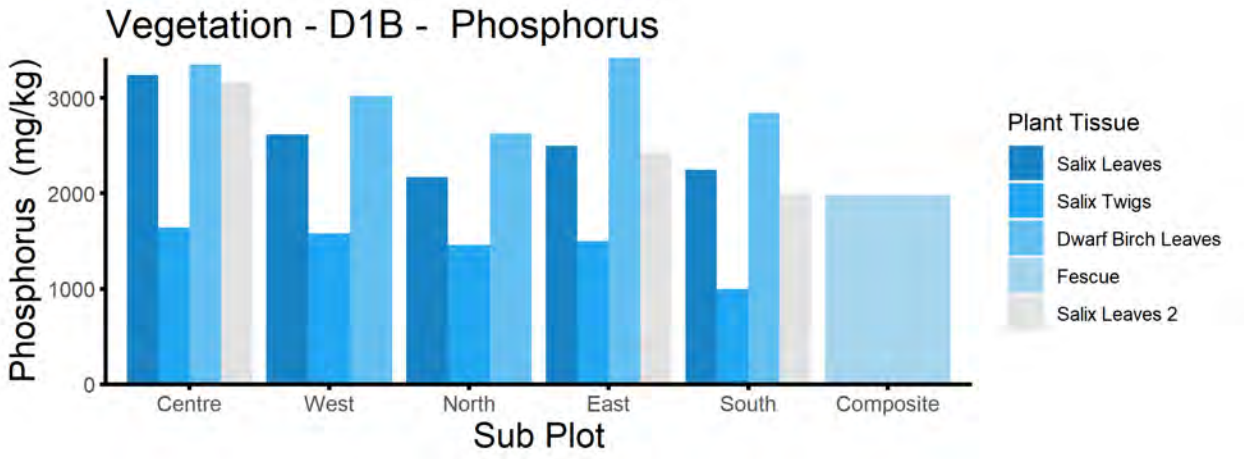

Vegetation - D1B - Manganese
Manganese (mg/kg)
2500
2000
1500
1000
500
0
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

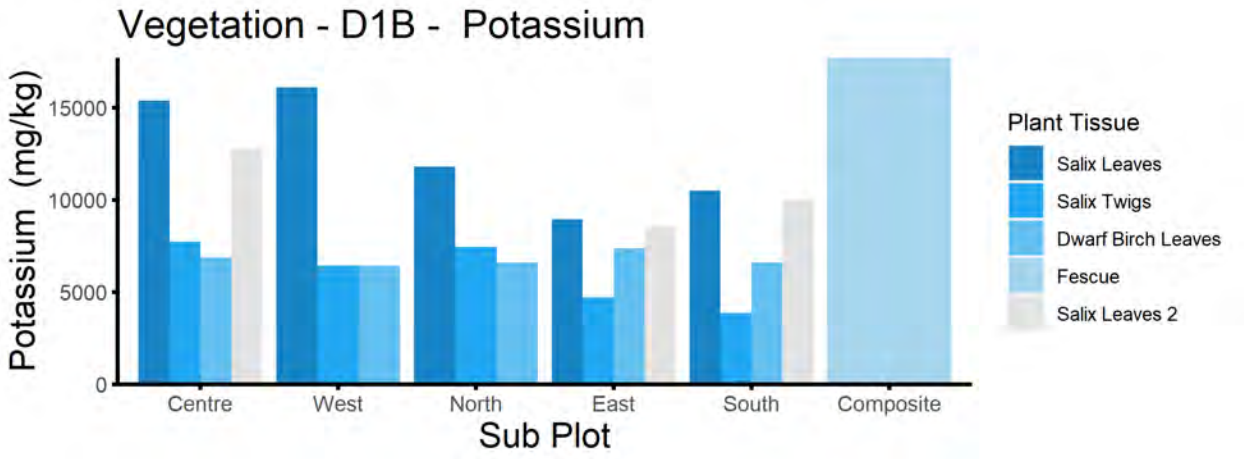

Vegetation - D1B - Mercury
Mercury (mg/kg)
0.005
0.004
0.003
0.002
0.001
0.000
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

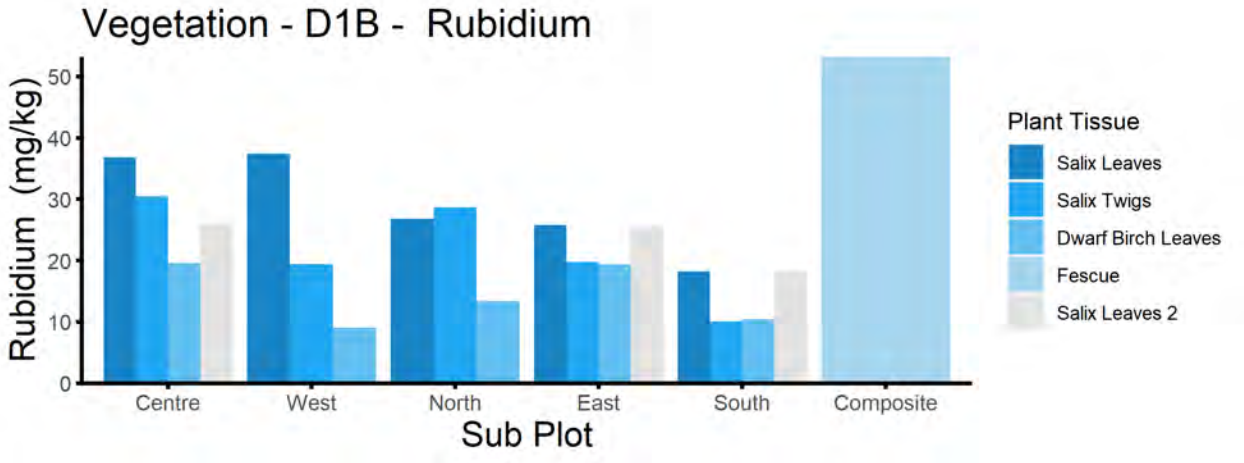

Vegetation - D1B - Moisture
Moisture %
60
40
20
0
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

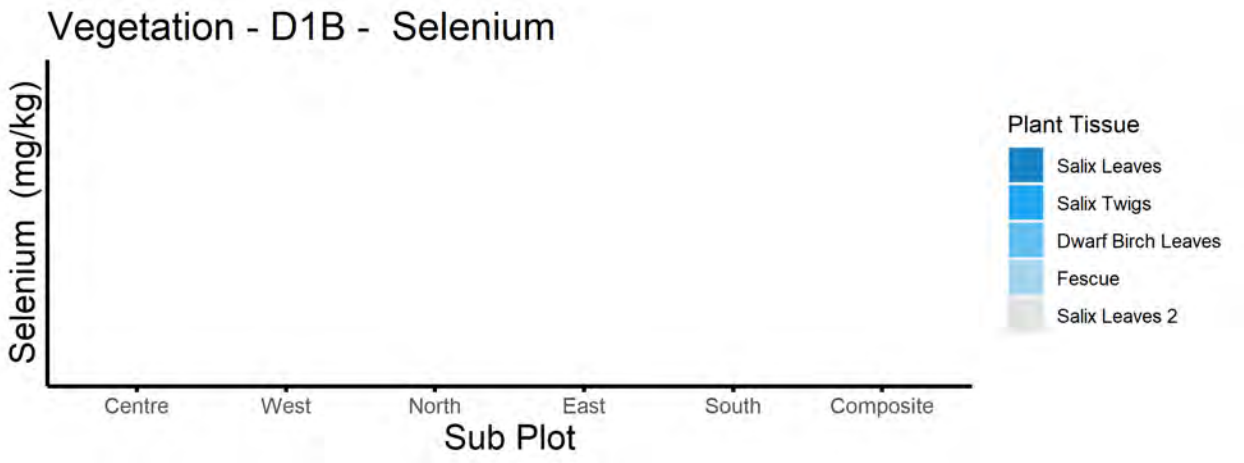

Vegetation - D1B - Molybdenum
Molybdenum (mg/kg)
0.12
0.09
0.06
0.03
0.00
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

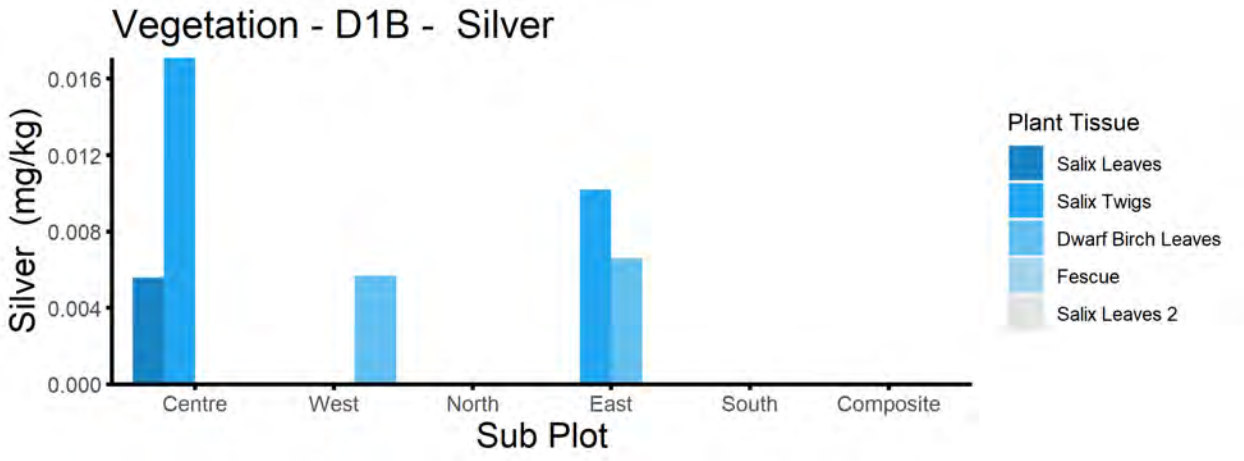

Vegetation - D1B - Nickel
Nickel (mg/kg)
0
2
4
6
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

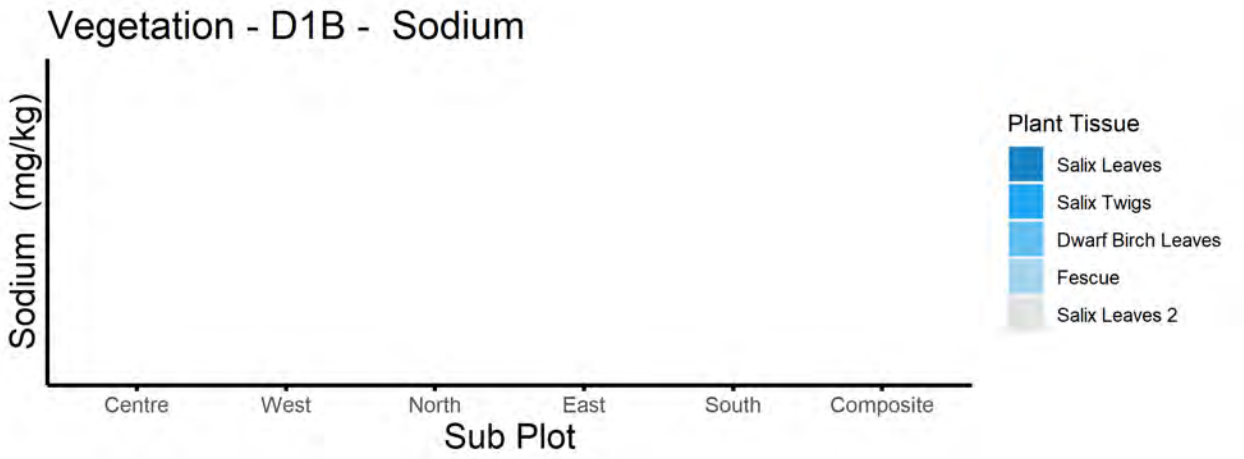

Vegetation - D1B - Phosphorus
Phosphorus (mg/kg)
0
1000
2000
3000
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

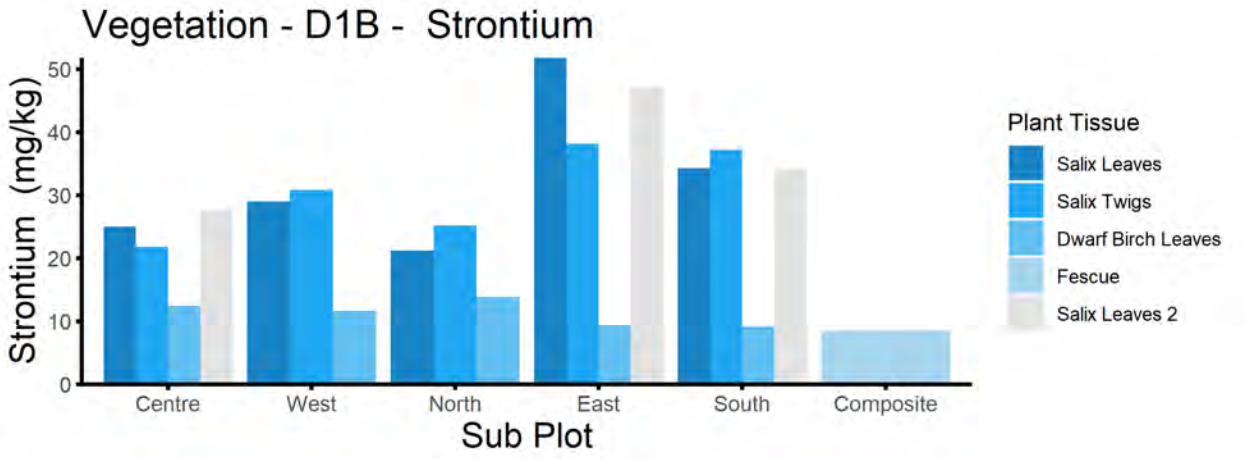

Vegetation - D1B - Potassium
Potassium (mg/kg)
0
5000
10000
15000
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

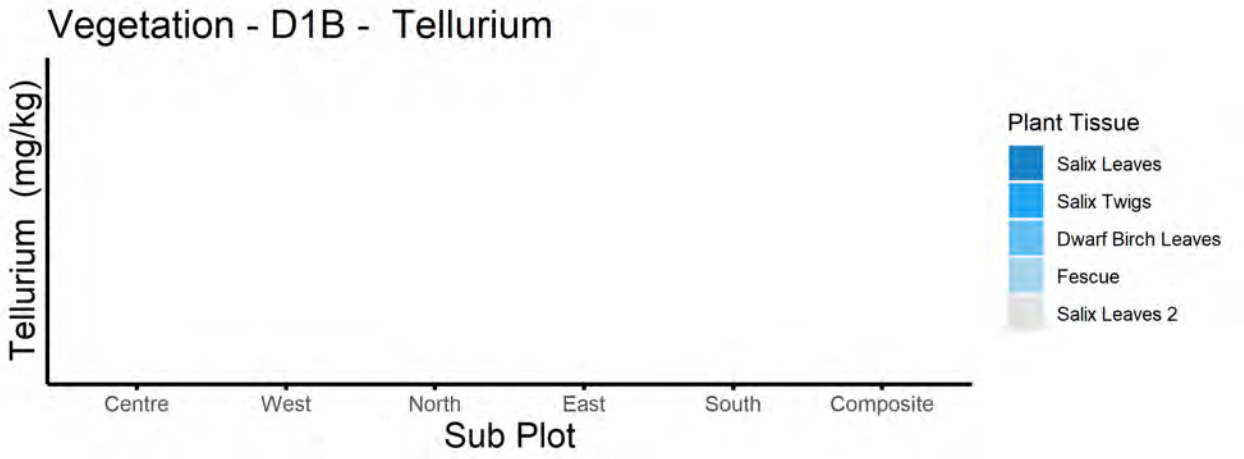

Vegetation - D1B - Rubidium
Rubidium (mg/kg)
0
10
20
30
40
50
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

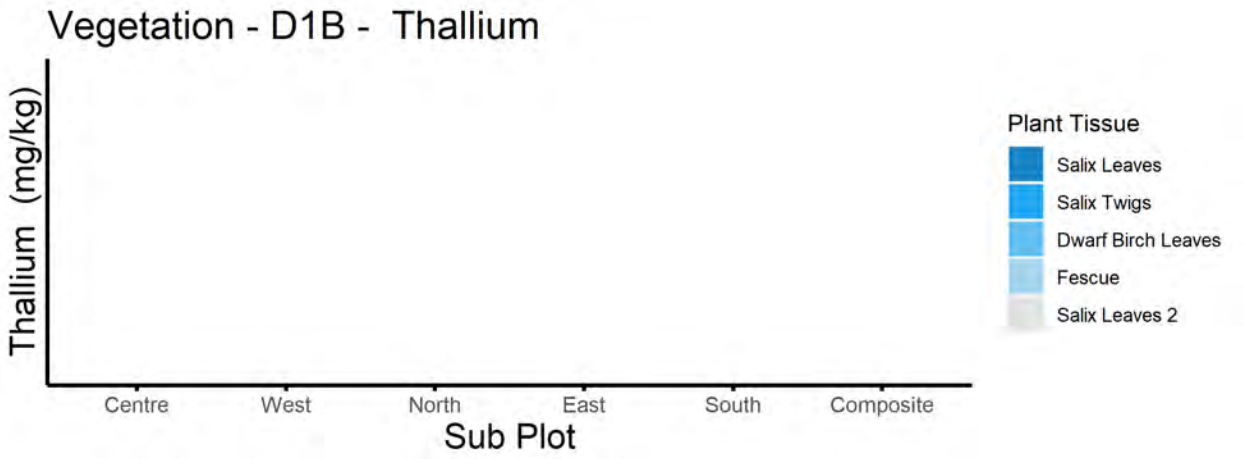

Vegetation - D1B - Selenium
Selenium (mg/kg)
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

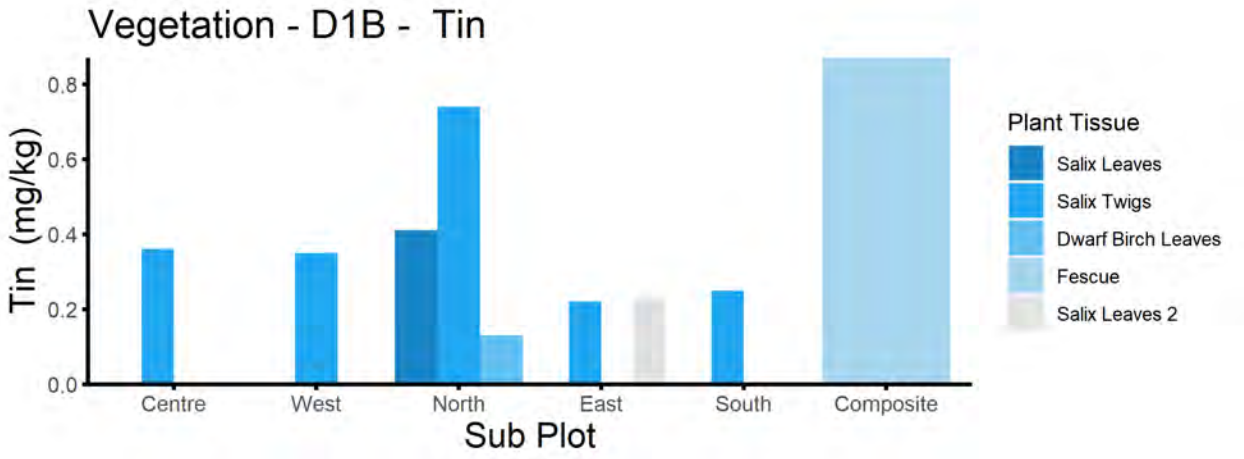

Vegetation - D1B - Silver
Silver (mg/kg)
0.000
0.004
0.008
0.012
0.016
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

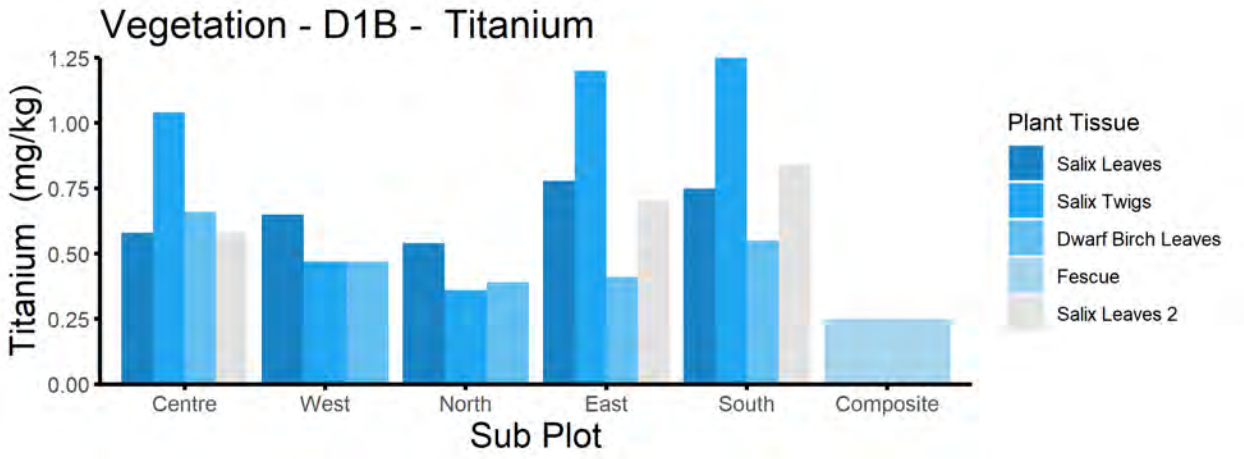

Vegetation - D1B - Sodium
Sodium (mg/kg)
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

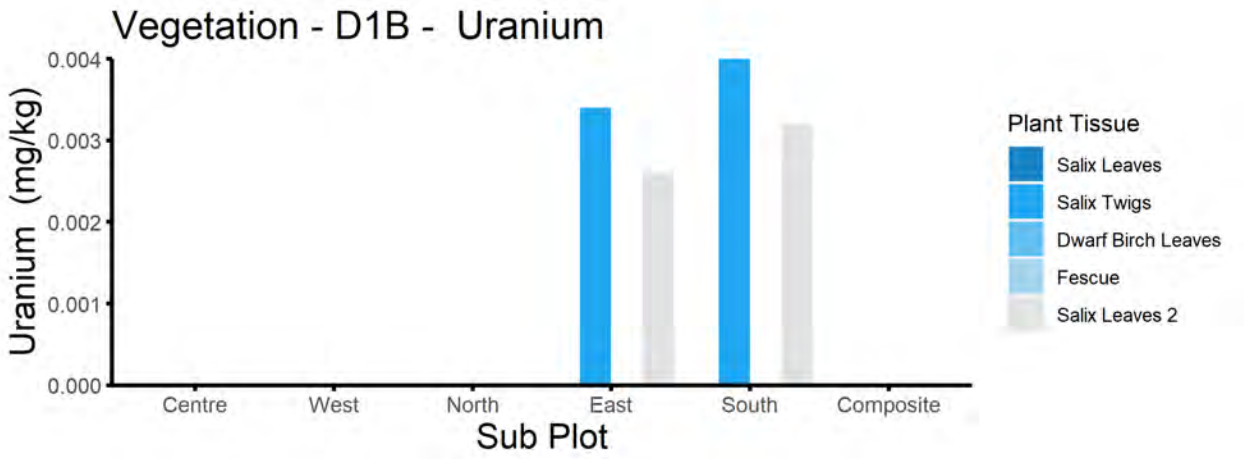

Vegetation - D1B - Strontium
Strontium (mg/kg)
0
10
20
30
40
50
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

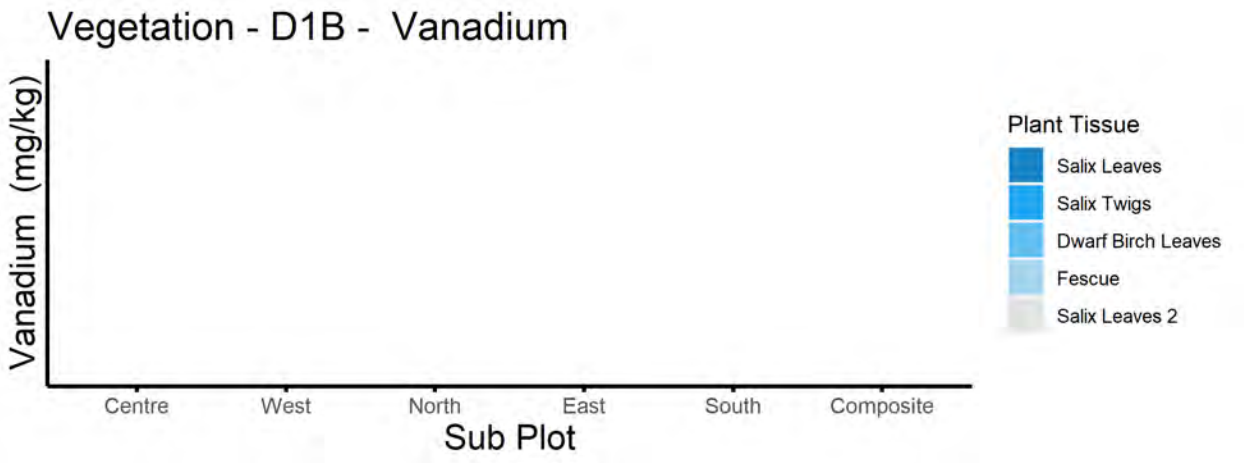

Vegetation - D1B - Tellurium
Tellurium (mg/kg)
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

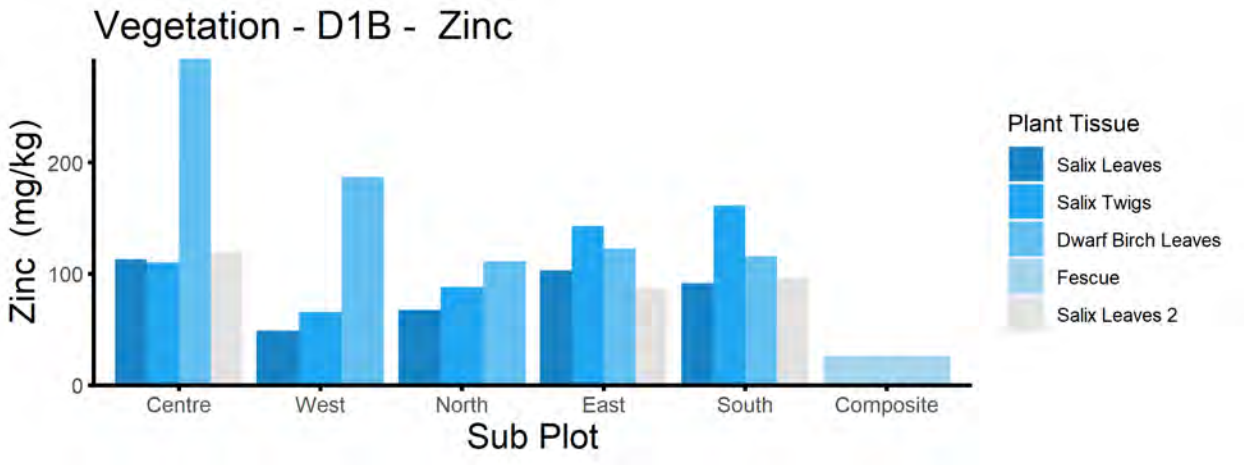

Vegetation - D1B - Thallium
Thallium (mg/kg)
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

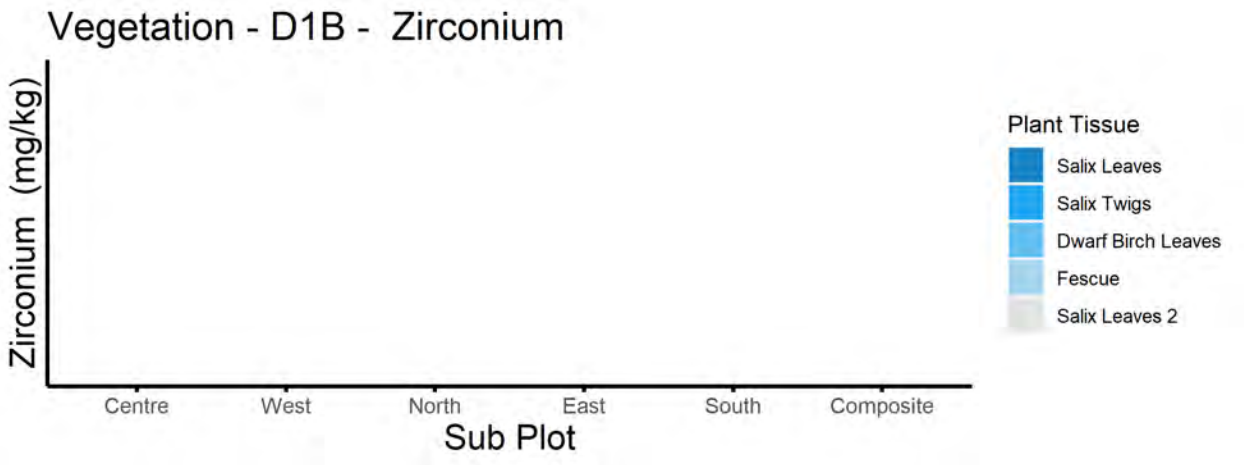

Vegetation - D1B - Tin
Tin (mg/kg)
0.0
0.2
0.4
0.6
0.8
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

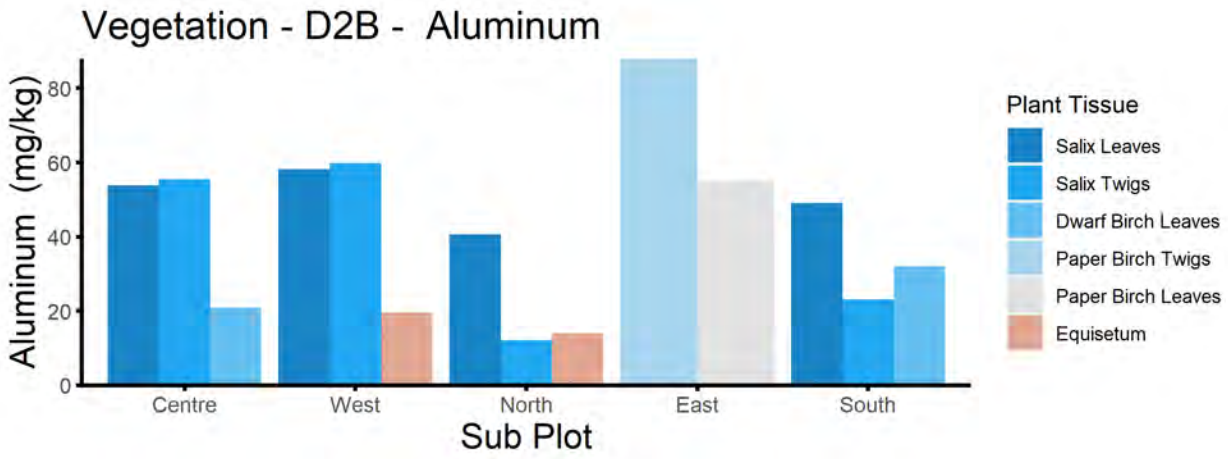

Vegetation - D1B - Titanium
Titanium (mg/kg)
0.00
0.25
0.50
0.75
1.00
1.25
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

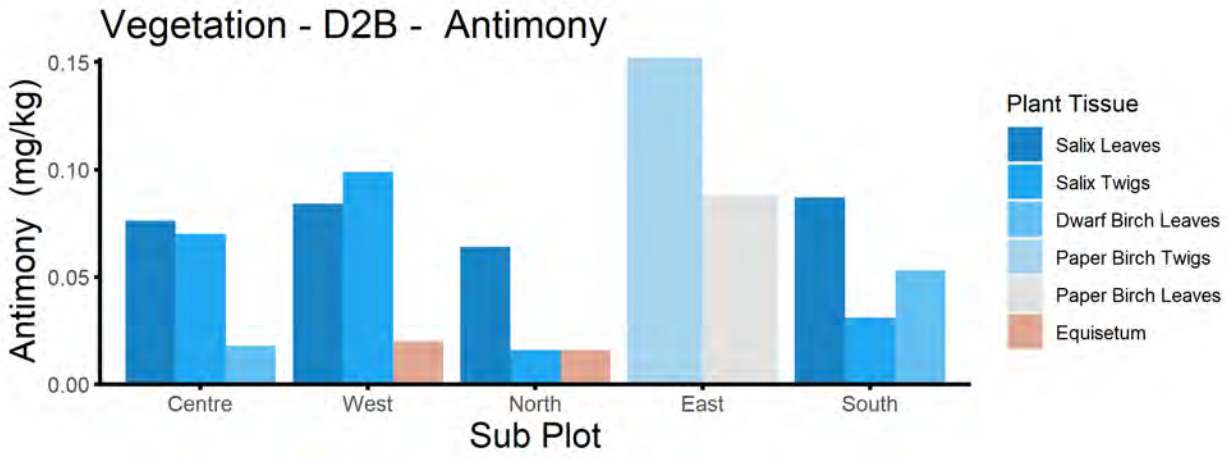

Vegetation - D1B - Uranium
Uranium (mg/kg)
0.004
0.003
0.002
0.001
0.000
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

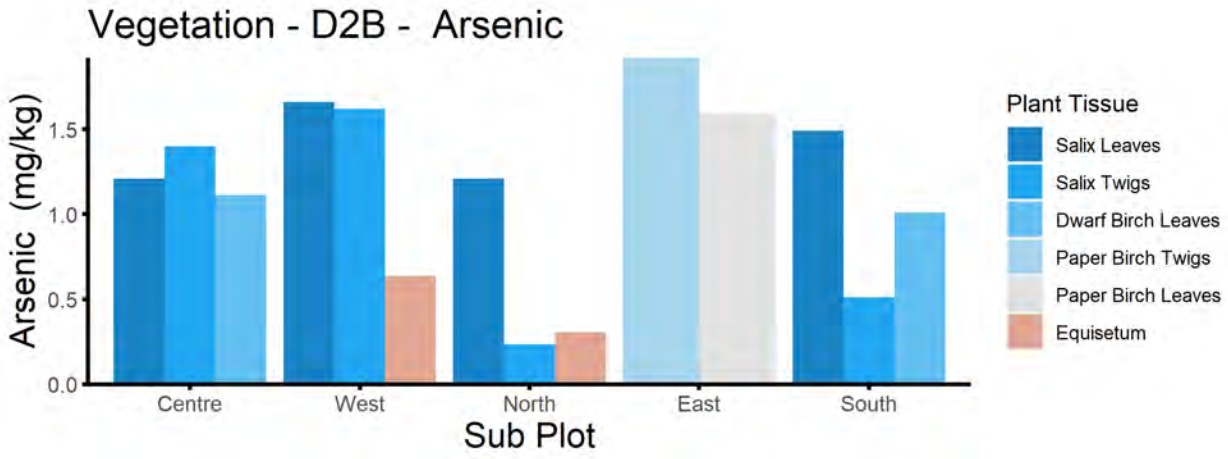

Vegetation - D1B - Vanadium
Vanadium (mg/kg)
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

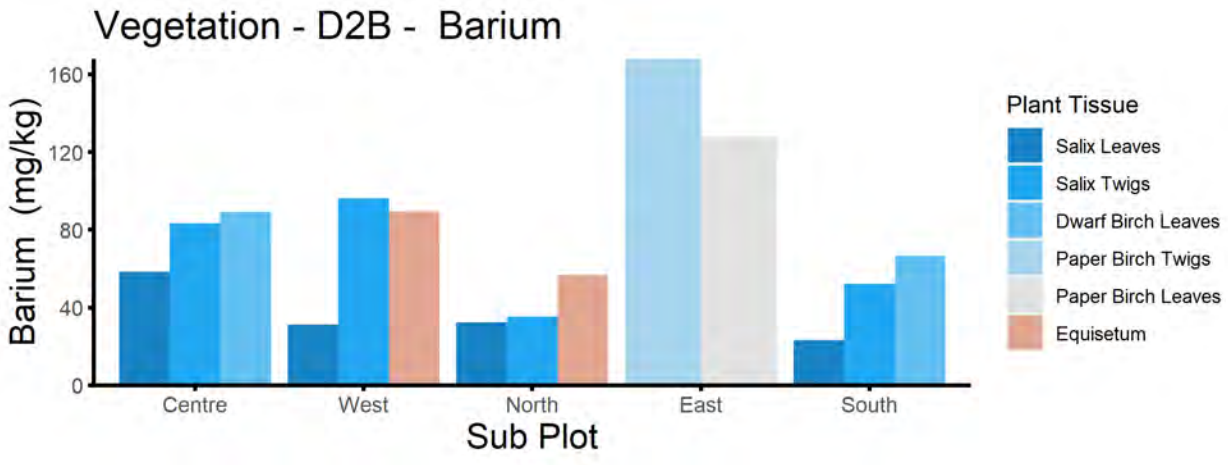

Vegetation - D1B - Zinc
Zinc (mg/kg)
200
100
0
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

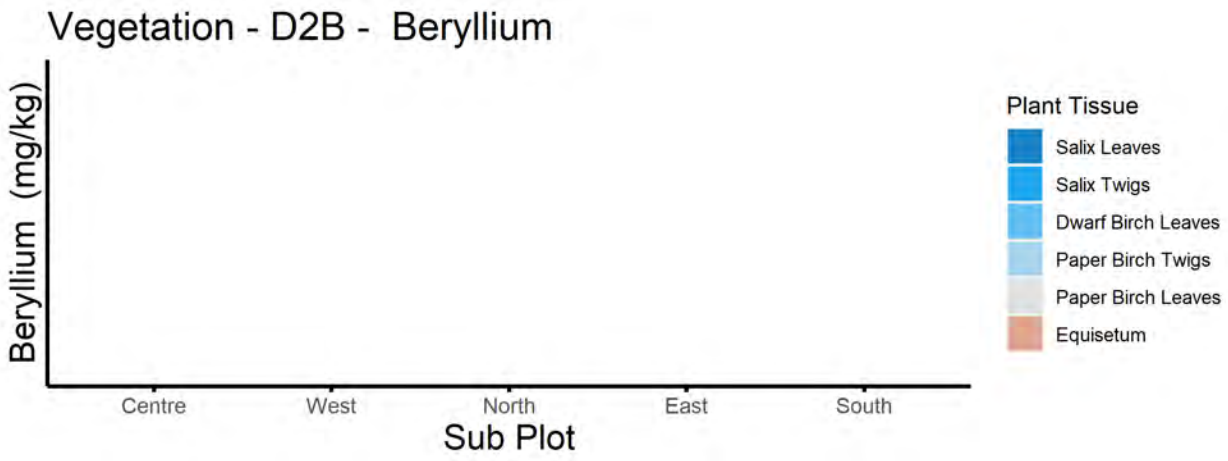

Vegetation - D1B - Zirconium
Zirconium (mg/kg)
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

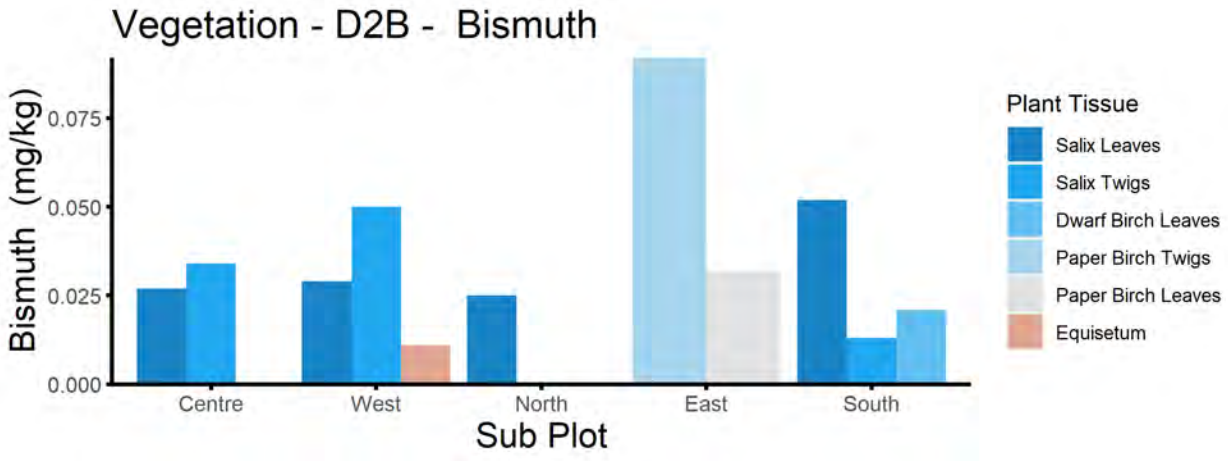

Vegetation - D2B - Aluminum
Aluminum (mg/kg)
0
20
40
60
80
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

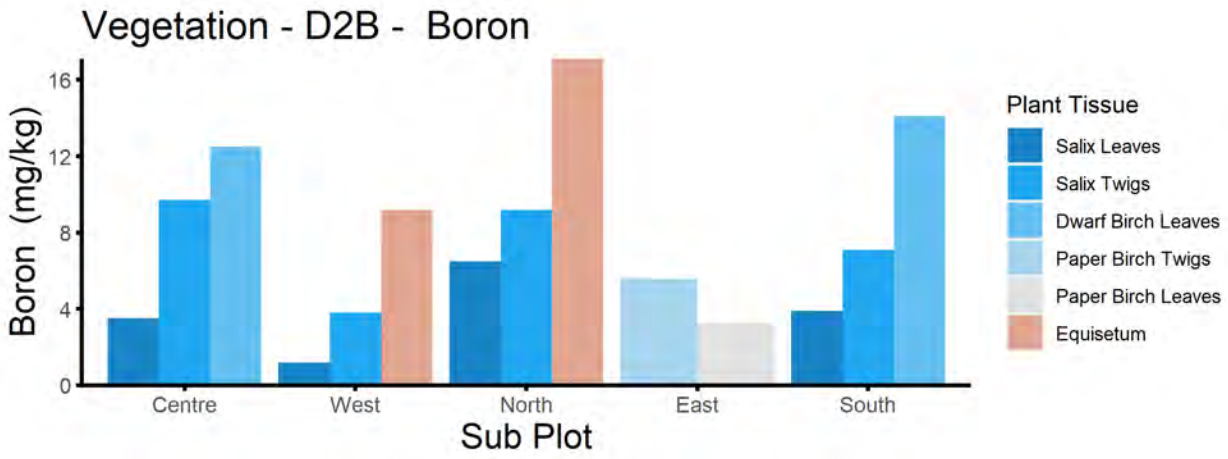

Vegetation - D2B - Antimony
Antimony (mg/kg)
0.00
0.05
0.10
0.15
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

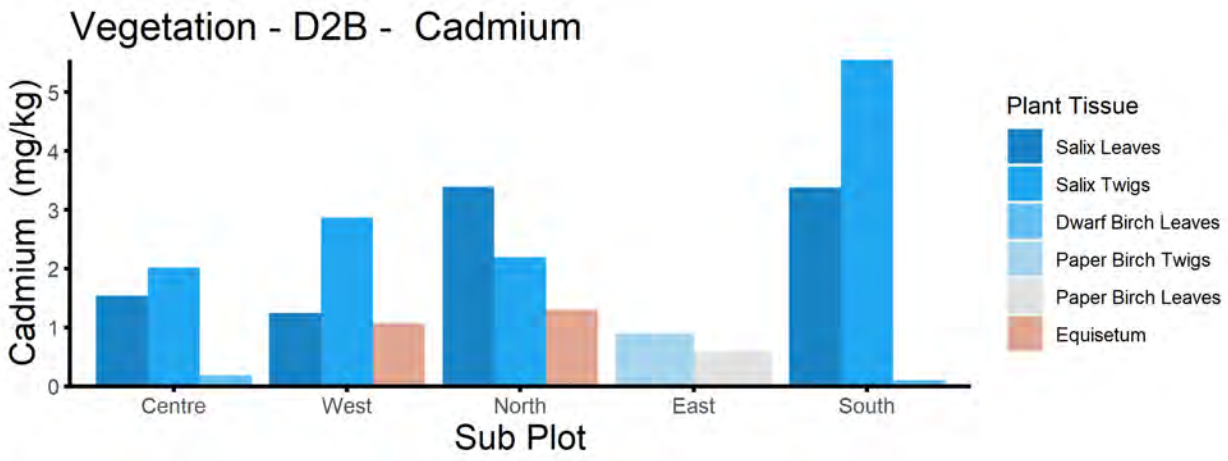

Vegetation - D2B - Arsenic
Arsenic (mg/kg)
0.0
0.5
1.0
1.5
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

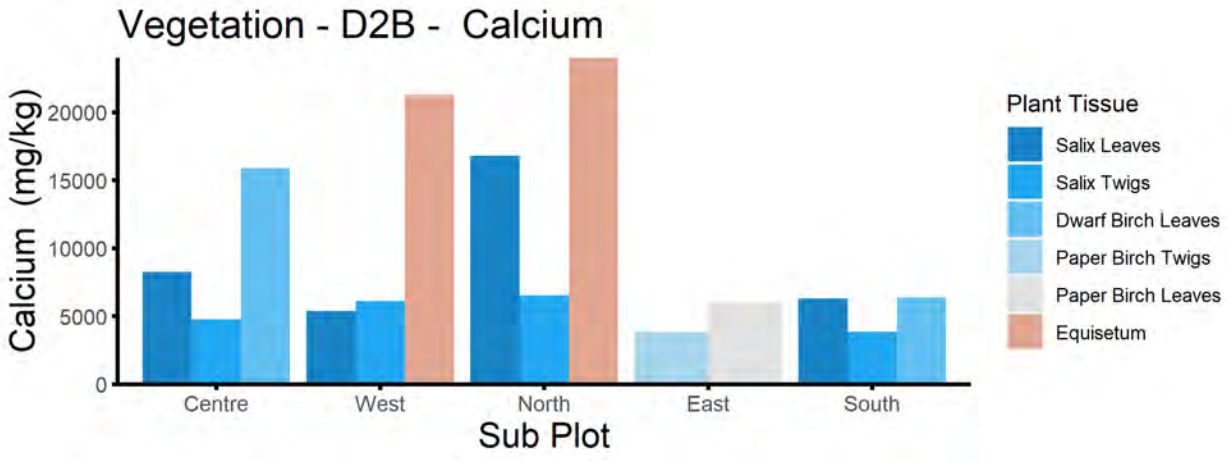

Vegetation - D2B - Barium
Barium (mg/kg)
160
120
80
40
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

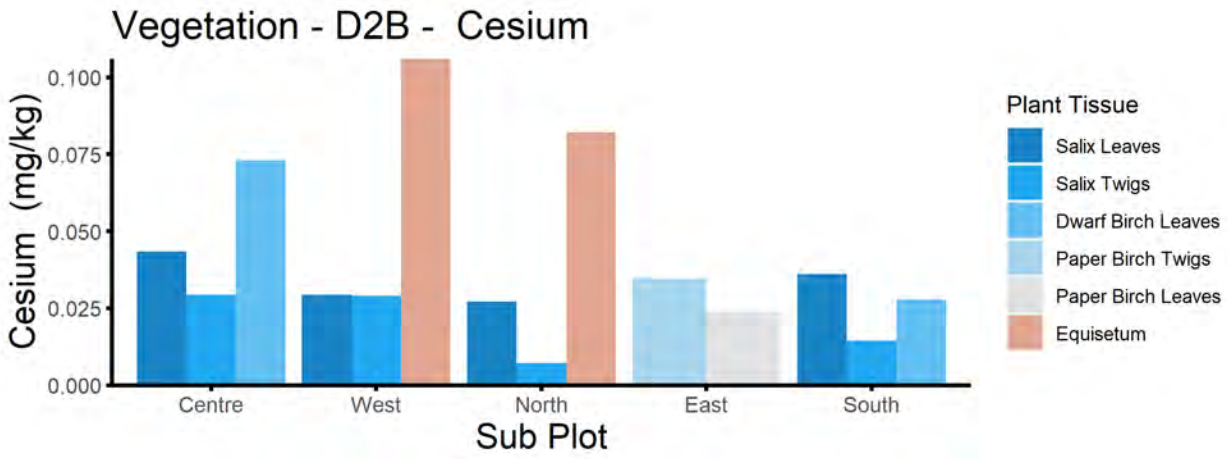

Vegetation - D2B - Beryllium
Beryllium (mg/kg)
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

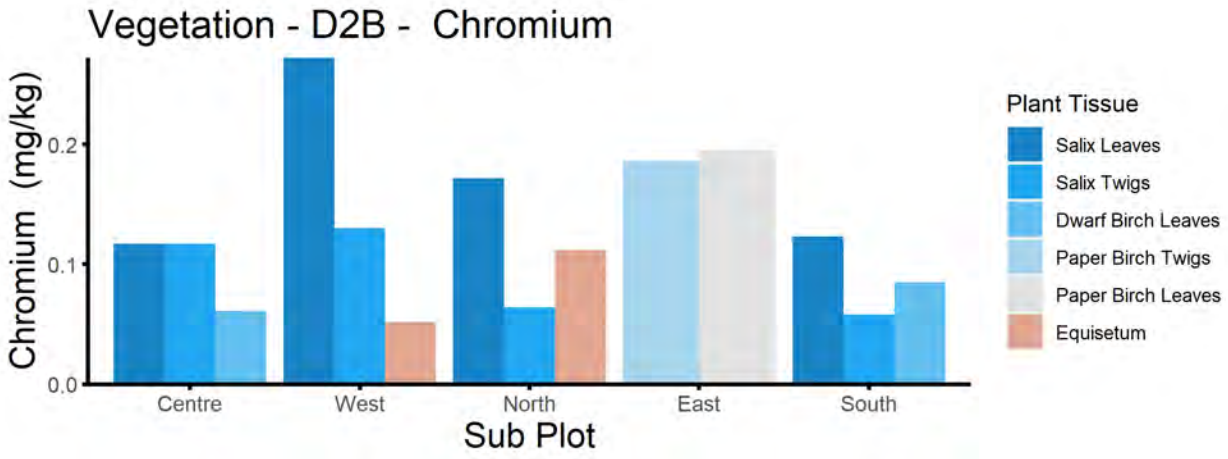

Vegetation - D2B - Bismuth
Bismuth (mg/kg)
0.075
0.050
0.025
0.000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

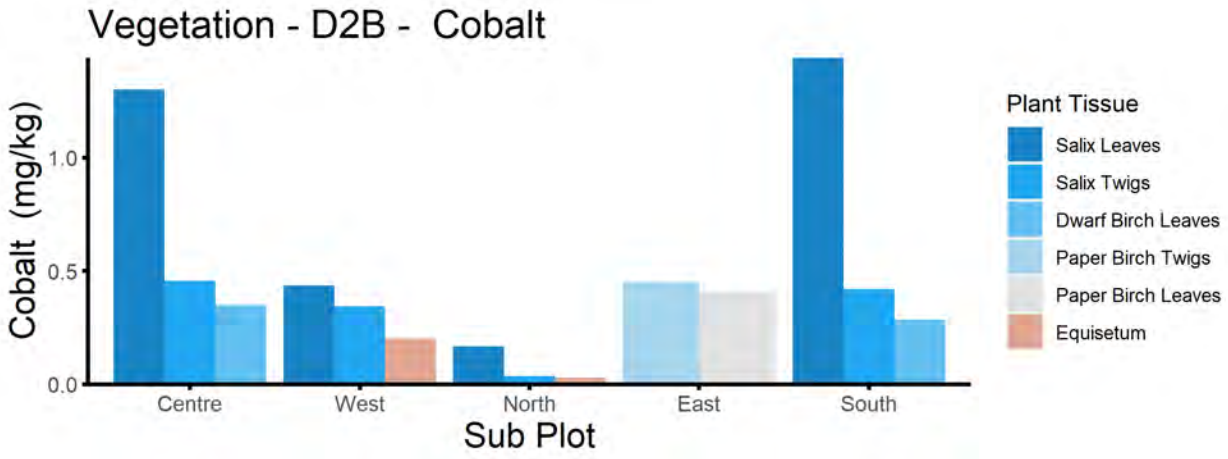

Vegetation - D2B - Boron
Boron (mg/kg)
0
4
8
12
16
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

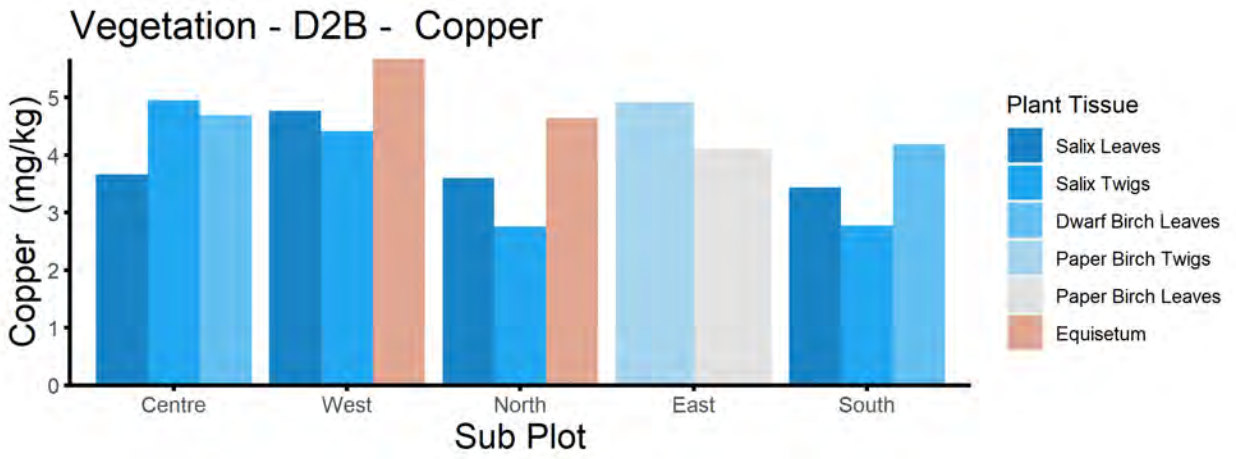

Vegetation - D2B - Cadmium
Cadmium (mg/kg)
0
1
2
3
4
5
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

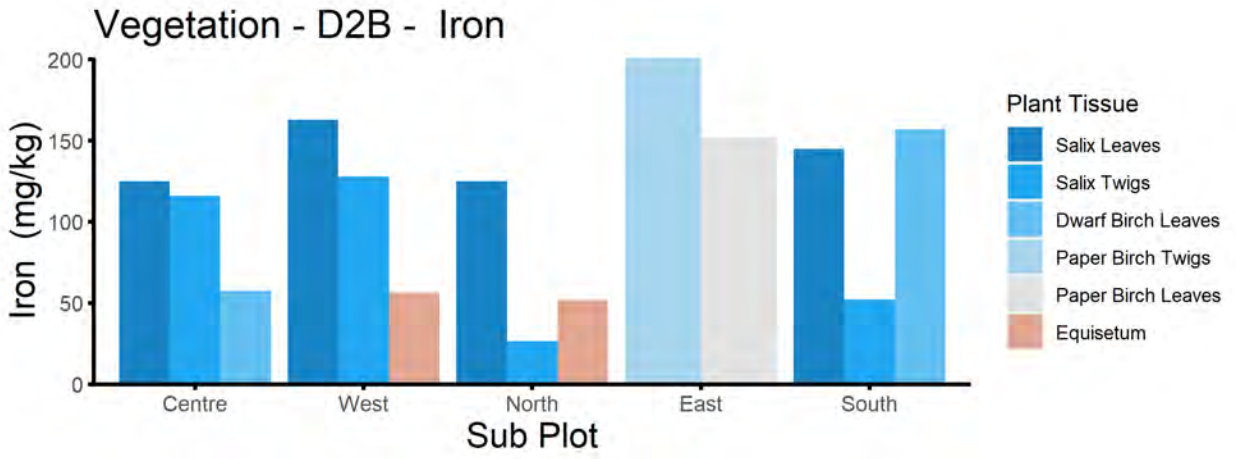

Vegetation - D2B - Calcium
Calcium (mg/kg)
0
5000
10000
15000
20000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

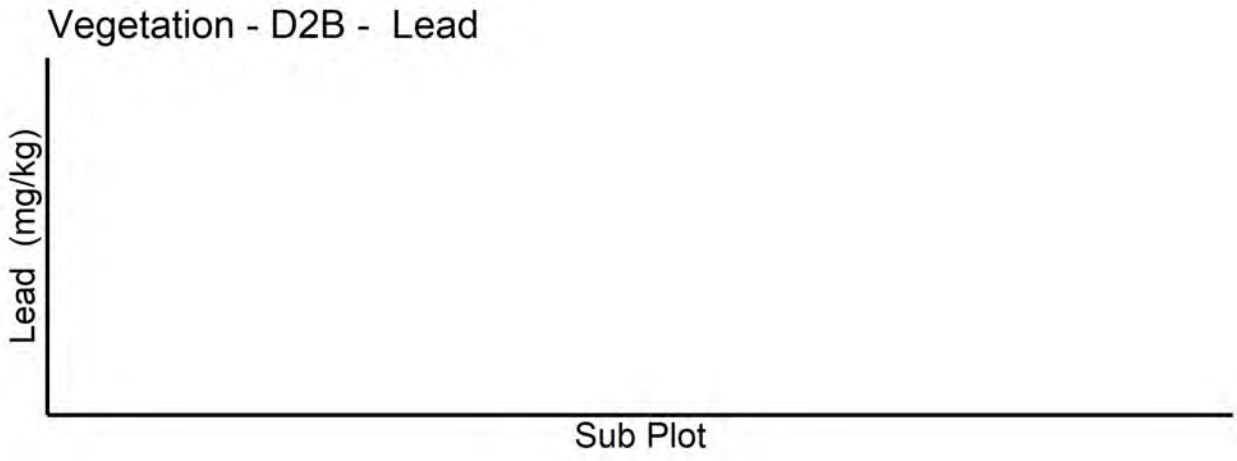

Vegetation - D2B - Cesium
Cesium (mg/kg)
0.100
0.075
0.050
0.025
0.000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

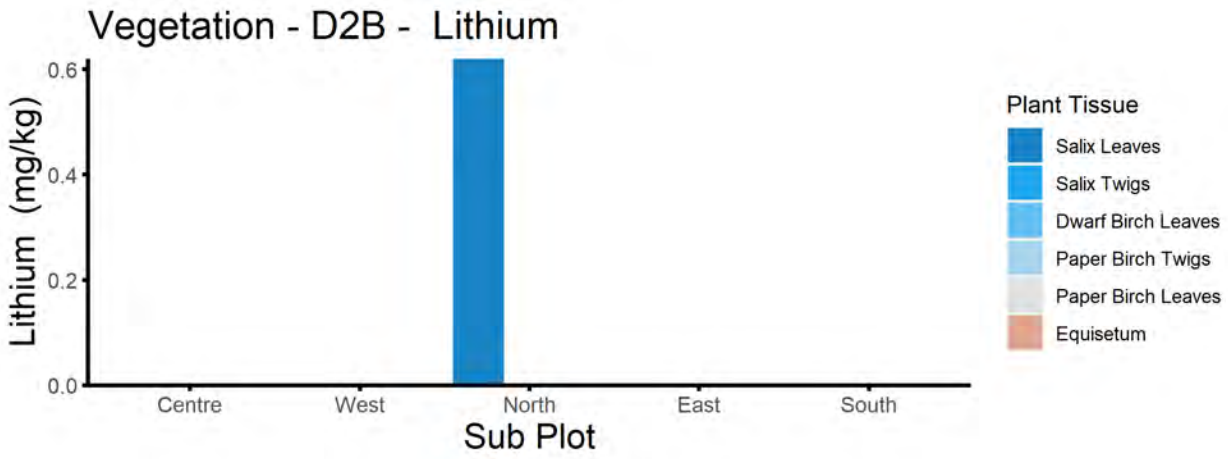

Vegetation - D2B - Chromium
Chromium (mg/kg)
0.2
0.1
0.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

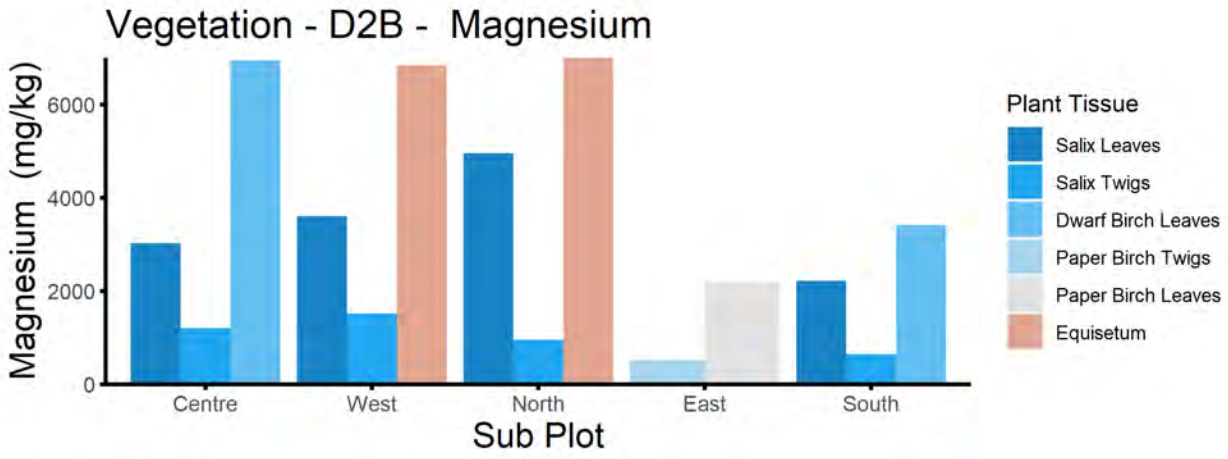

Vegetation - D2B - Cobalt
Cobalt (mg/kg)
1.0
0.5
0.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

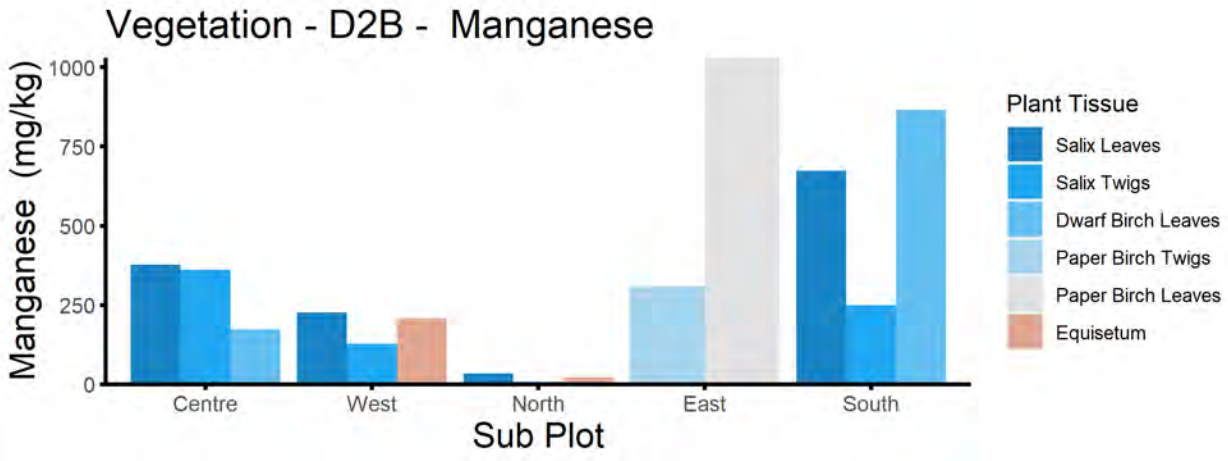

Vegetation - D2B - Copper
Copper (mg/kg)
0
1
2
3
4
5
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

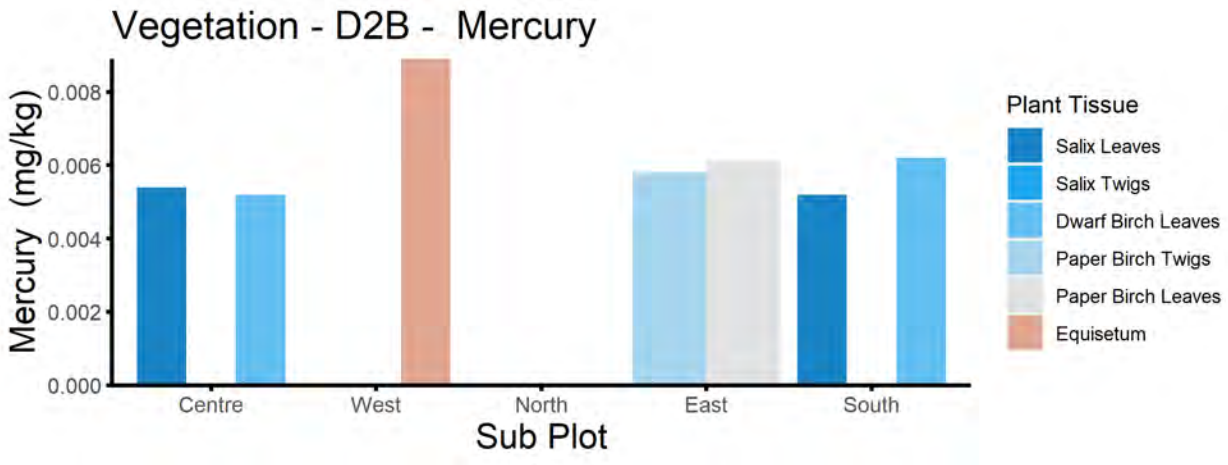

Vegetation - D2B - Iron
Iron (mg/kg)
0
50
100
150
200
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

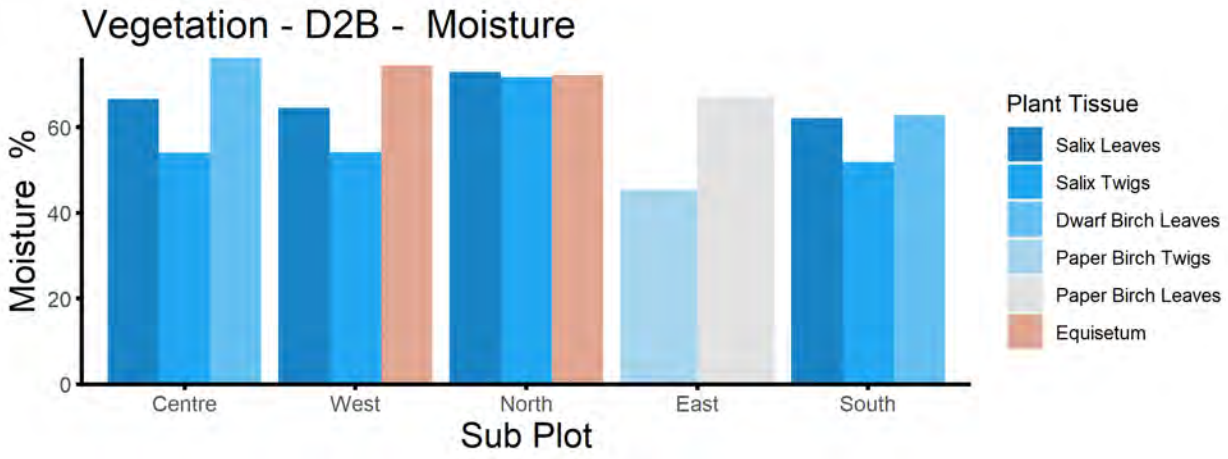

Vegetation - D2B - Lead
Lead (mg/kg)
Sub Plot

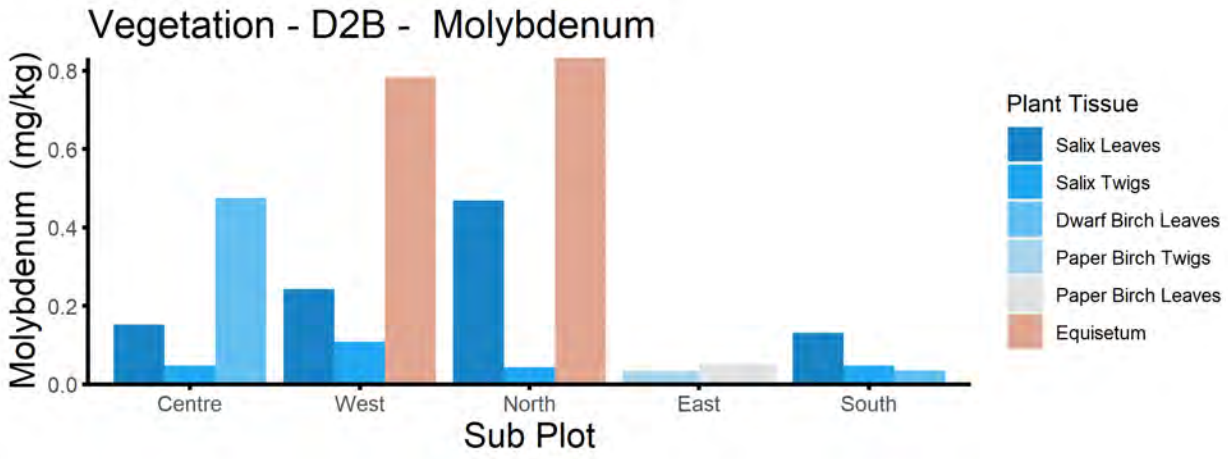

Vegetation - D2B - Lithium
Lithium (mg/kg)
0.6
0.4
0.2
0.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

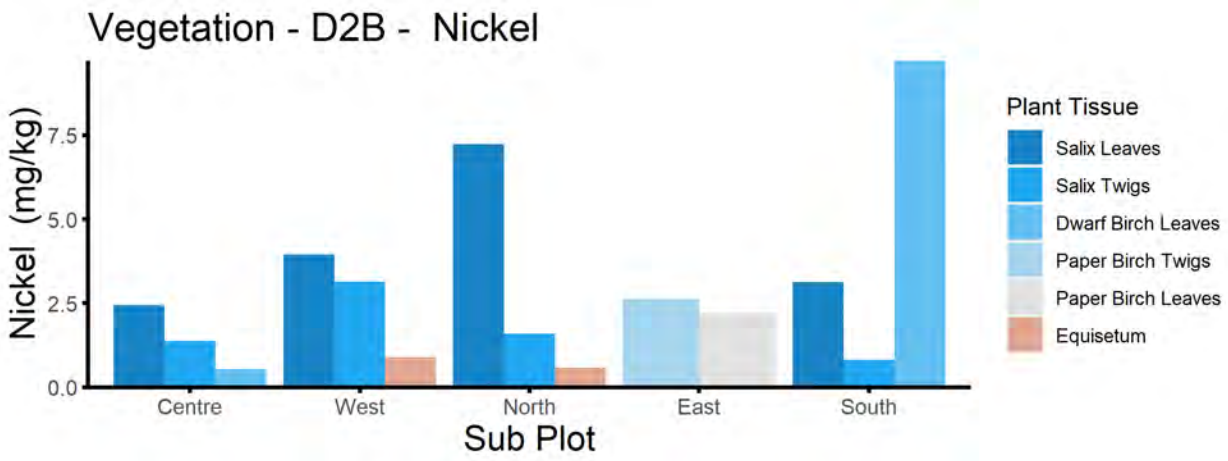

Vegetation - D2B - Magnesium
Magnesium (mg/kg)
6000
4000
2000
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

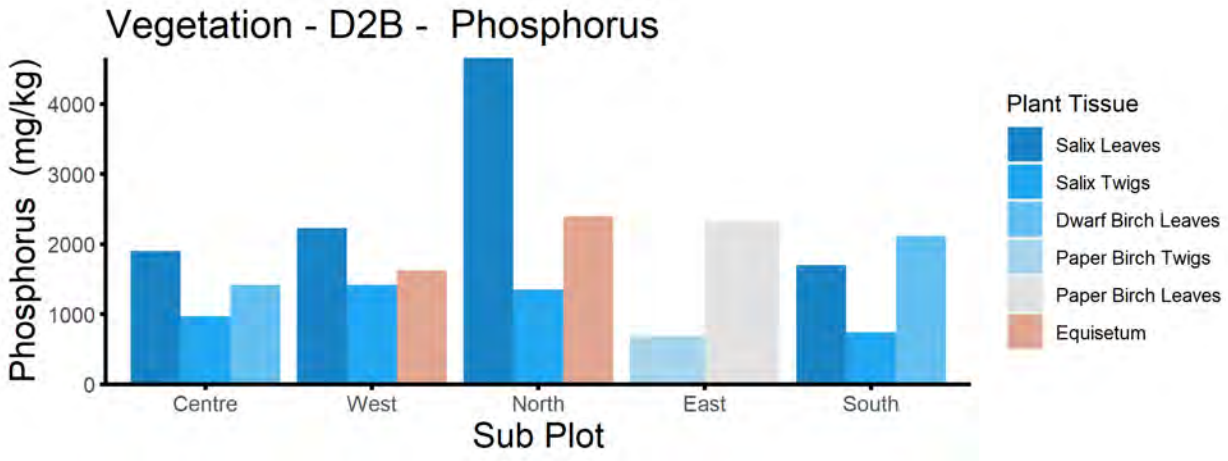

Vegetation - D2B - Manganese
Manganese (mg/kg)
1000
750
500
250
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

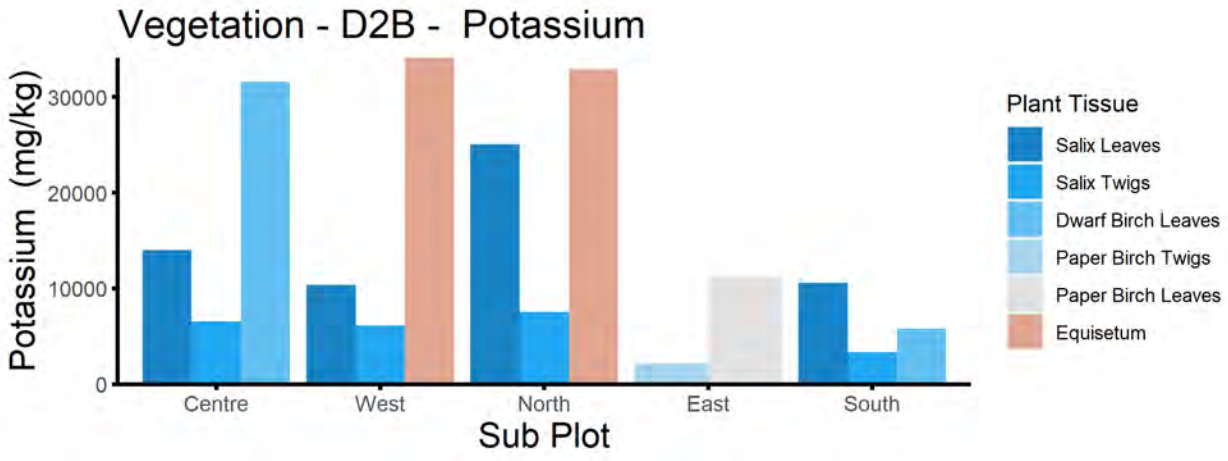

Vegetation - D2B - Mercury
Mercury (mg/kg)
0.008
0.006
0.004
0.002
0.000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

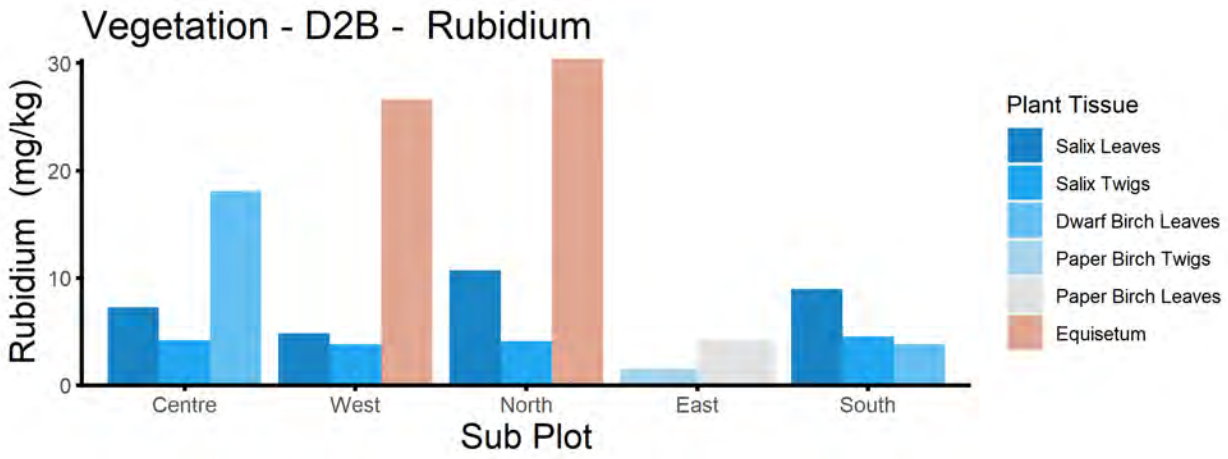

Vegetation - D2B - Moisture
Moisture %
60
40
20
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

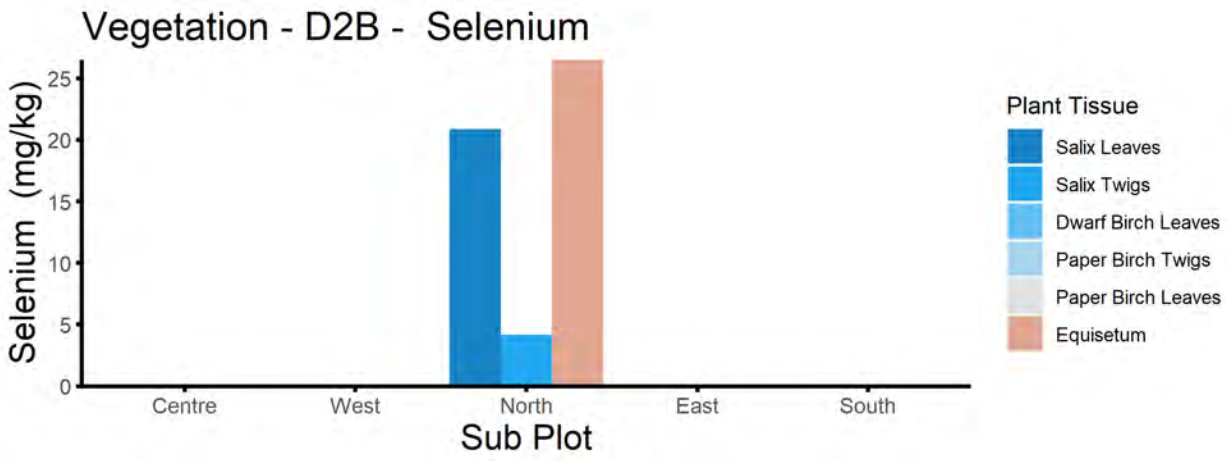

Vegetation - D2B - Molybdenum
Molybdenum (mg/kg)
0.8
0.6
0.4
0.2
0.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

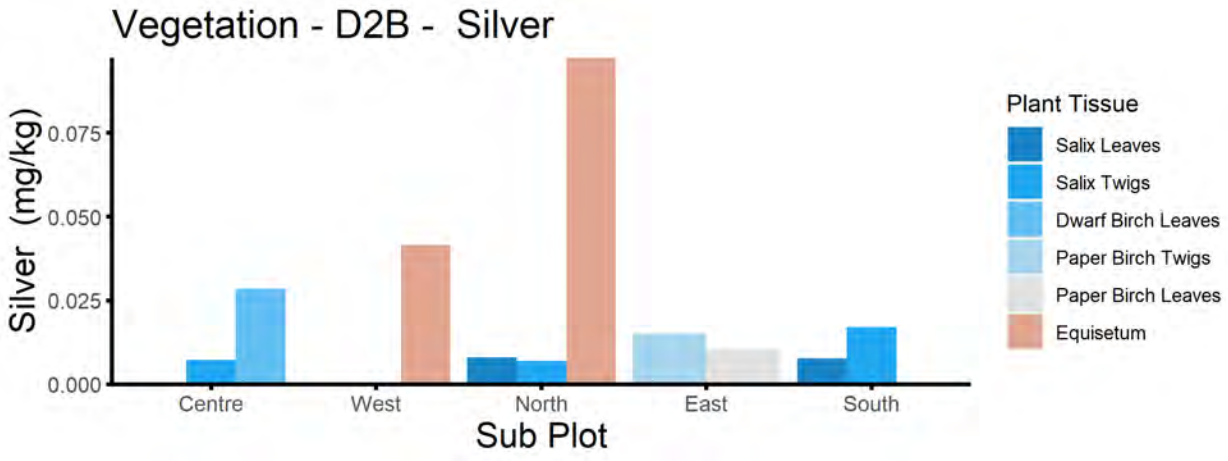

Vegetation - D2B - Nickel
Nickel (mg/kg)
0.0
2.5
5.0
7.5
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

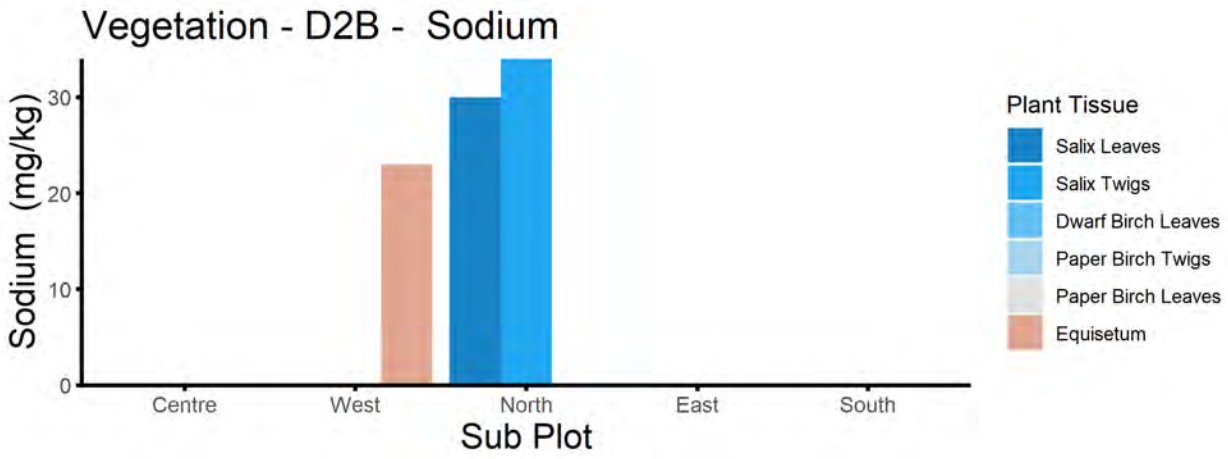

Vegetation - D2B - Phosphorus
Phosphorus (mg/kg)
0
1000
2000
3000
4000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

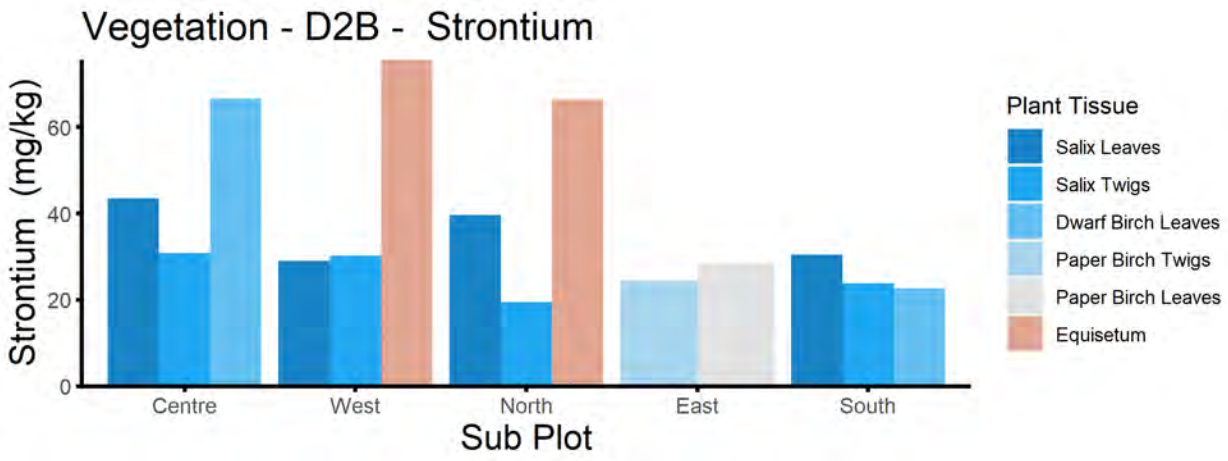

Vegetation - D2B - Potassium
Potassium (mg/kg)
0
10000
20000
30000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

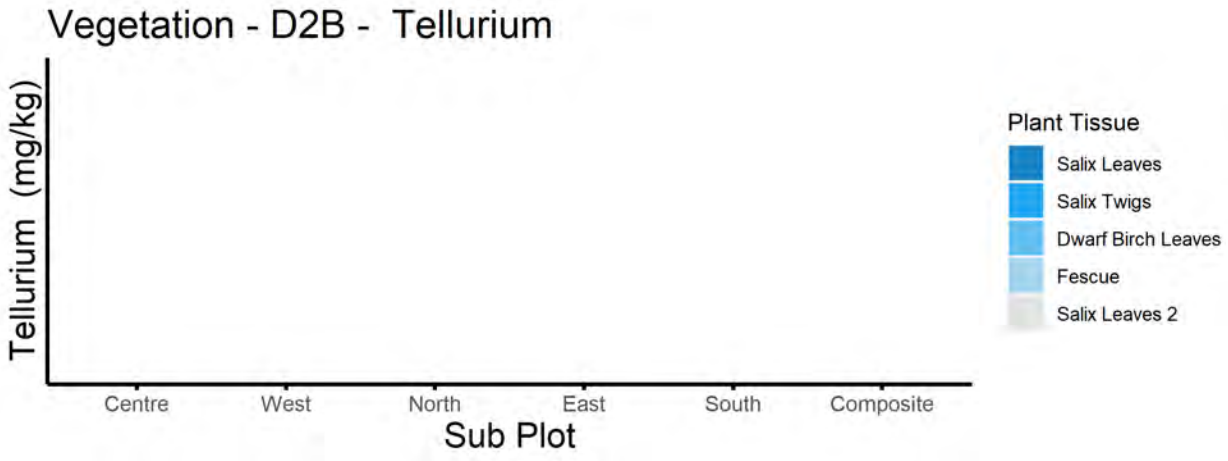

Vegetation - D2B - Rubidium
Rubidium (mg/kg)
30
20
10
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

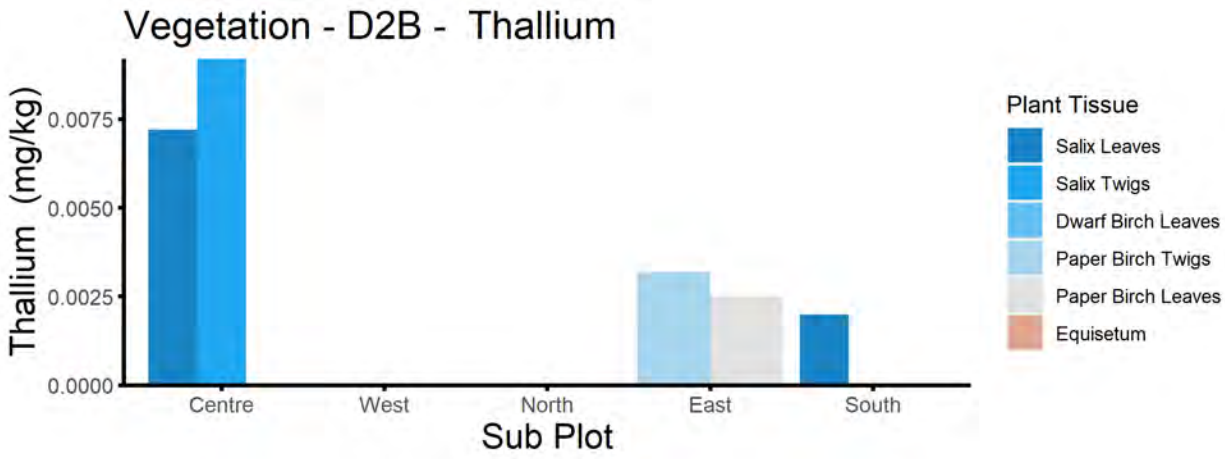

Vegetation - D2B - Selenium
Selenium (mg/kg)
25
20
15
10
5
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

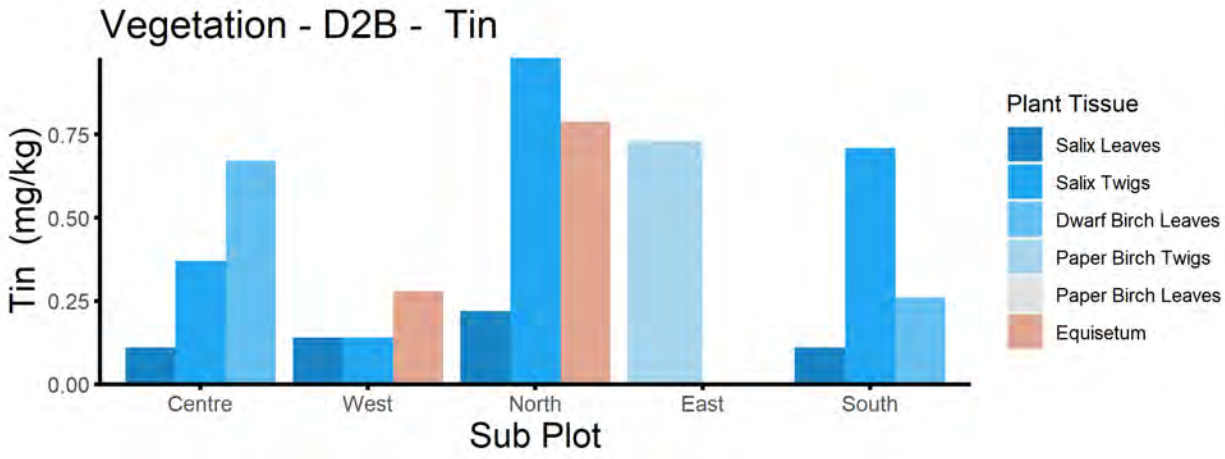

Vegetation - D2B - Silver
Silver (mg/kg)
0.075
0.050
0.025
0.000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

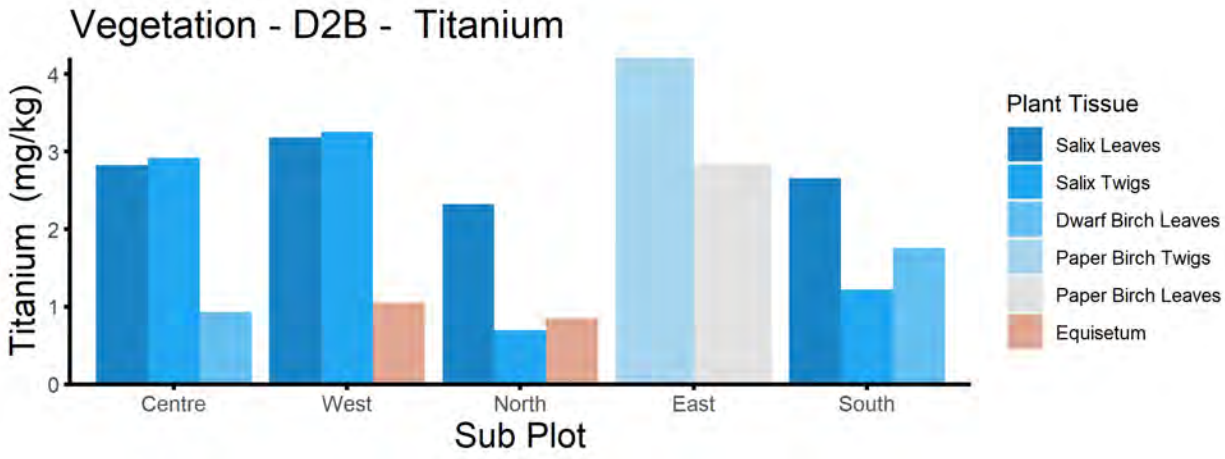

Vegetation - D2B - Sodium
Sodium (mg/kg)
0
10
20
30
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

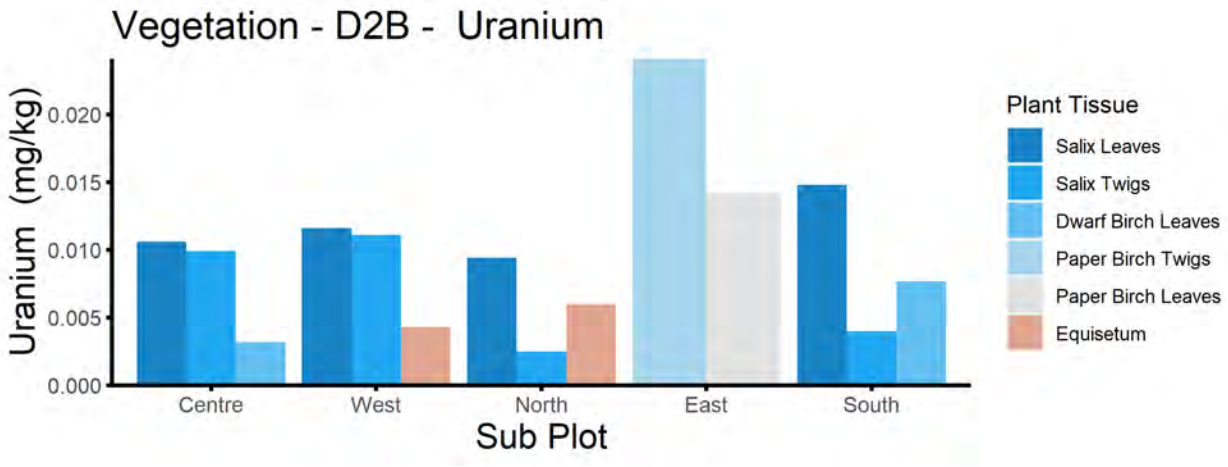

Vegetation - D2B - Strontium
Strontium (mg/kg)
0
20
40
60
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

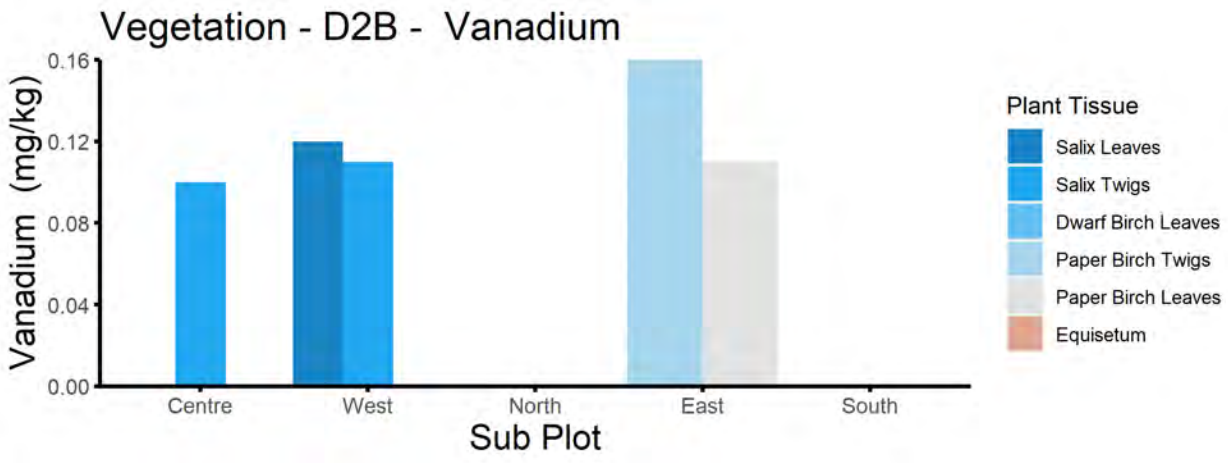

Vegetation - D2B - Tellurium
Tellurium (mg/kg)
Centre
West
North
East
South
Composite
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Fescue
Salix Leaves 2

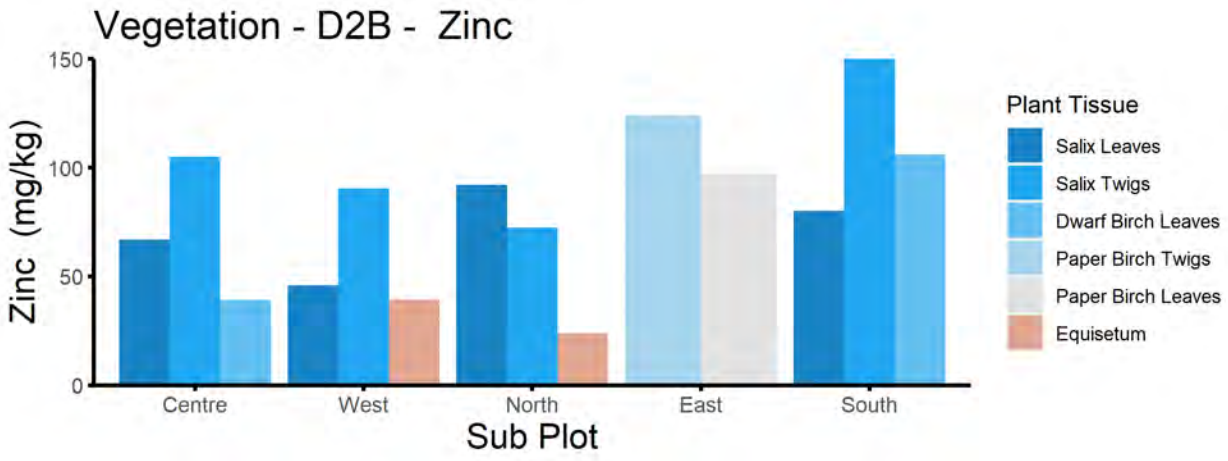

Vegetation - D2B - Thallium
Thallium (mg/kg)
0.0075
0.0050
0.0025
0.0000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

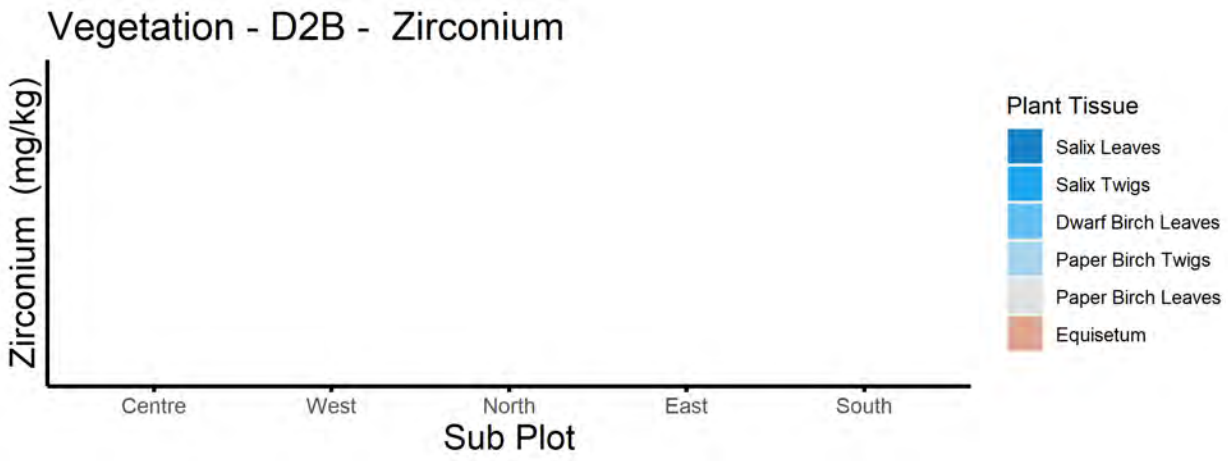

Vegetation - D2B - Tin
Tin (mg/kg)
0.75
0.50
0.25
0.00
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

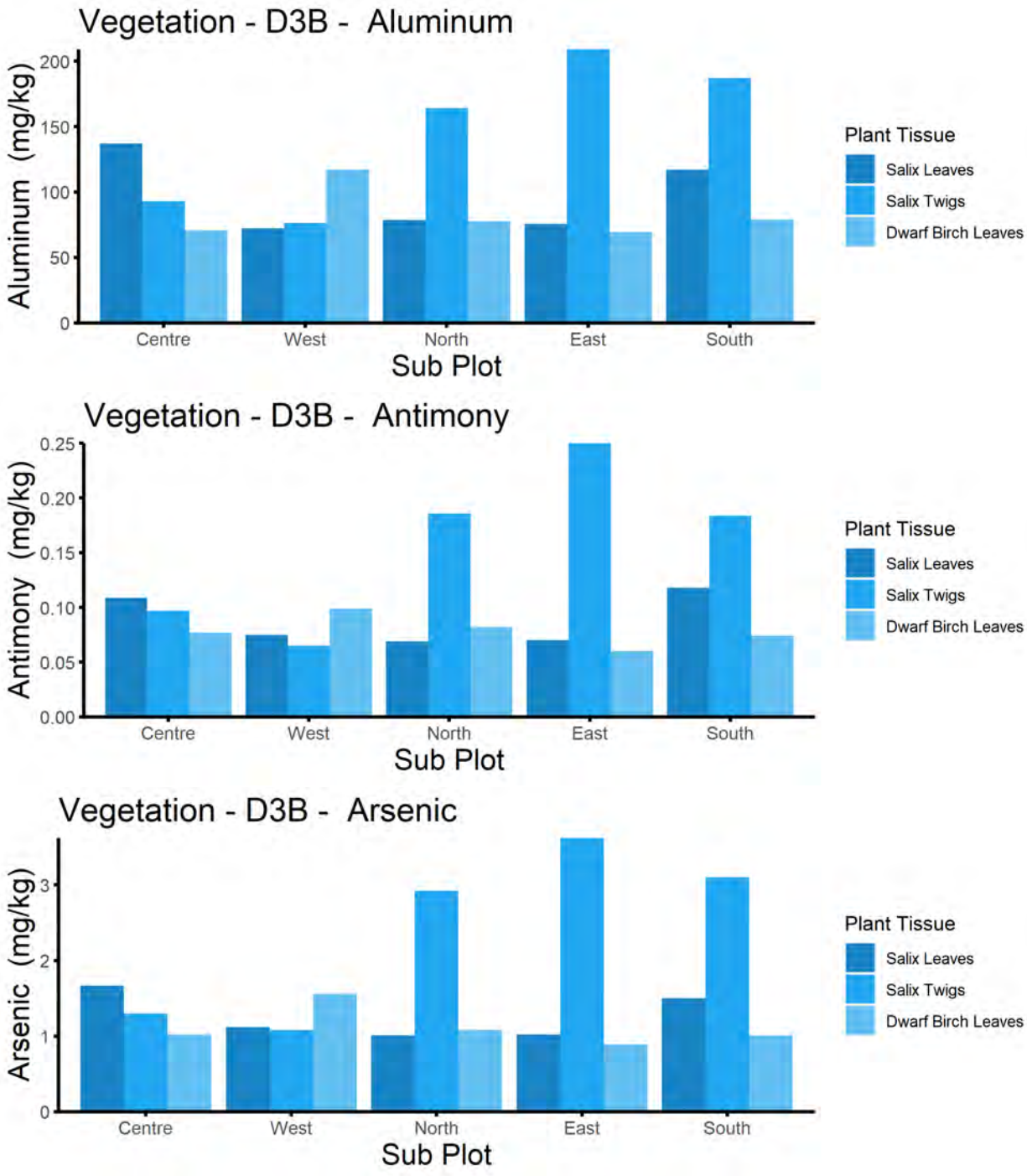

Vegetation - D2B - Titanium
Titanium (mg/kg)
4
3
2
1
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

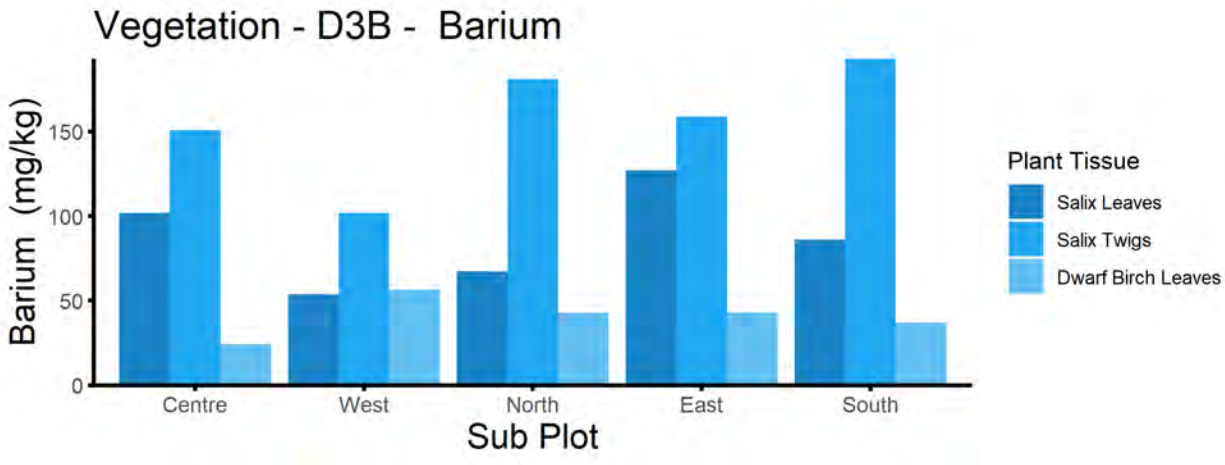

Vegetation - D2B - Uranium
Uranium (mg/kg)
0.020
0.015
0.010
0.005
0.000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

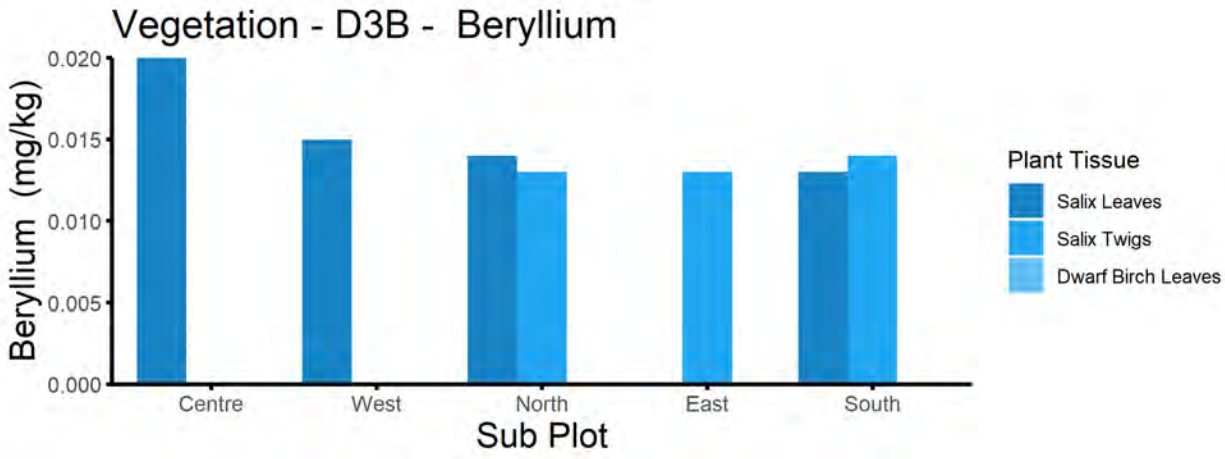

Vegetation - D2B - Vanadium
Vanadium (mg/kg)
0.16
0.12
0.08
0.04
0.00
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

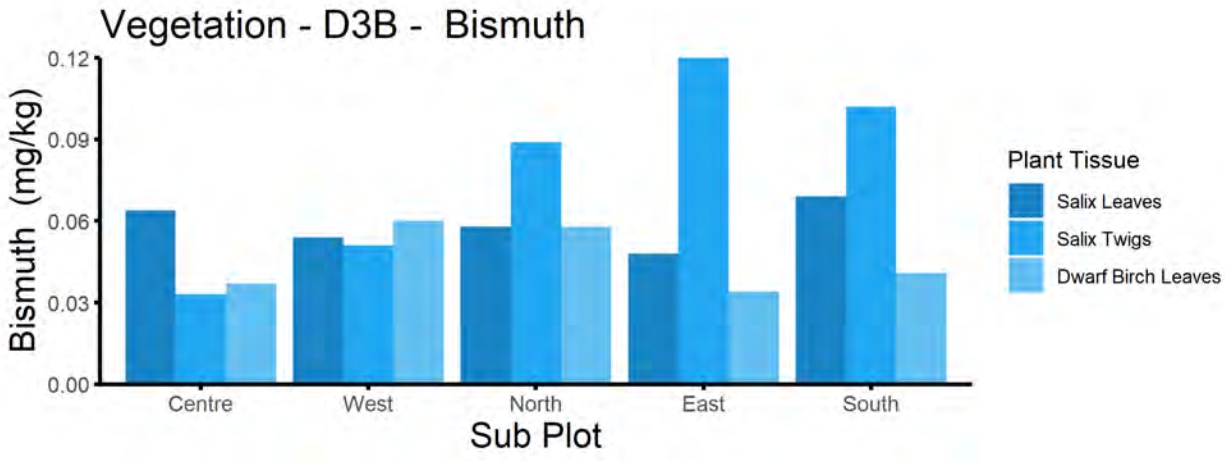

Vegetation - D2B - Zinc
Zinc (mg/kg)
150
100
50
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

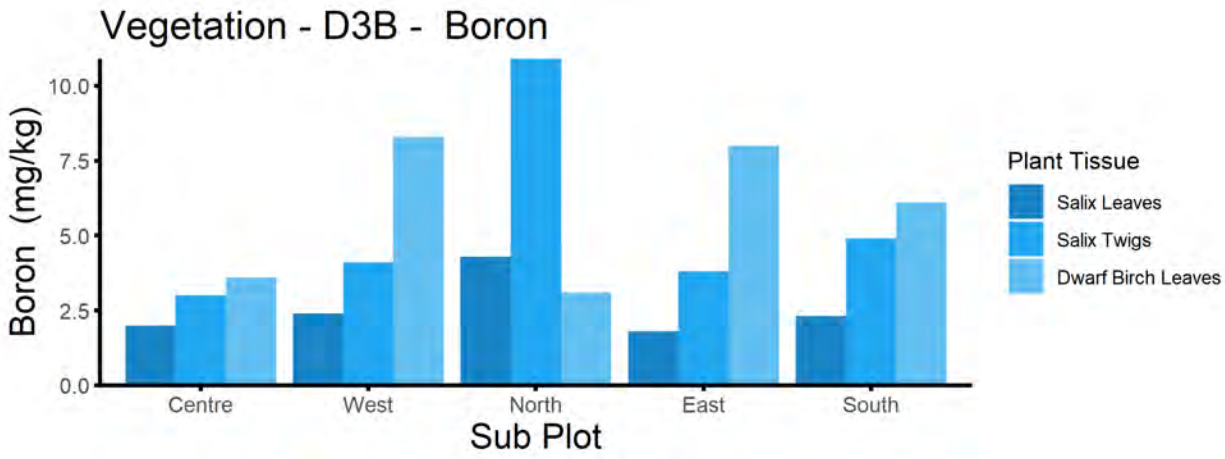

Vegetation - D2B - Zirconium
Zirconium (mg/kg)
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Paper Birch Twigs
Paper Birch Leaves
Equisetum

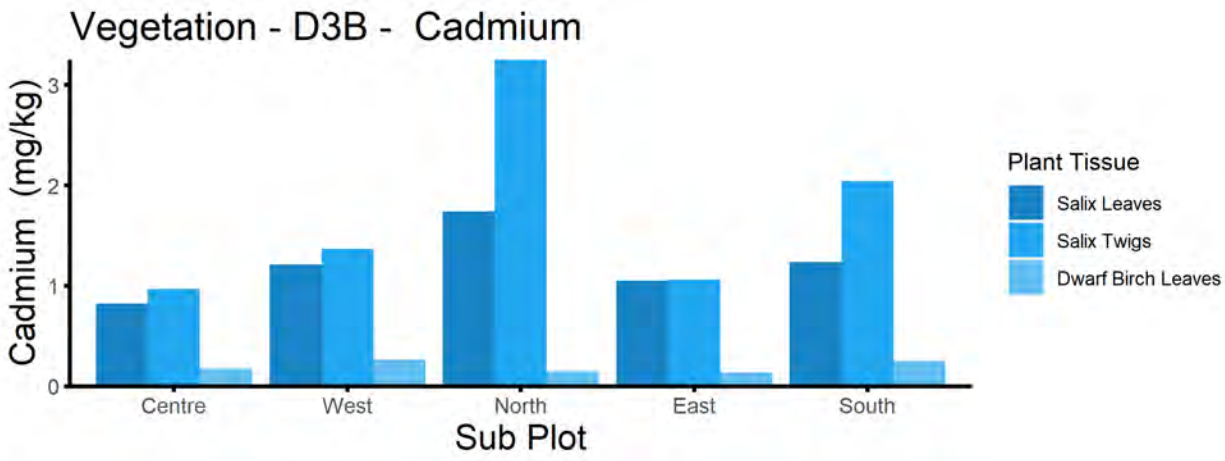

Vegetation - D3B - Aluminum
Aluminum (mg/kg)
200
150
100
50
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Vegetation - D3B - Antimony
Antimony (mg/kg)
0.25
0.20
0.15
0.10
0.05
0.00
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Vegetation - D3B - Arsenic
Arsenic (mg/kg)
3
2
1
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

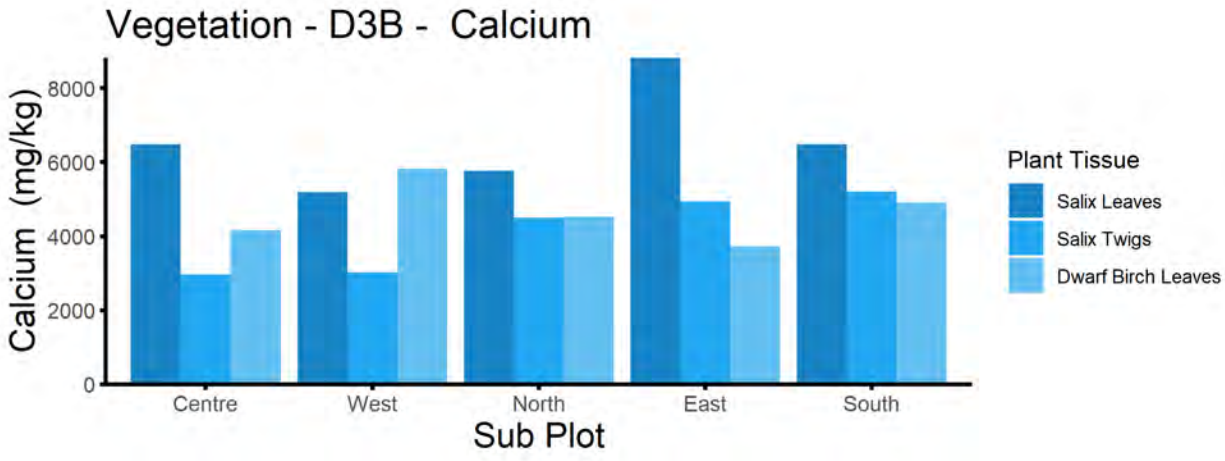

Vegetation - D3B - Barium
Barium (mg/kg)
150
100
50
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

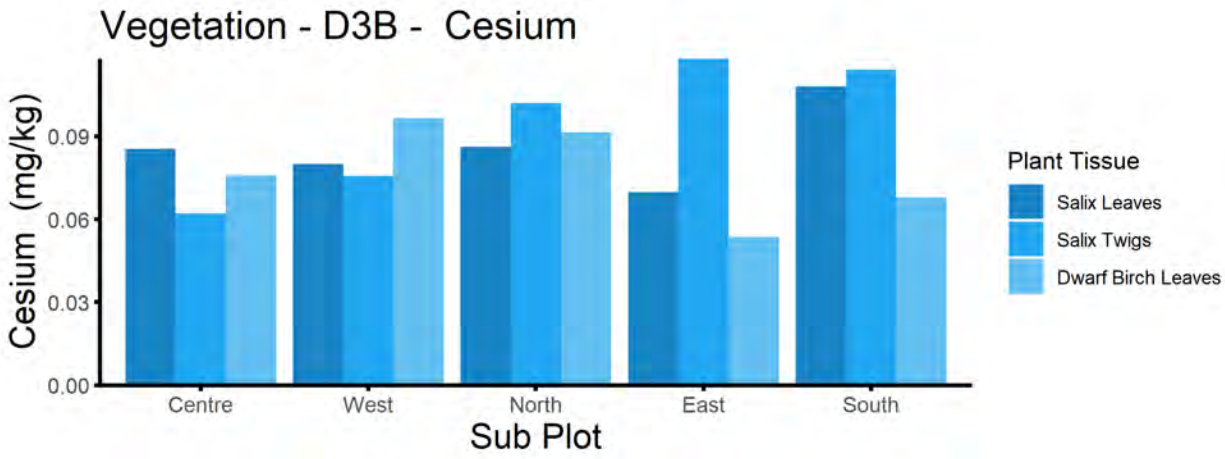

Vegetation - D3B - Beryllium
Beryllium (mg/kg)
0.020
0.015
0.010
0.005
0.000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

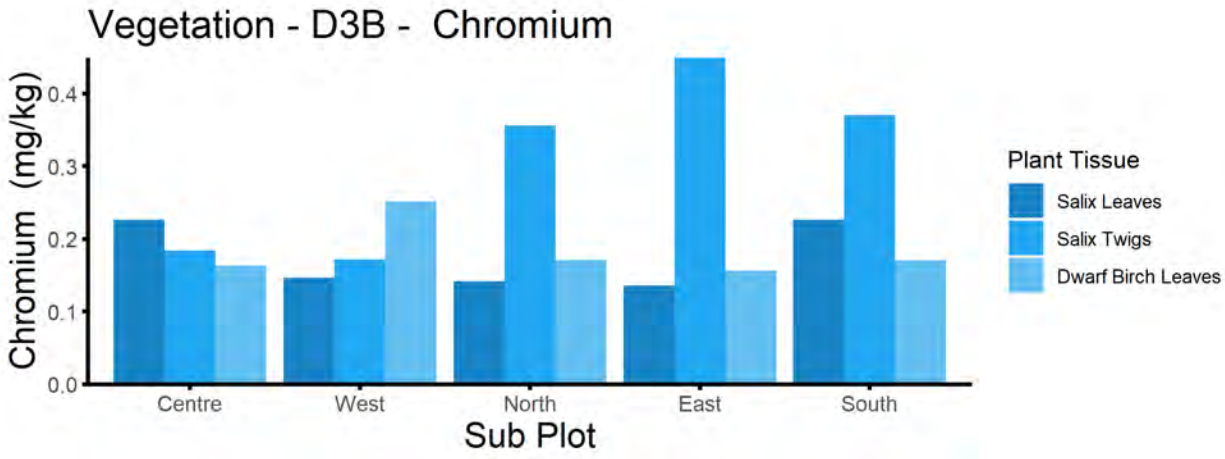

Vegetation - D3B - Bismuth
Bismuth (mg/kg)
0.12
0.09
0.06
0.03
0.00
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

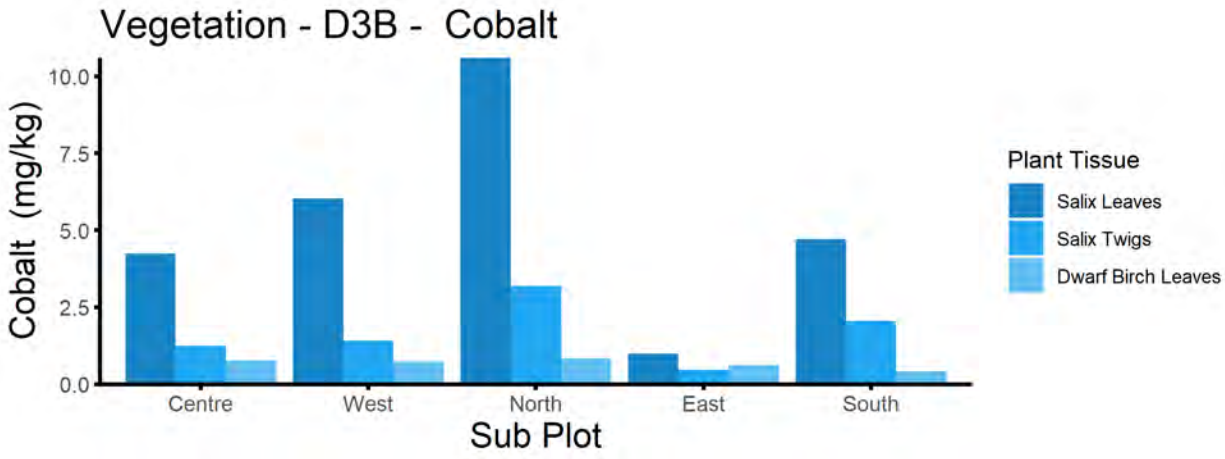

Vegetation - D3B - Boron
Boron (mg/kg)
10.0
7.5
5.0
2.5
0.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

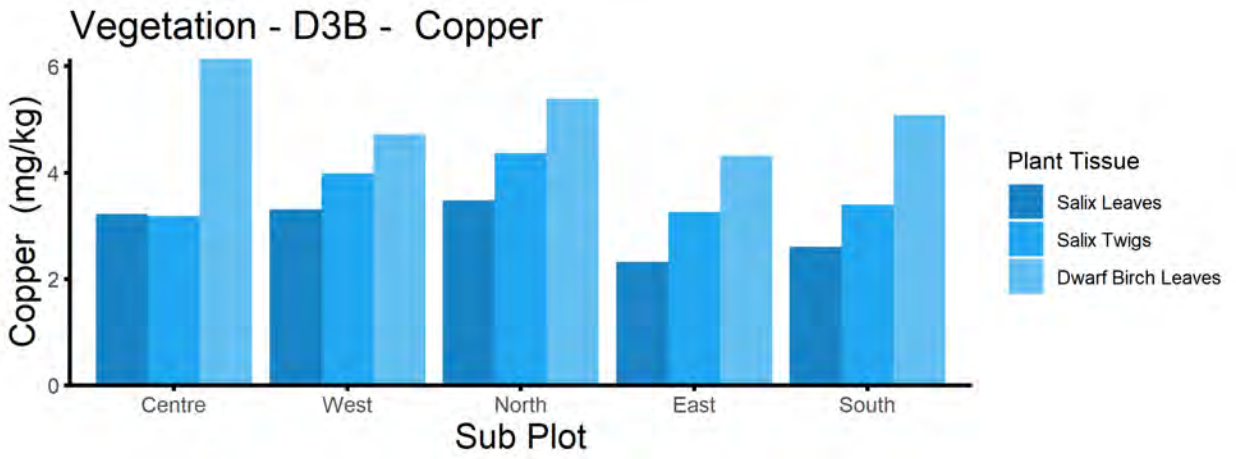

Vegetation - D3B - Cadmium
Cadmium (mg/kg)
3
2
1
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

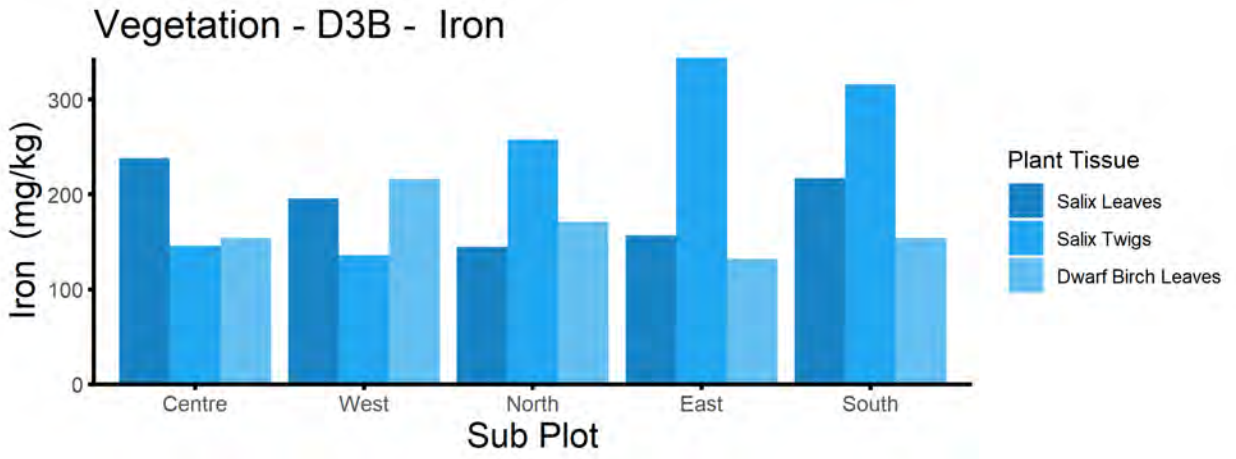

Vegetation - D3B - Calcium
Calcium (mg/kg)
8000
6000
4000
2000
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

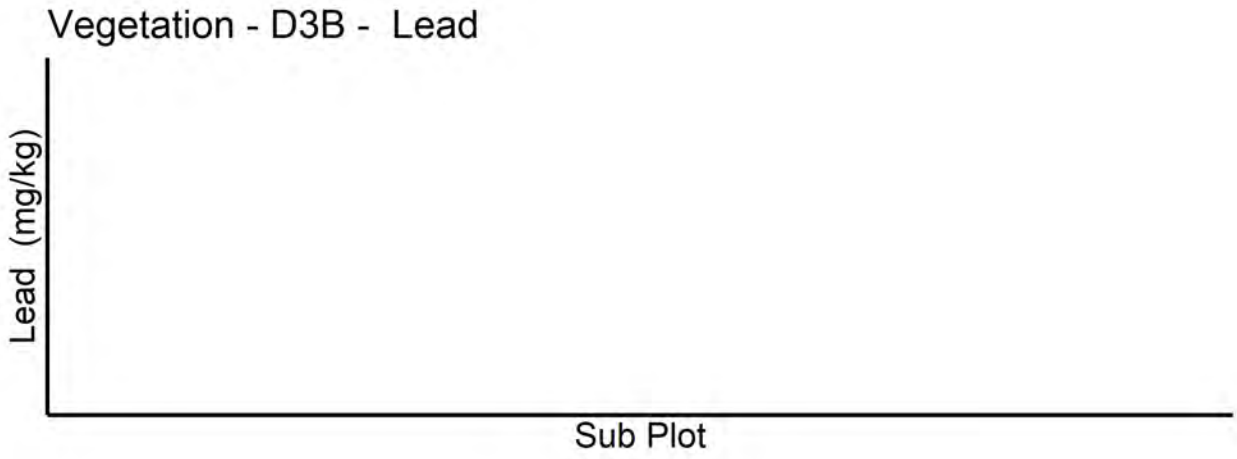

Vegetation - D3B - Cesium
Cesium (mg/kg)
0.00
0.03
0.06
0.09
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

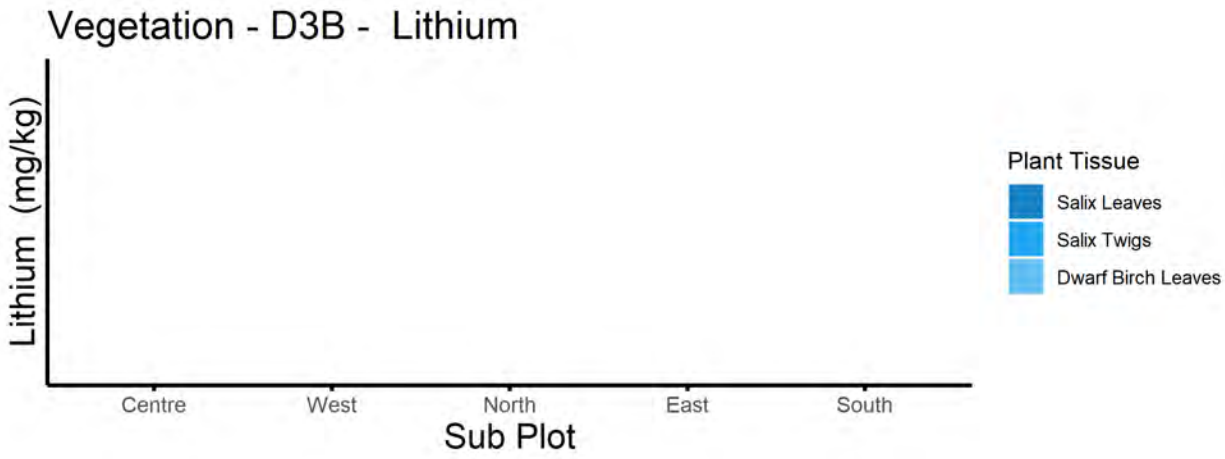

Vegetation - D3B - Chromium
Chromium (mg/kg)
0.0
0.1
0.2
0.3
0.4
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

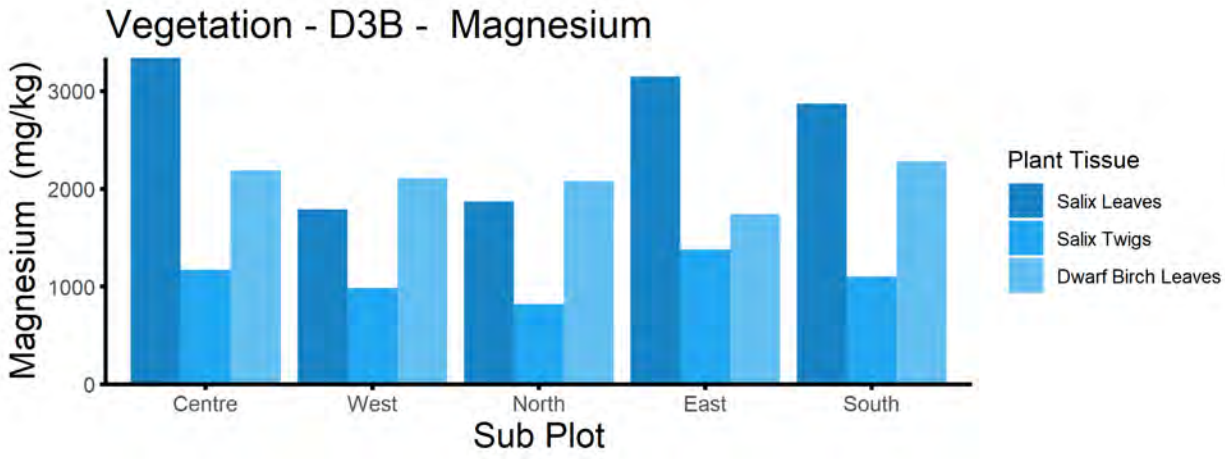

Vegetation - D3B - Cobalt
Cobalt (mg/kg)
0.0
2.5
5.0
7.5
10.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

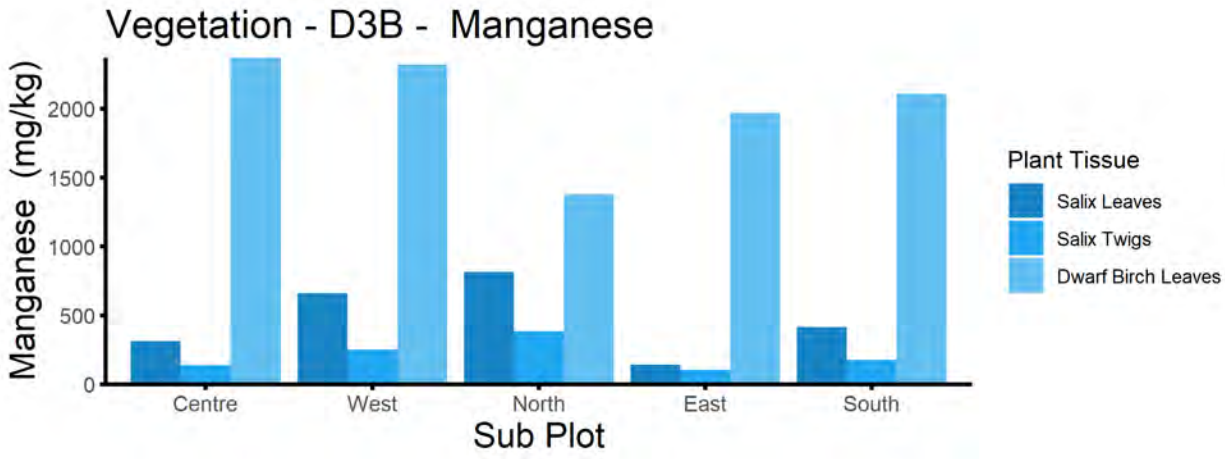

Vegetation - D3B - Copper
Copper (mg/kg)
0
2
4
6
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

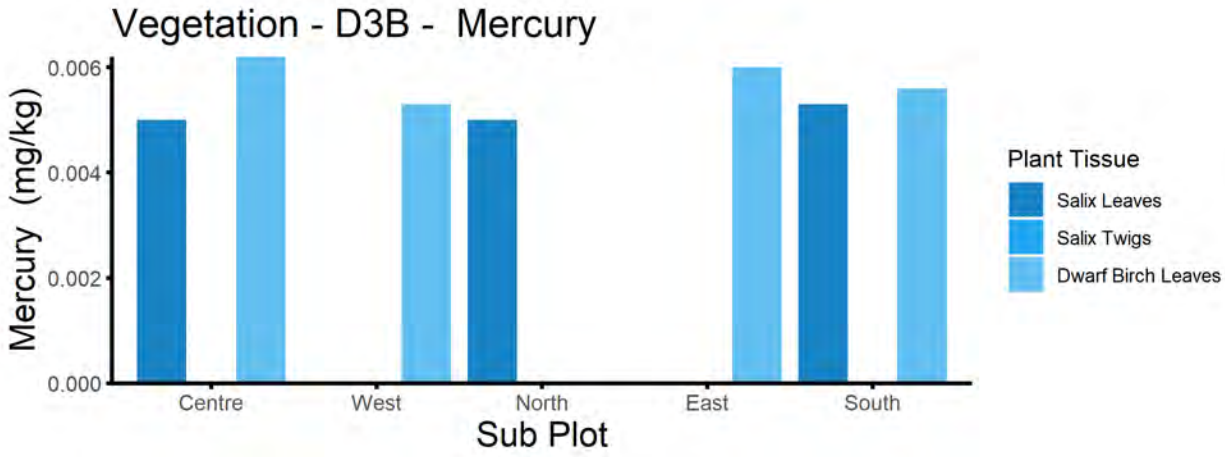

Vegetation - D3B - Iron
Iron (mg/kg)
0
100
200
300
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

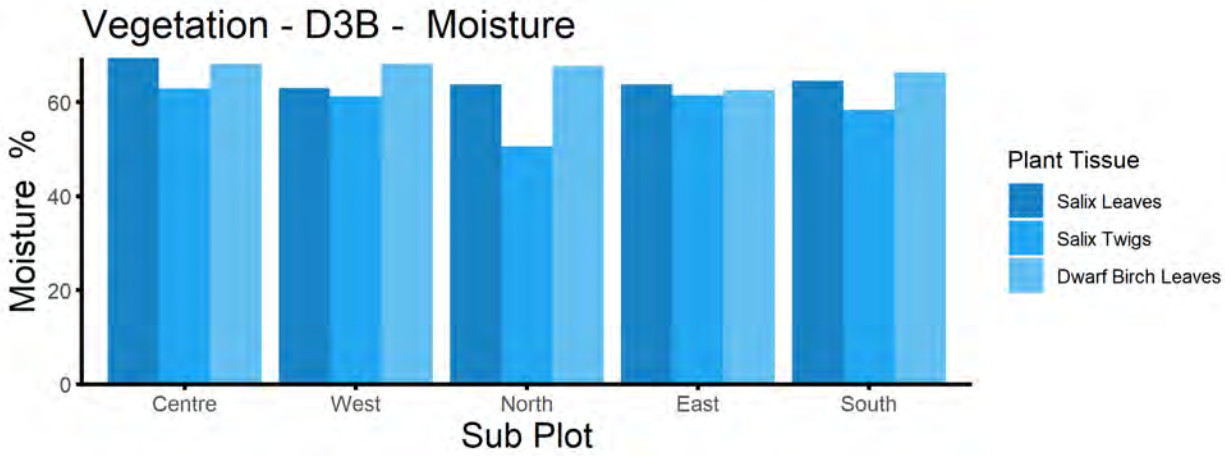

Vegetation - D3B - Lead
Lead (mg/kg)
Sub Plot

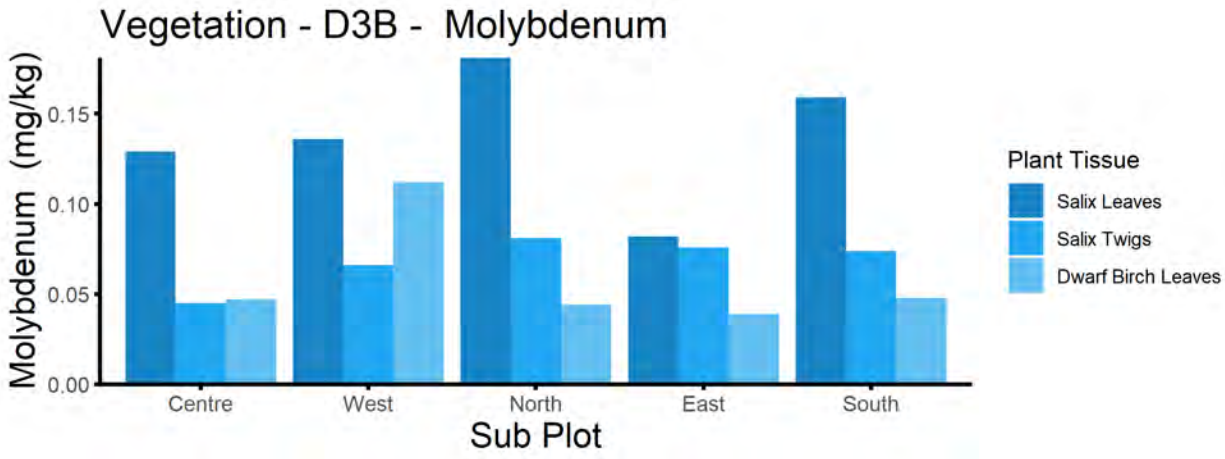

Vegetation - D3B - Lithium
Lithium (mg/kg)
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

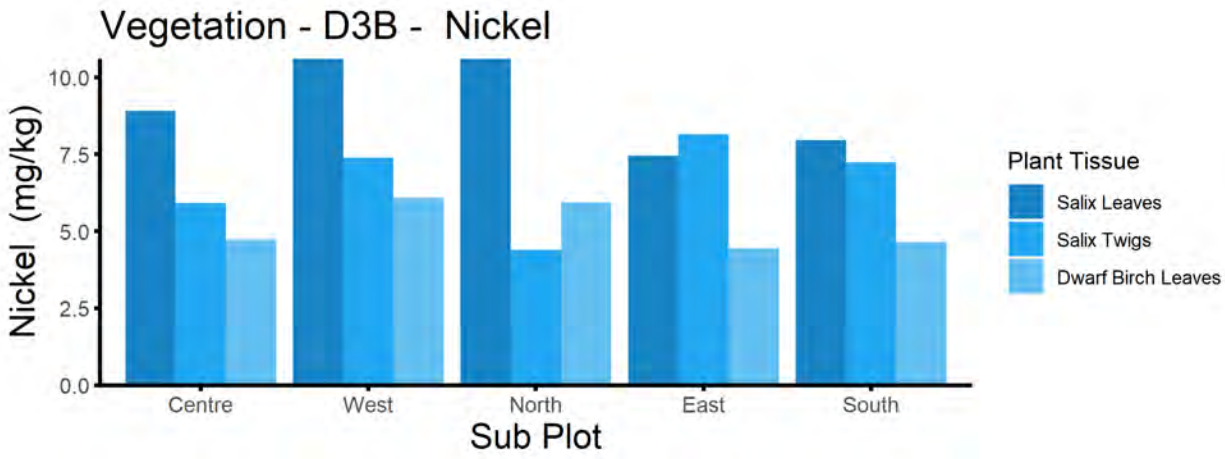

Vegetation - D3B - Magnesium
Magnesium (mg/kg)
3000
2000
1000
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

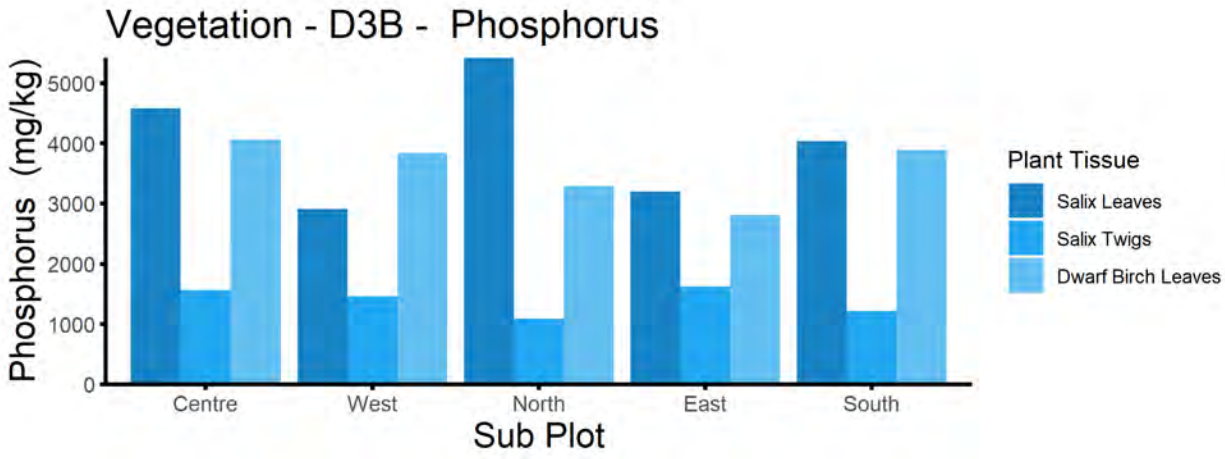

Vegetation - D3B - Manganese
Manganese (mg/kg)
2000
1500
1000
500
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

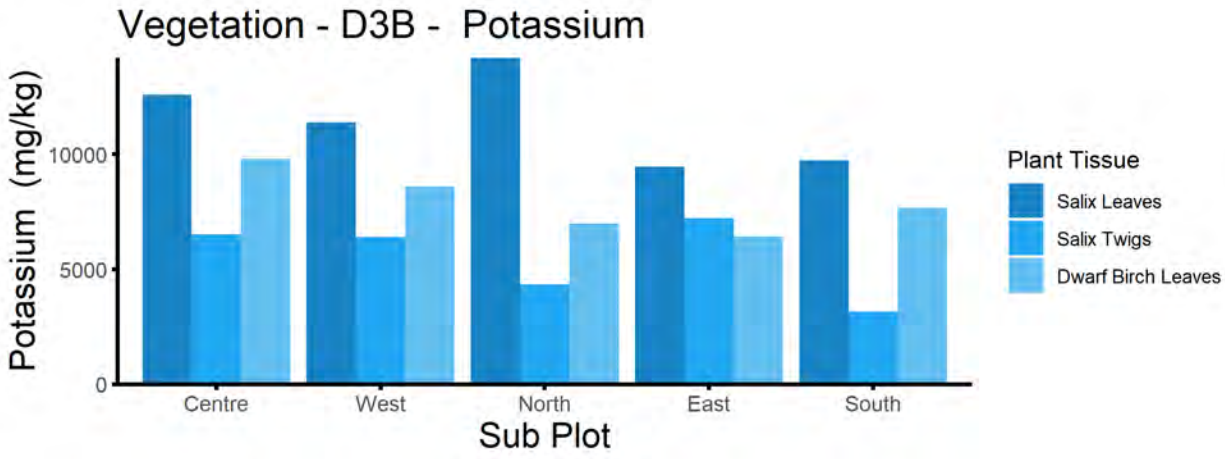

Vegetation - D3B - Mercury
Mercury (mg/kg)
0.006
0.004
0.002
0.000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

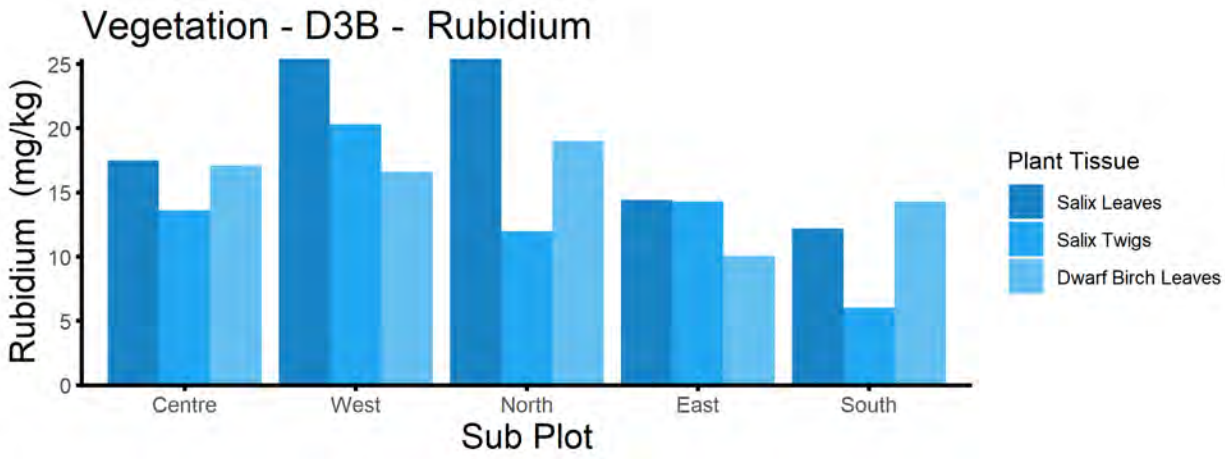

Vegetation - D3B - Moisture
Moisture %
60
40
20
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

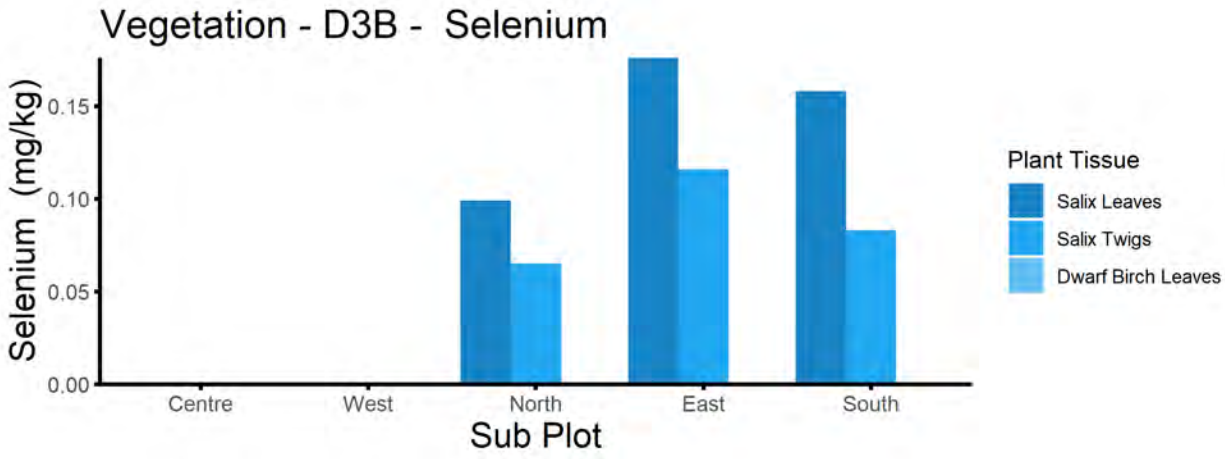

Vegetation - D3B - Molybdenum
Molybdenum (mg/kg)
0.15
0.10
0.05
0.00
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

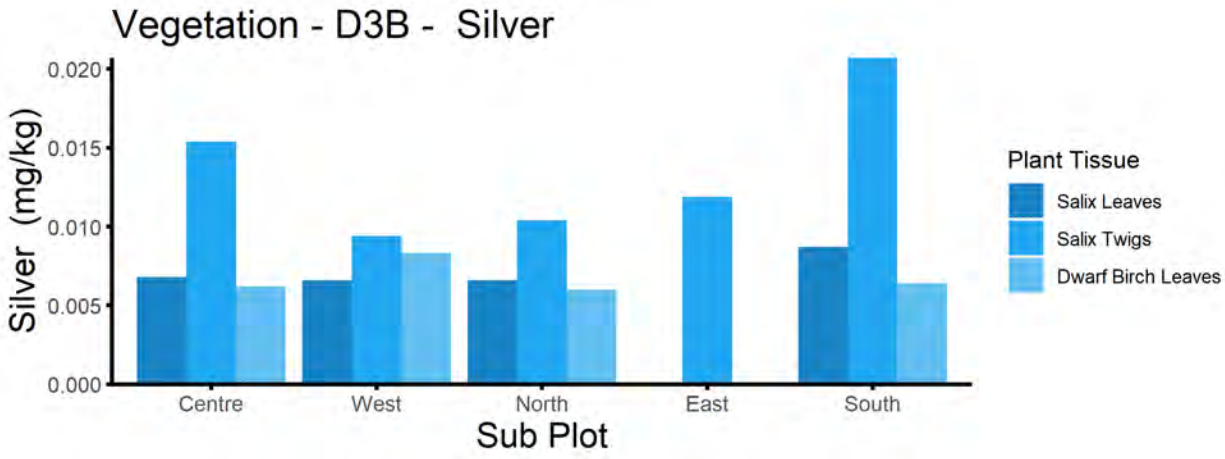

Vegetation - D3B - Nickel
Nickel (mg/kg)
10.0
7.5
5.0
2.5
0.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

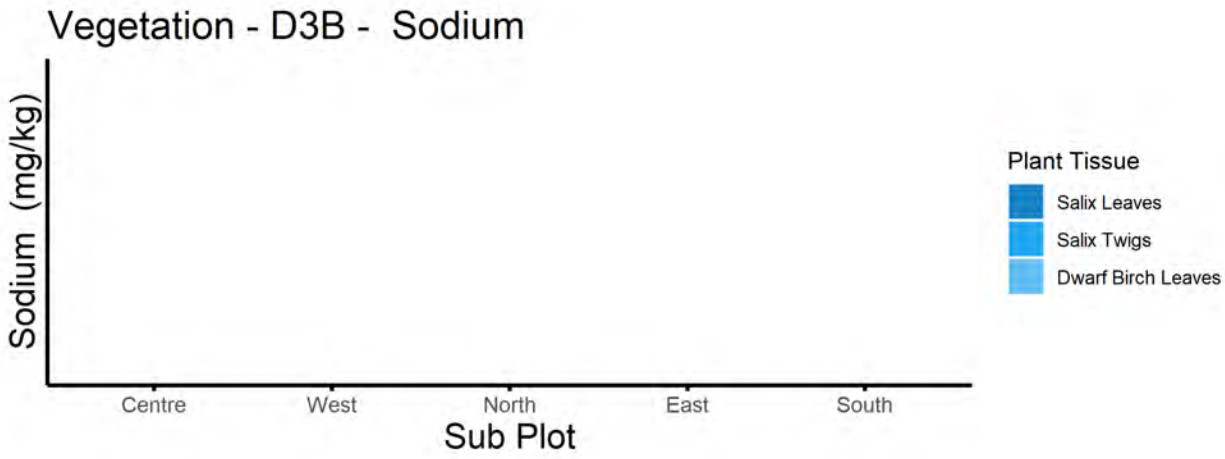

Vegetation - D3B - Phosphorus
Phosphorus (mg/kg)
5000
4000
3000
2000
1000
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

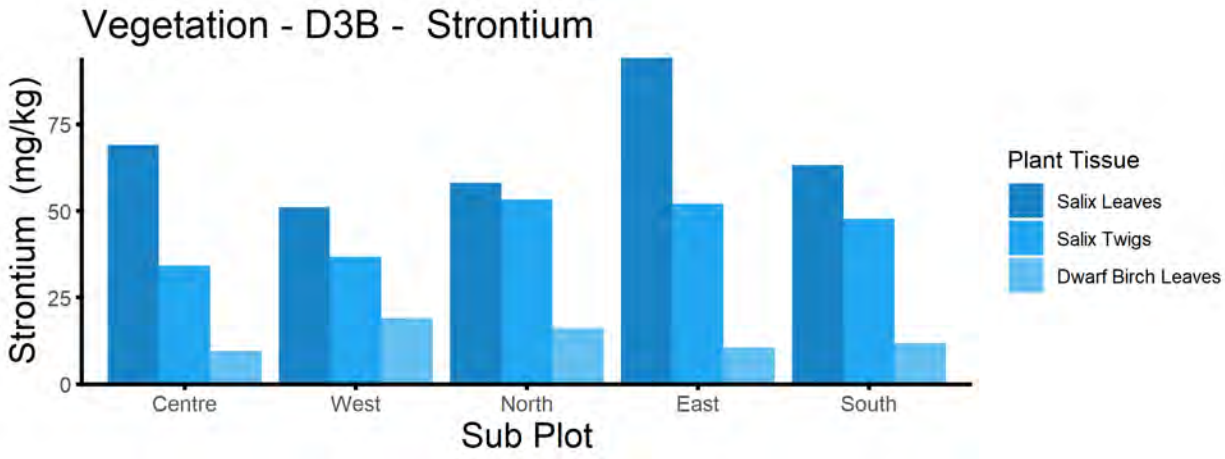

Vegetation - D3B - Potassium
Potassium (mg/kg)
10000
5000
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

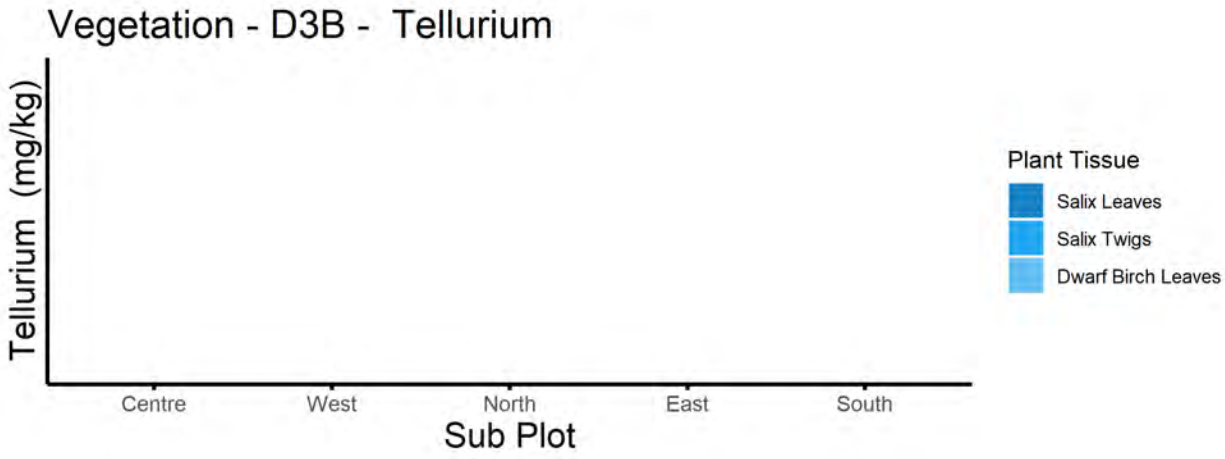

Vegetation - D3B - Rubidium
Rubidium (mg/kg)
25
20
15
10
5
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

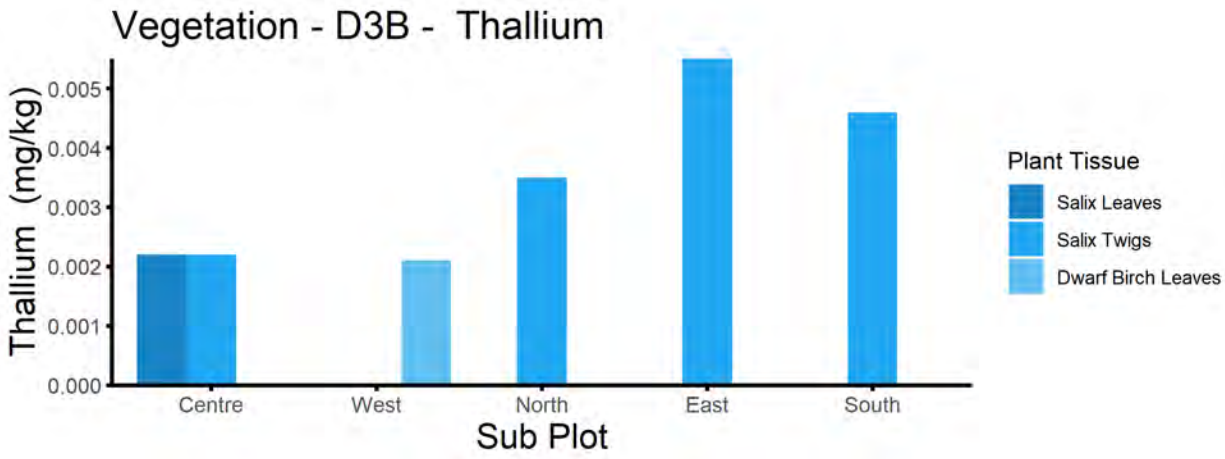

Vegetation - D3B - Selenium
Selenium (mg/kg)
0.15
0.10
0.05
0.00
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

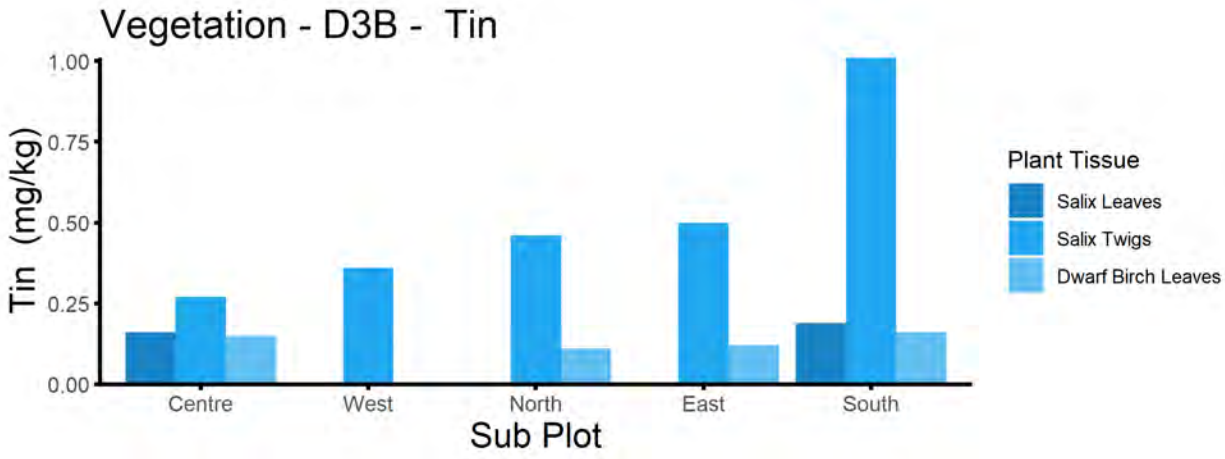

Vegetation - D3B - Silver
Silver (mg/kg)
0.020
0.015
0.010
0.005
0.000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

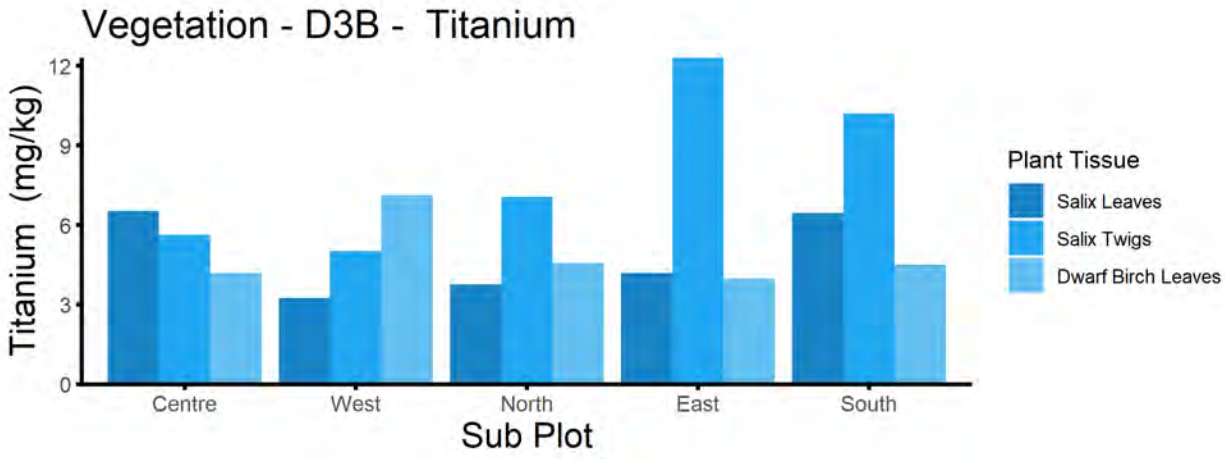

Vegetation - D3B - Sodium
Sodium (mg/kg)
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

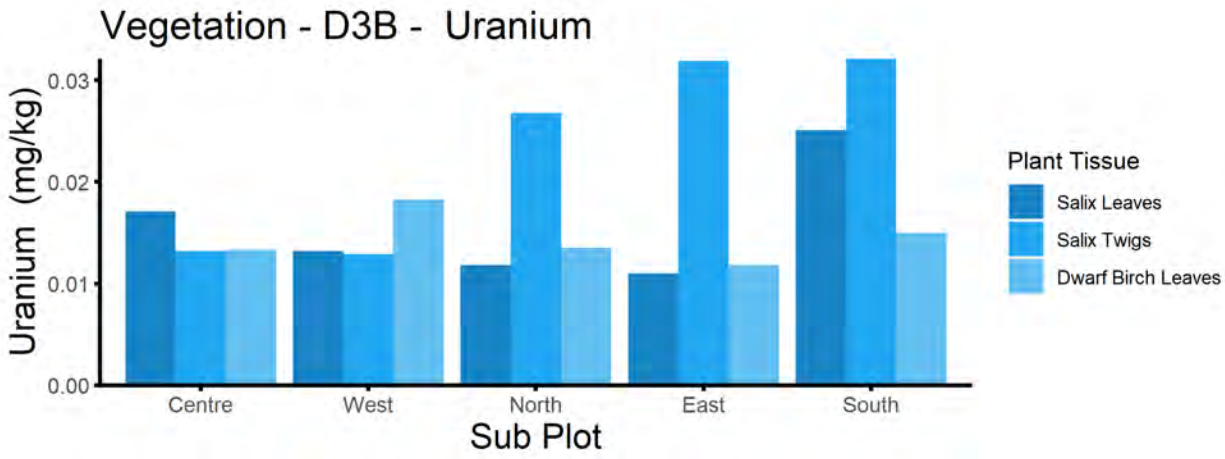

Vegetation - D3B - Strontium
Strontium (mg/kg)
0
25
50
75
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

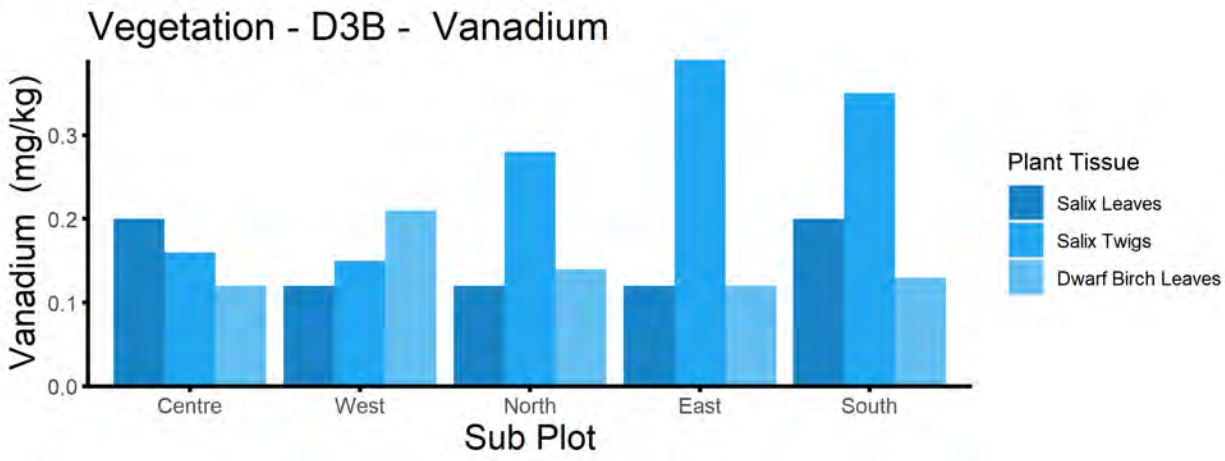

Vegetation - D3B - Tellurium
Tellurium (mg/kg)
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

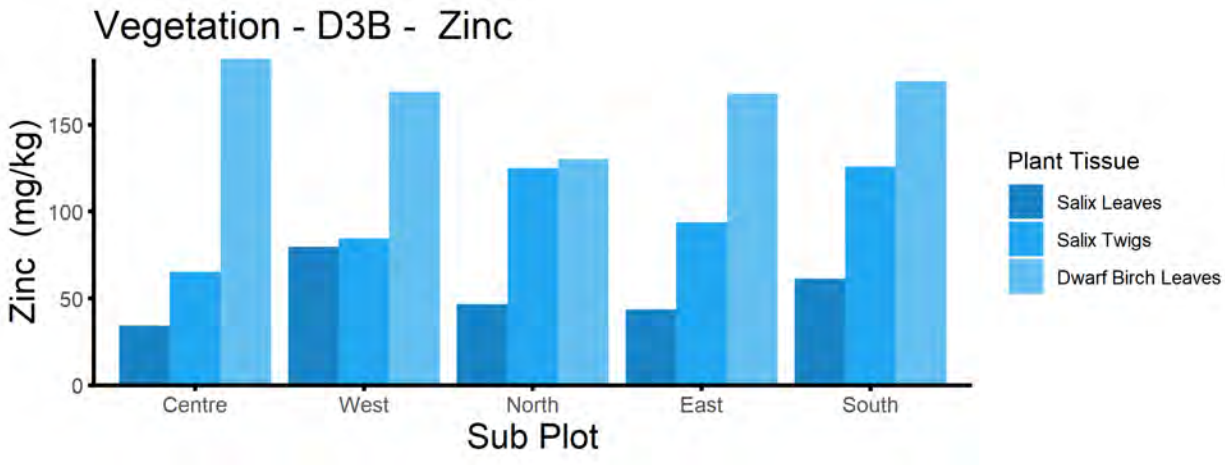

Vegetation - D3B - Thallium
Thallium (mg/kg)
0.005
0.004
0.003
0.002
0.001
0.000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

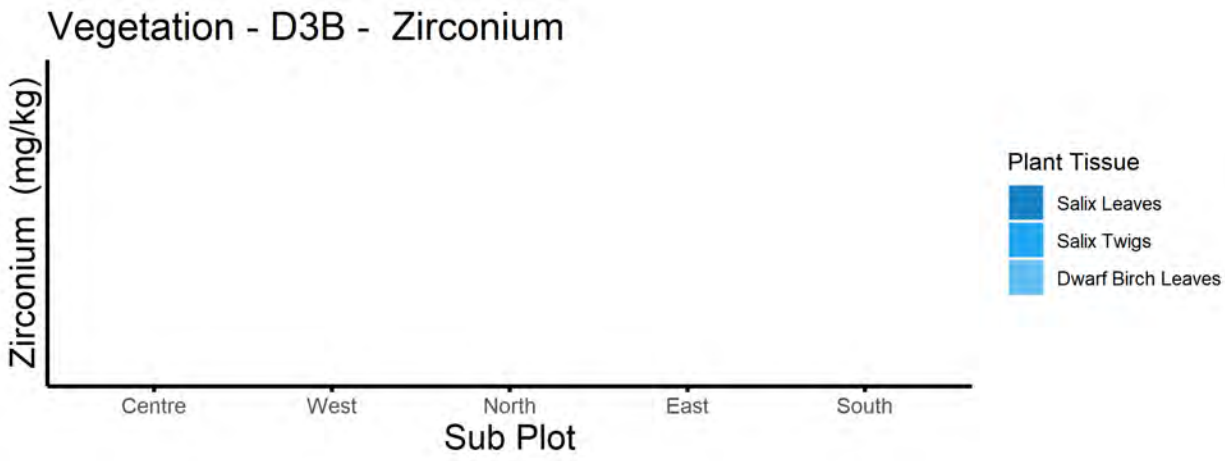

Vegetation - D3B - Tin
Tin (mg/kg)
1.00
0.75
0.50
0.25
0.00
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

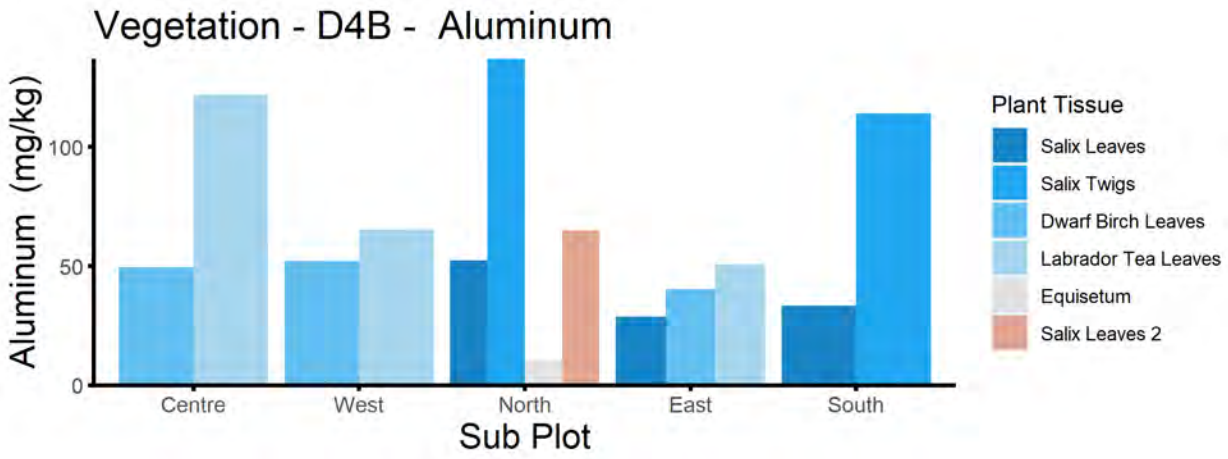

Vegetation - D3B - Titanium
Titanium (mg/kg)
12
9
6
3
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

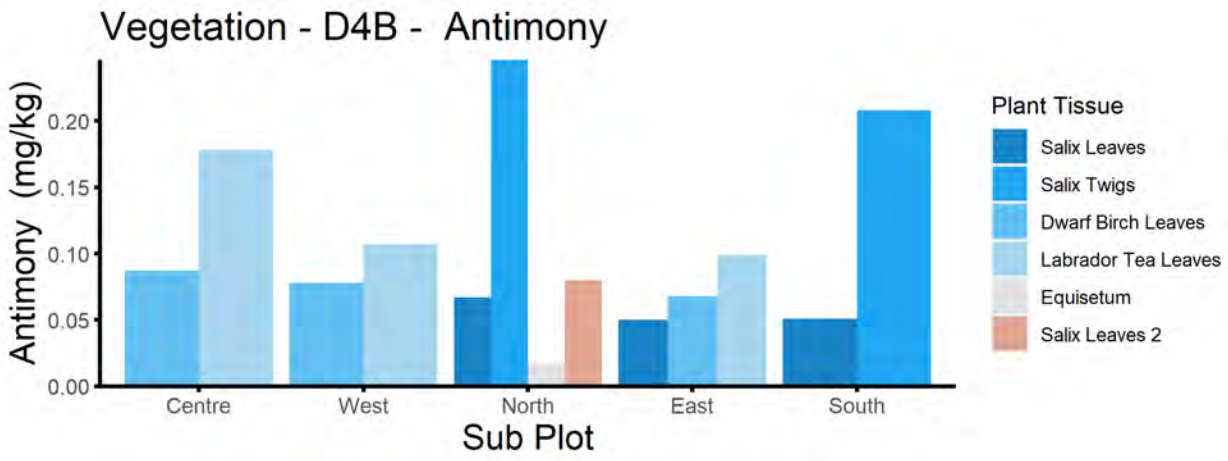

Vegetation - D3B - Uranium
Uranium (mg/kg)
0.03
0.02
0.01
0.00
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

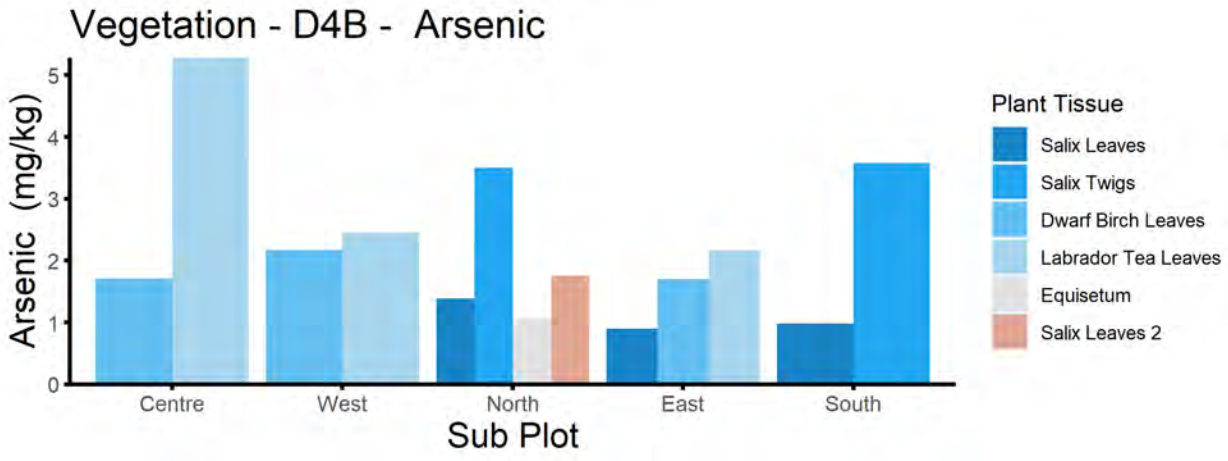

Vegetation - D3B - Vanadium
Vanadium (mg/kg)
0.3
0.2
0.1
0.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

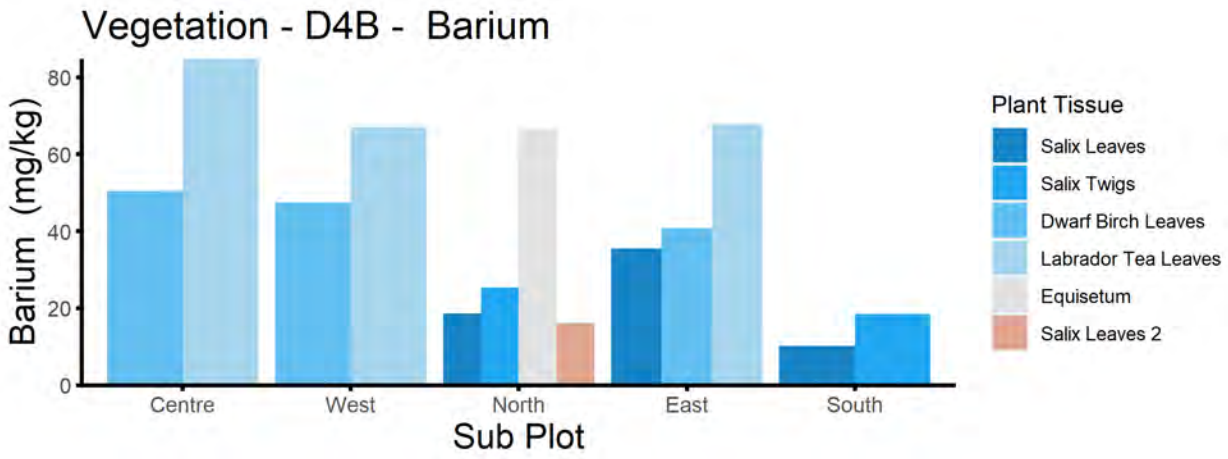

Vegetation - D3B - Zinc
Zinc (mg/kg)
150
100
50
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

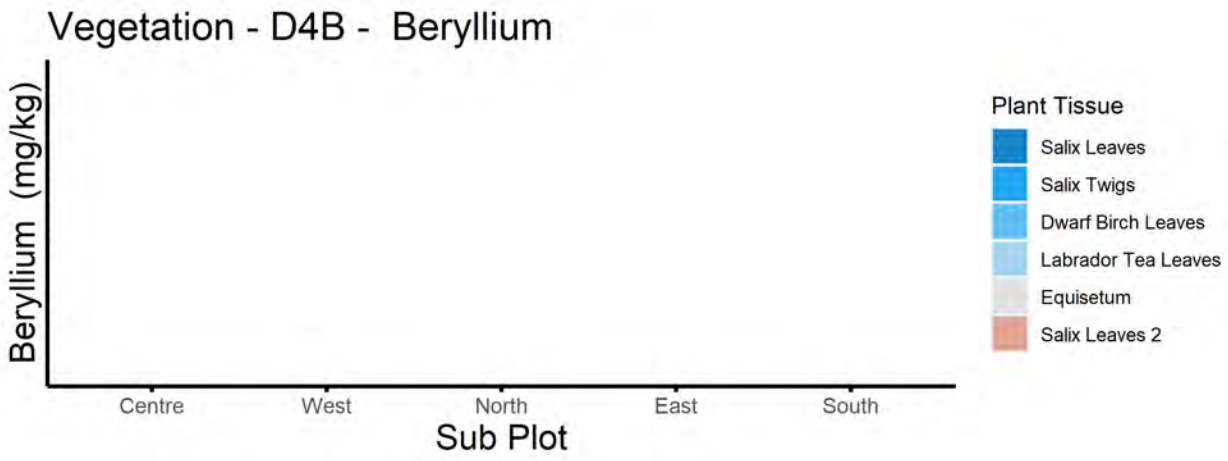

Vegetation - D3B - Zirconium
Zirconium (mg/kg)
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves

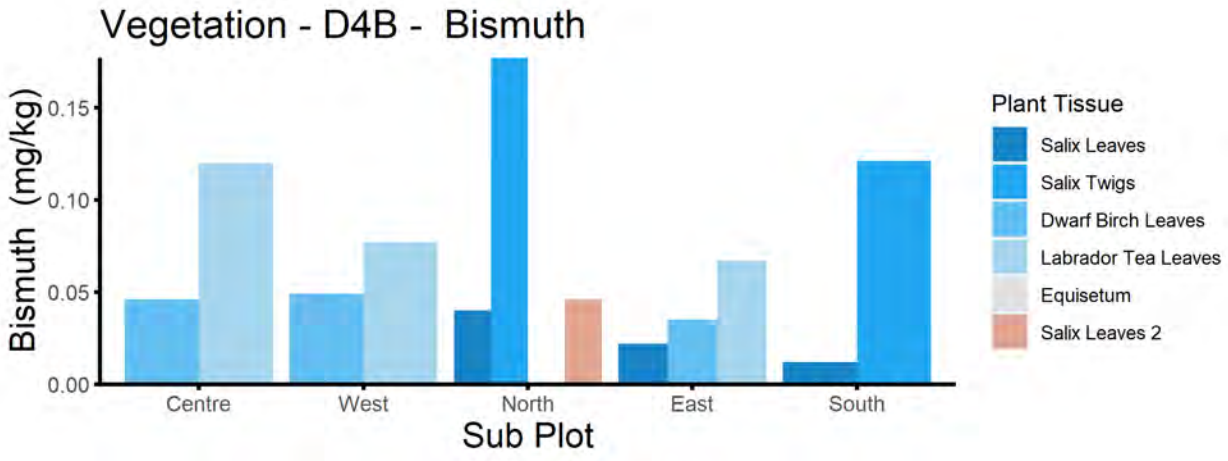

Vegetation - D4B - Aluminum
Aluminum (mg/kg)
100
50
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

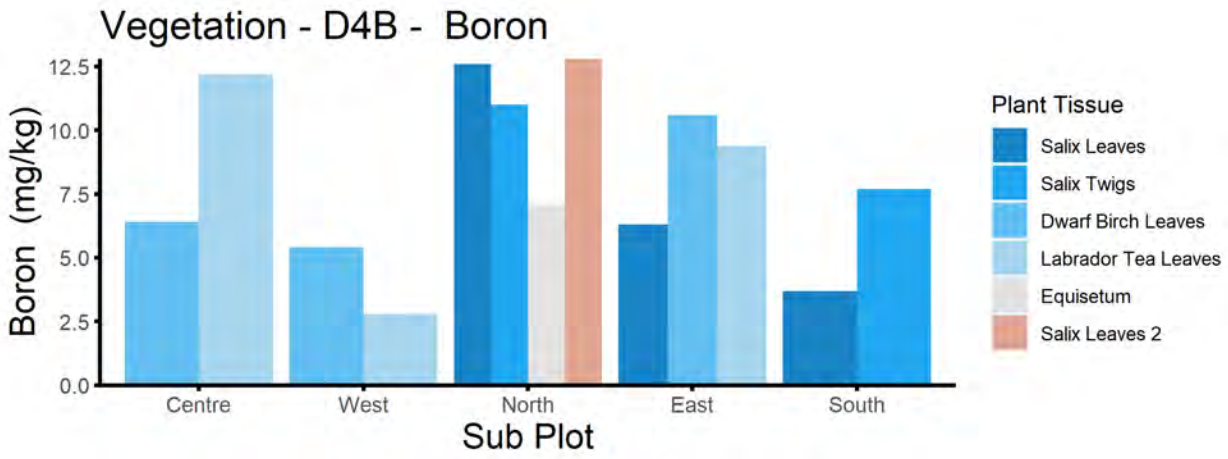

Vegetation - D4B - Antimony
Antimony (mg/kg)
0.20
0.15
0.10
0.05
0.00
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

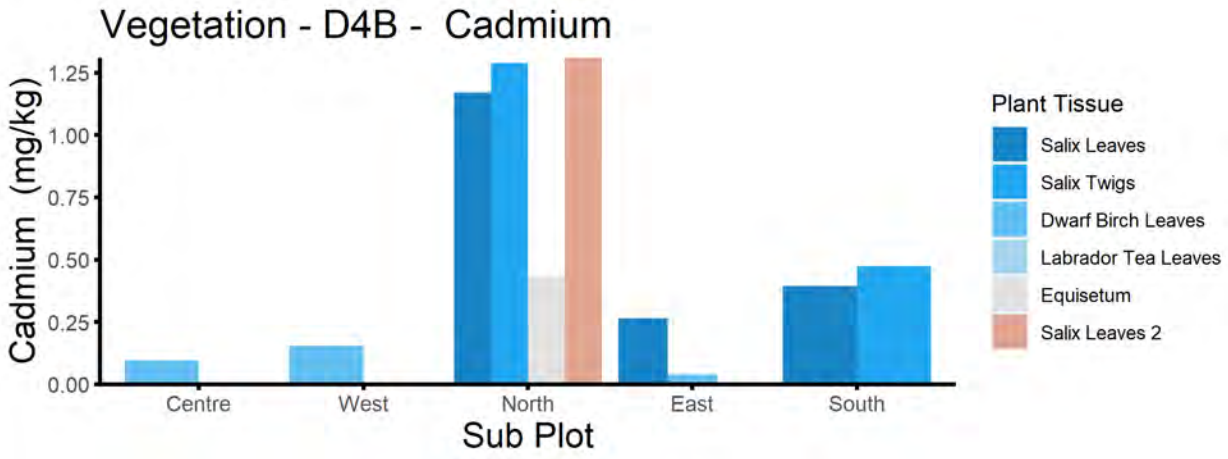

Vegetation - D4B - Arsenic
Arsenic (mg/kg)
5
4
3
2
1
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

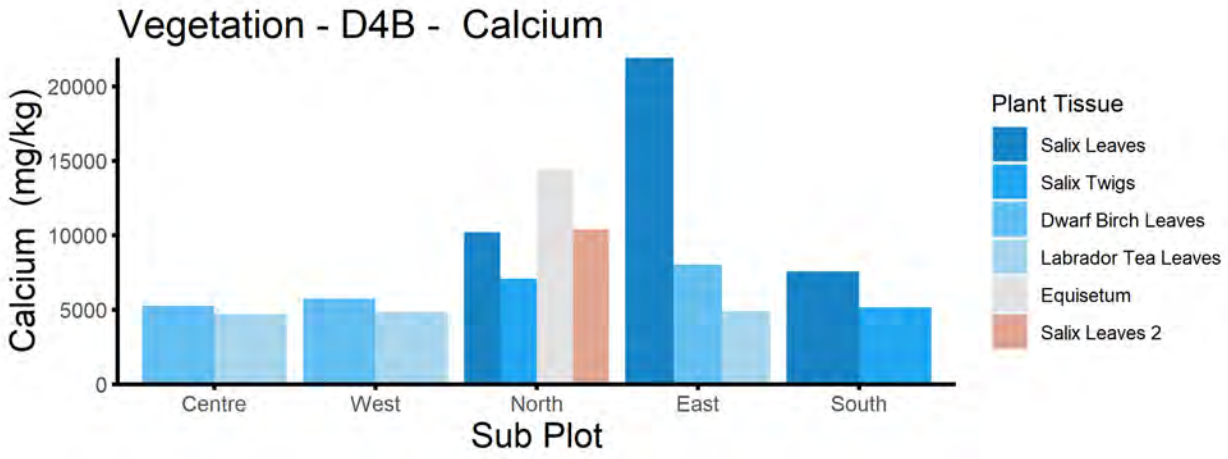

Vegetation - D4B - Barium
Barium (mg/kg)
80
60
40
20
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

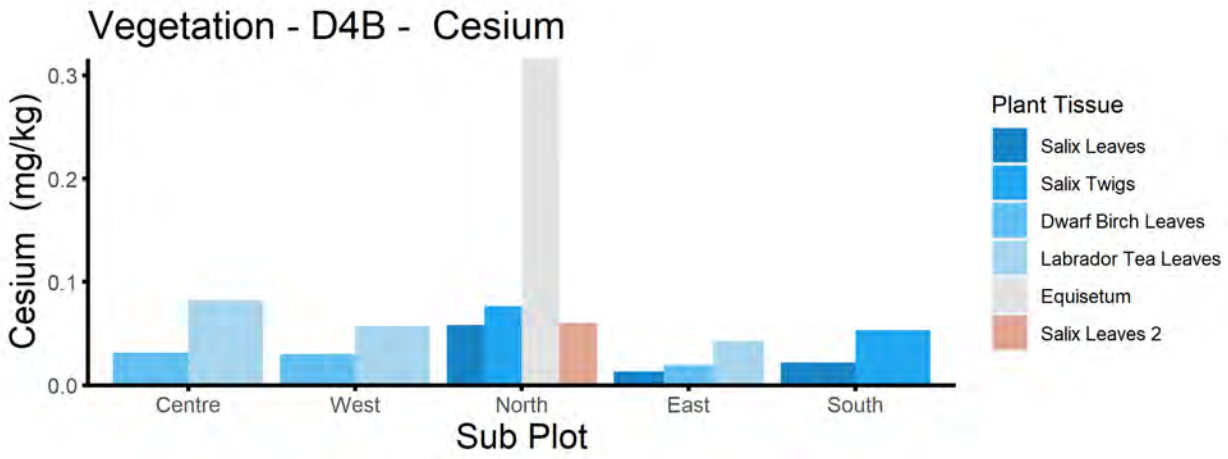

Vegetation - D4B - Beryllium
Beryllium (mg/kg)
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

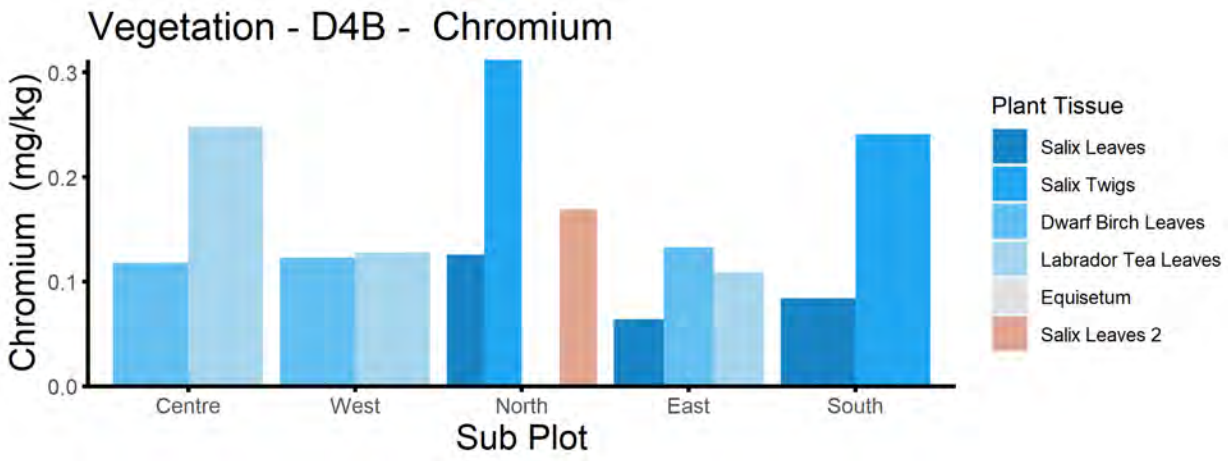

Vegetation - D4B - Bismuth
Bismuth (mg/kg)
0.15
0.10
0.05
0.00
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

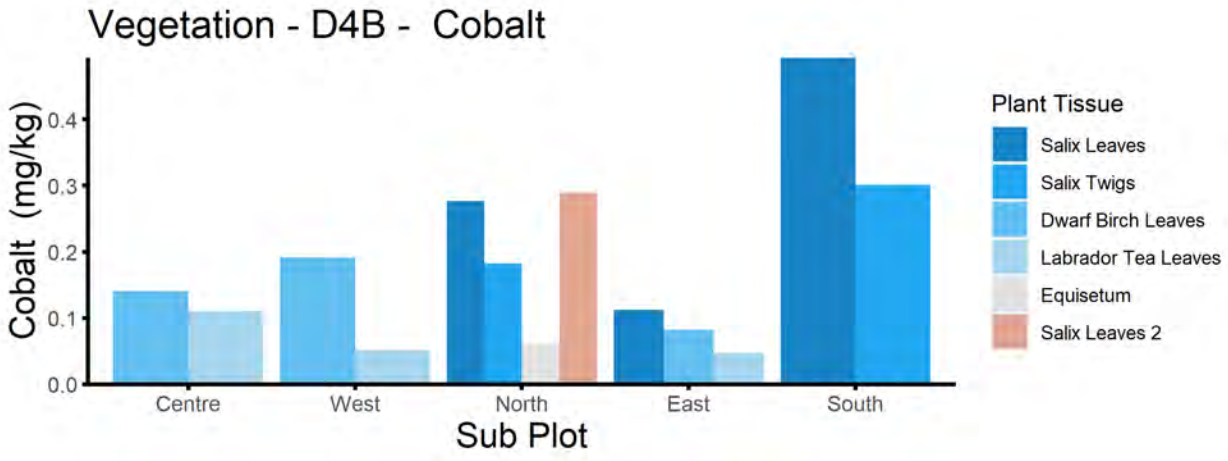

Vegetation - D4B - Boron
Boron (mg/kg)
12.5
10.0
7.5
5.0
2.5
0.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

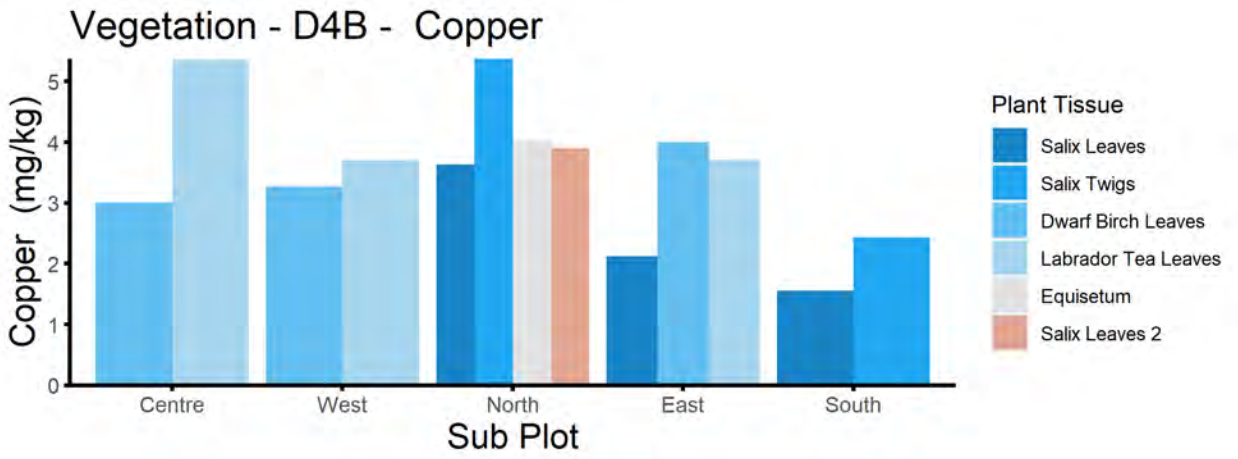

Vegetation - D4B - Cadmium
Cadmium (mg/kg)
1.25
1.00
0.75
0.50
0.25
0.00
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

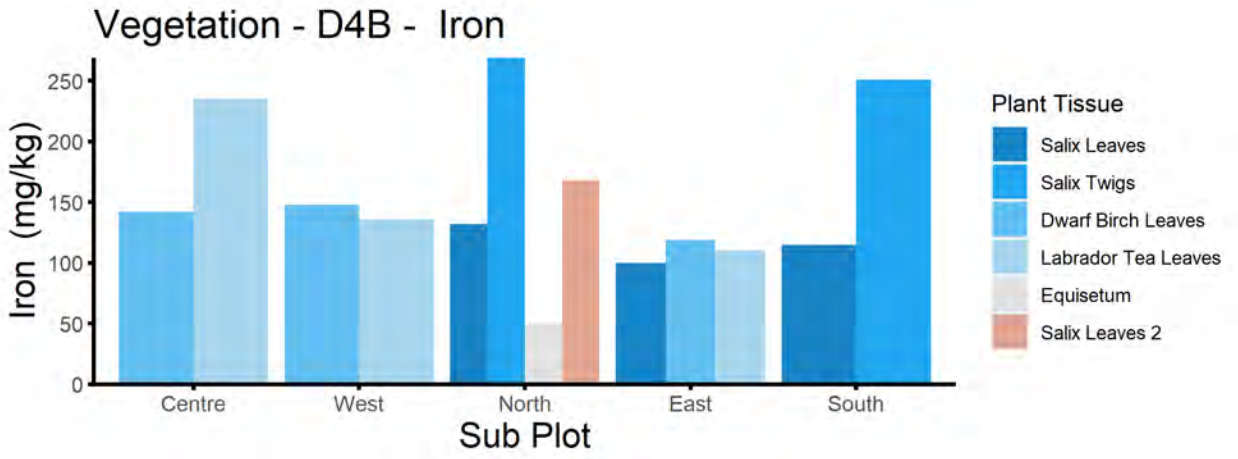

Vegetation - D4B - Calcium
Calcium (mg/kg)
20000
15000
10000
5000
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

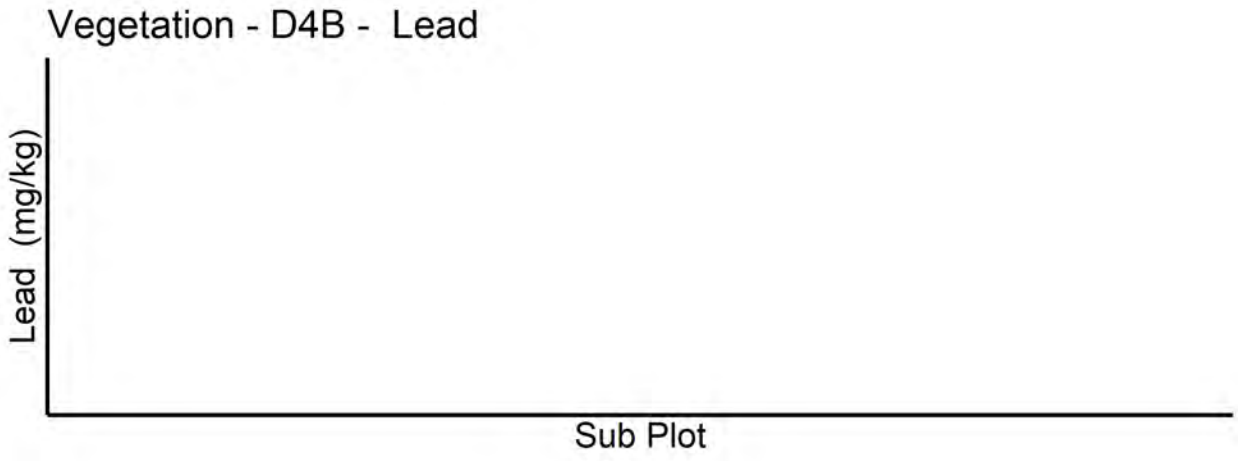

Vegetation - D4B - Cesium
Cesium (mg/kg)
0.3
0.2
0.1
0.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

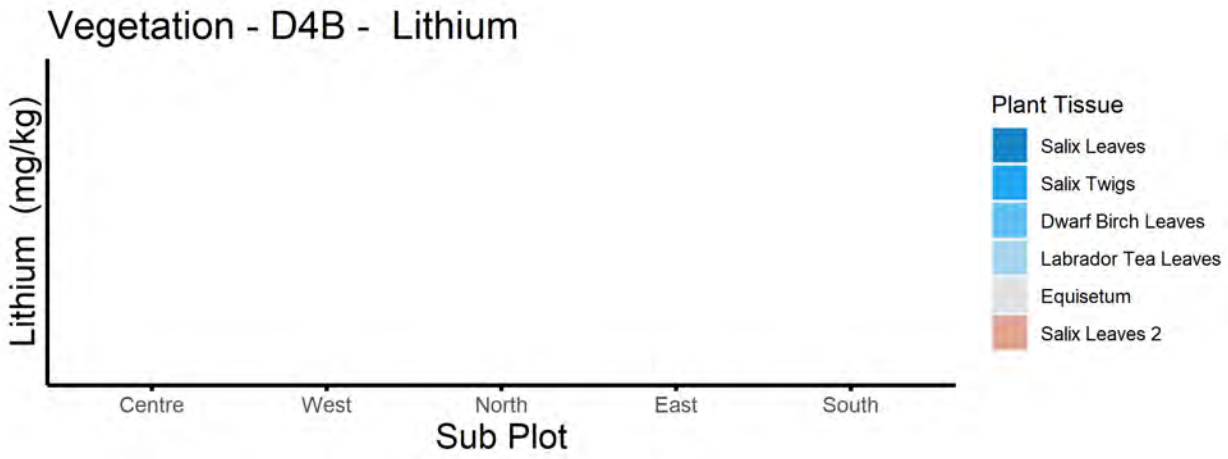

Vegetation - D4B - Chromium
Chromium (mg/kg)
0.3
0.2
0.1
0.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

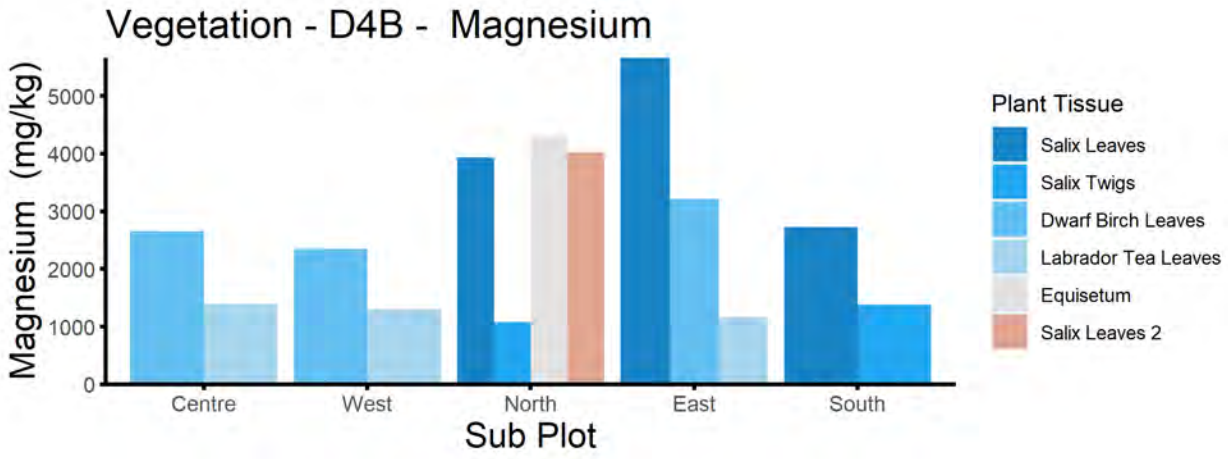

Vegetation - D4B - Cobalt
Cobalt (mg/kg)
0.4
0.3
0.2
0.1
0.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

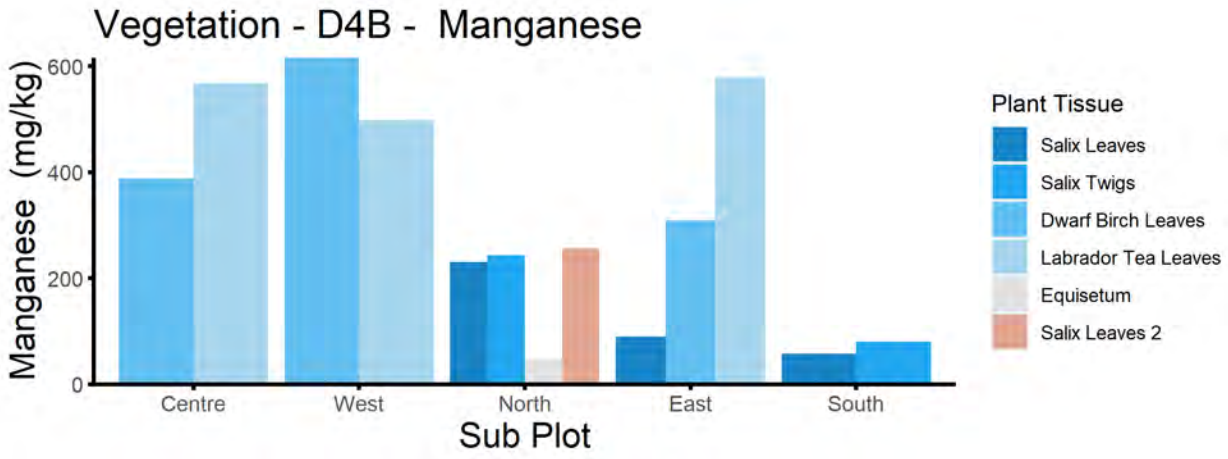

Vegetation - D4B - Copper
Copper (mg/kg)
0
1
2
3
4
5
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

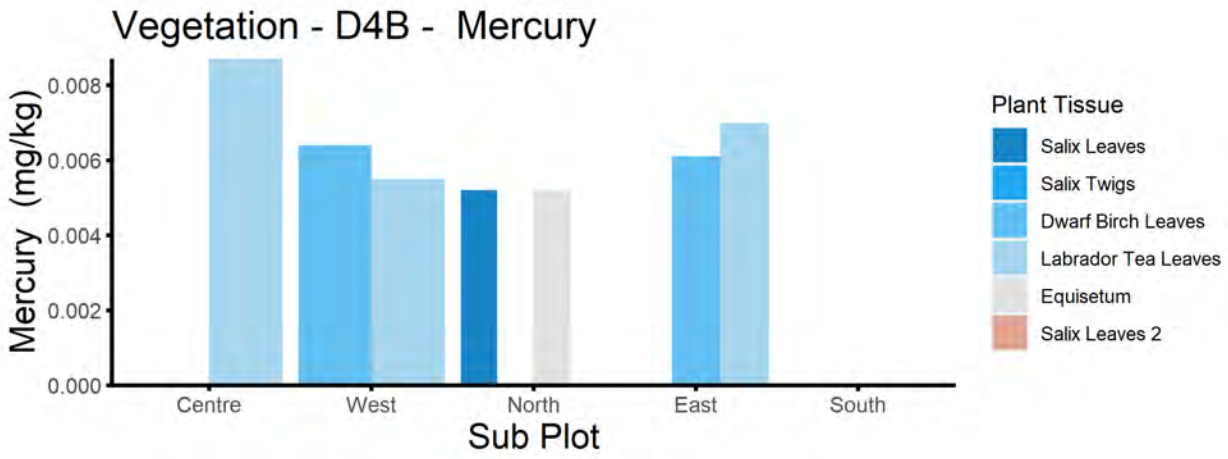

Vegetation - D4B - Iron
Iron (mg/kg)
0
50
100
150
200
250
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

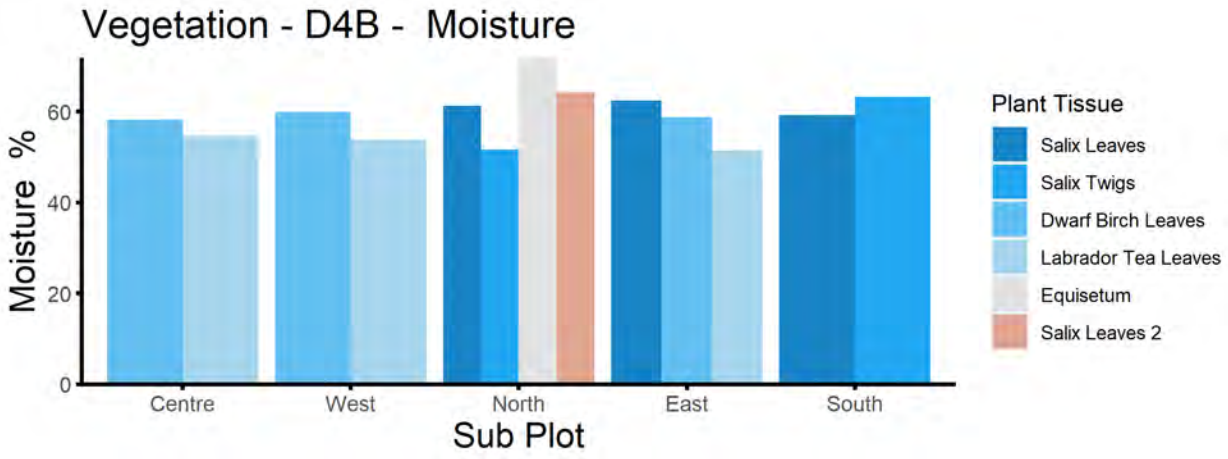

Vegetation - D4B - Lead
Lead (mg/kg)
Sub Plot

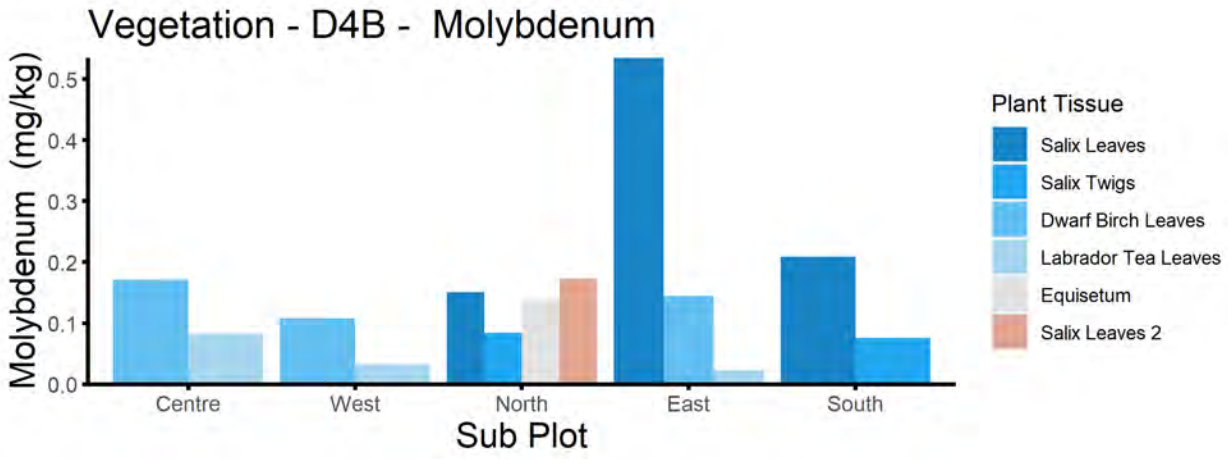

Vegetation - D4B - Lithium
Lithium (mg/kg)
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

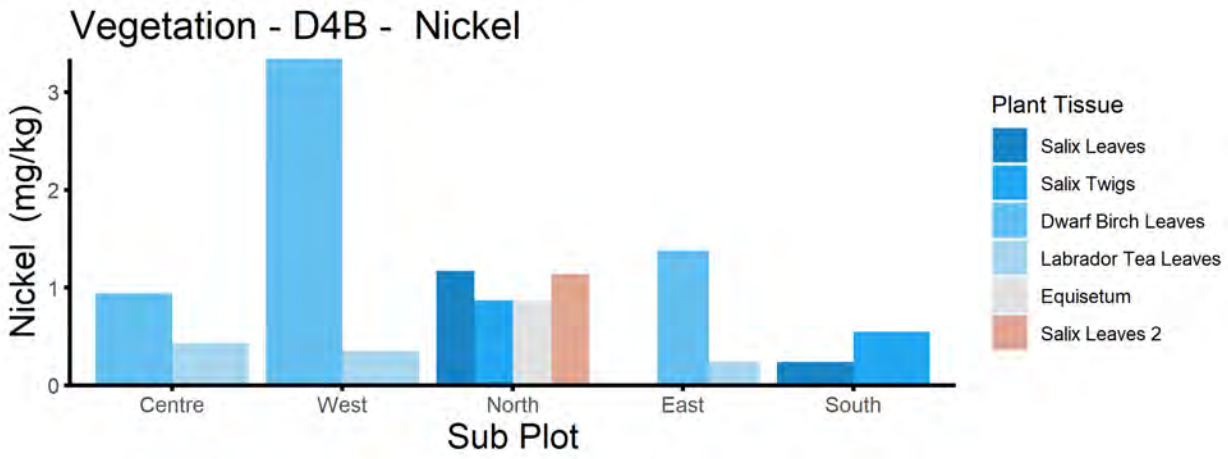

Vegetation - D4B - Magnesium
Magnesium (mg/kg)
5000
4000
3000
2000
1000
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

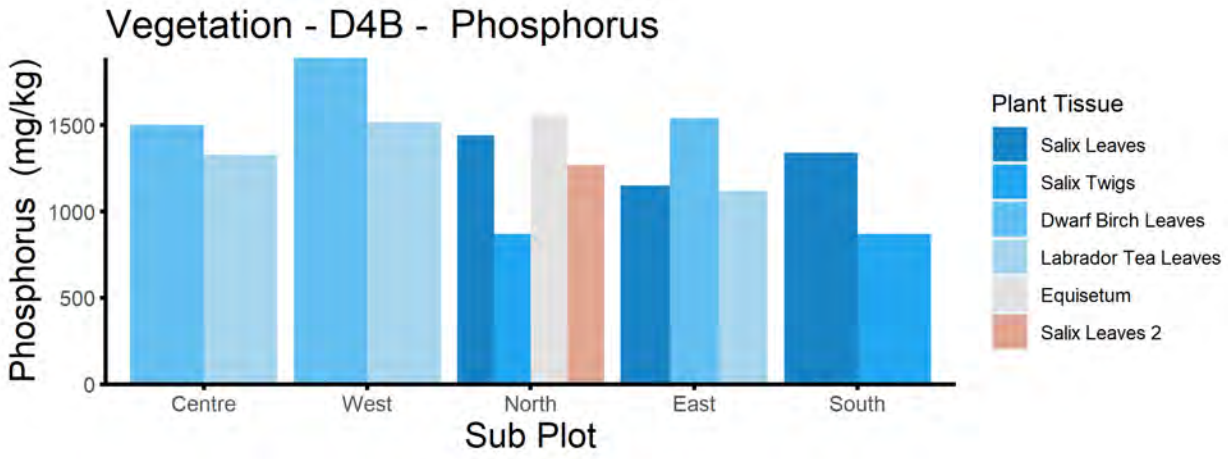

Vegetation - D4B - Manganese
Manganese (mg/kg)
600
400
200
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

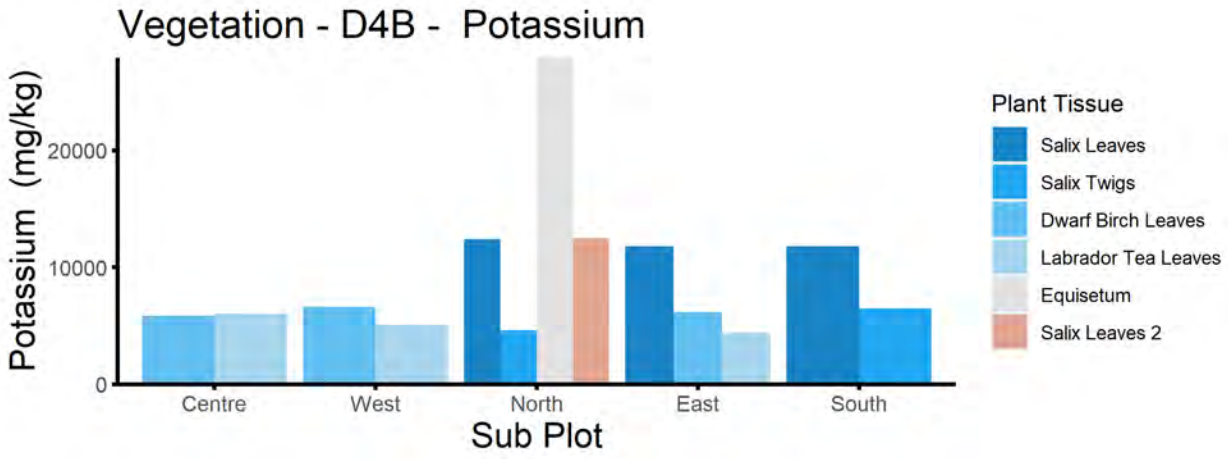

Vegetation - D4B - Mercury
Mercury (mg/kg)
0.008
0.006
0.004
0.002
0.000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

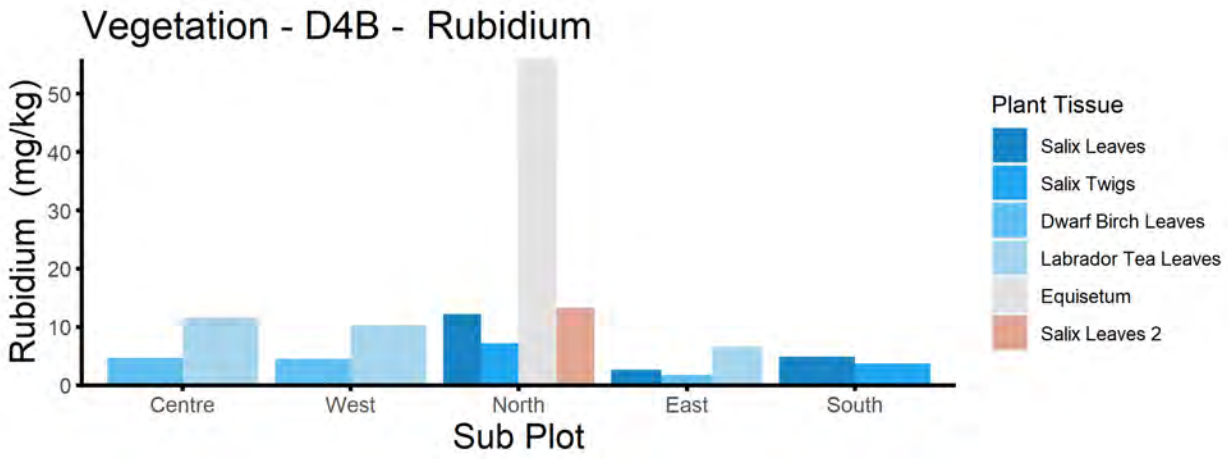

Vegetation - D4B - Moisture
Moisture %
60
40
20
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

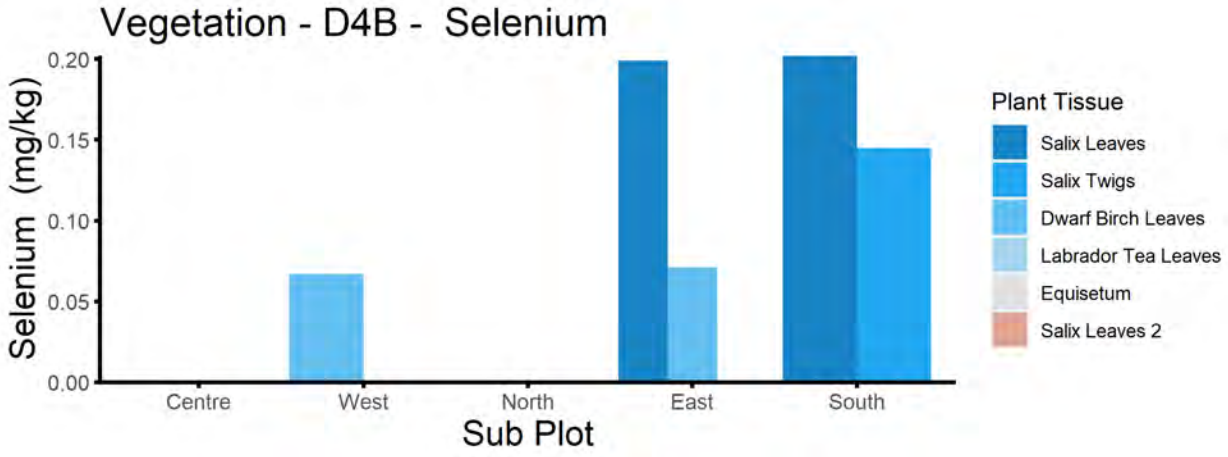

Vegetation - D4B - Molybdenum
Molybdenum (mg/kg)
0.5
0.4
0.3
0.2
0.1
0.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

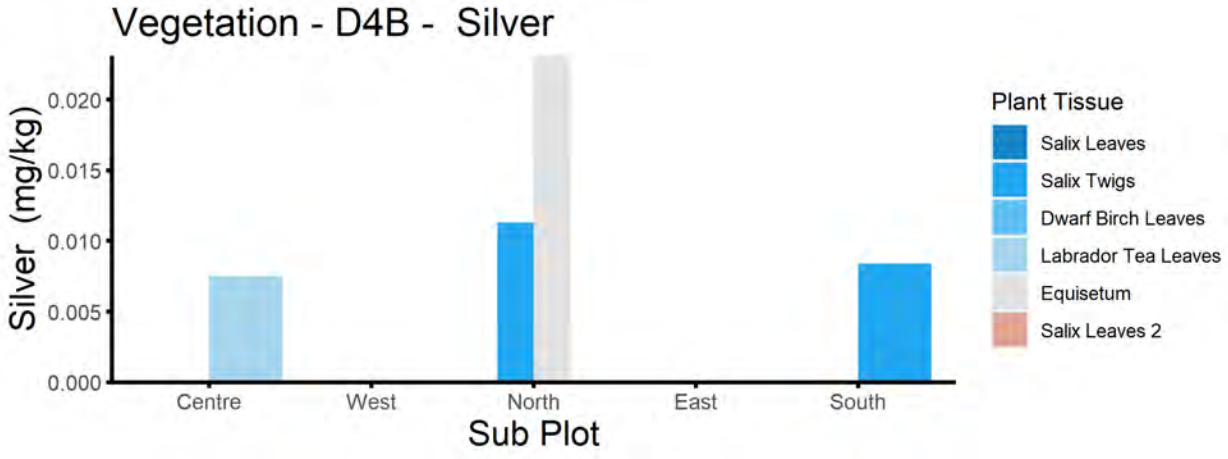

Vegetation - D4B - Nickel
Nickel (mg/kg)
0
1
2
3
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

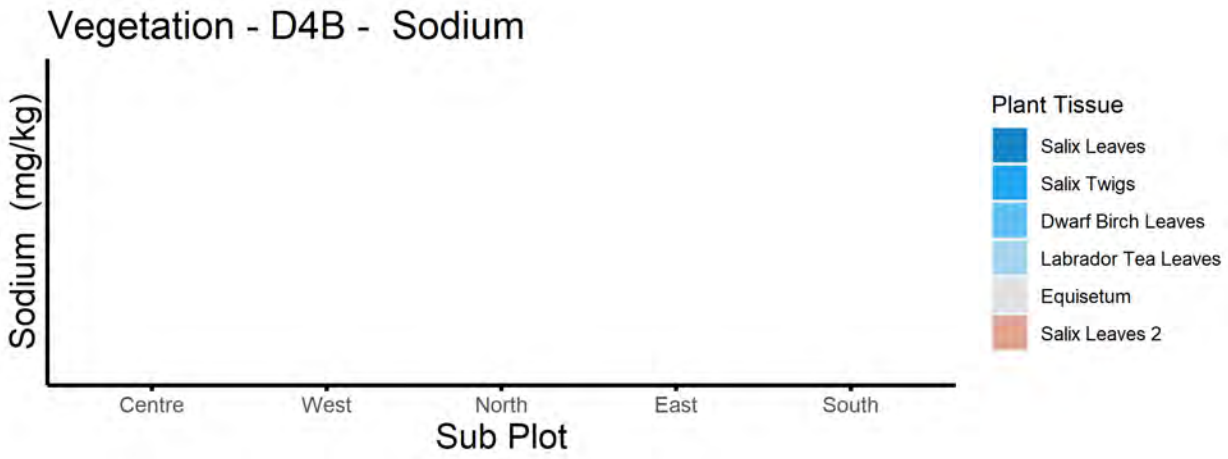

Vegetation - D4B - Phosphorus
Phosphorus (mg/kg)
0
500
1000
1500
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

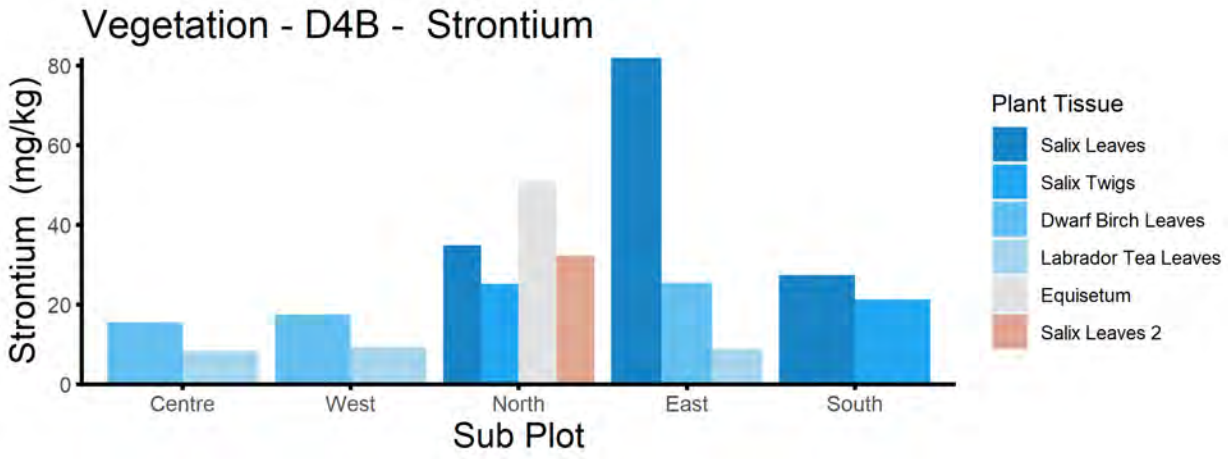

Vegetation - D4B - Potassium
Potassium (mg/kg)
0
10000
20000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

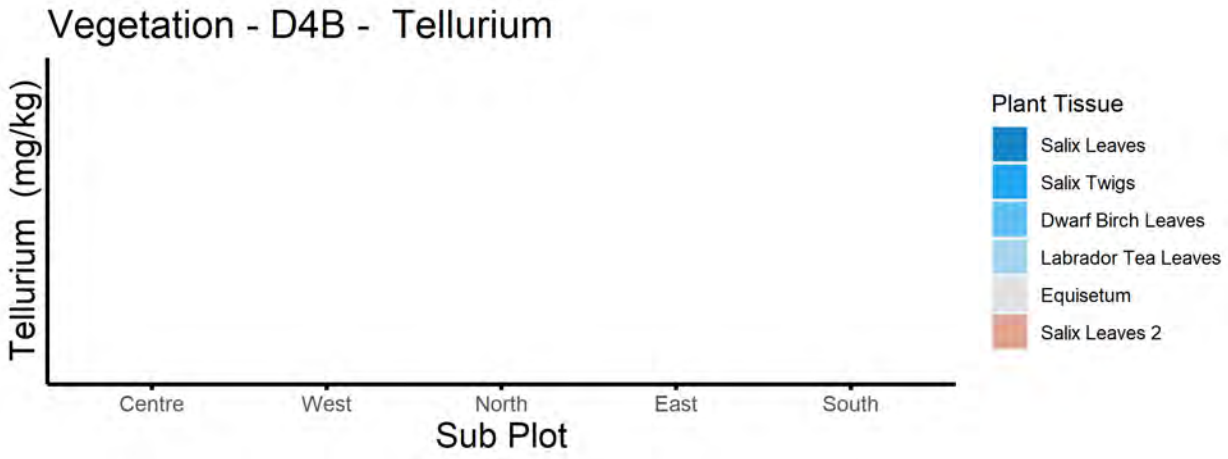

Vegetation - D4B - Rubidium
Rubidium (mg/kg)
0
10
20
30
40
50
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

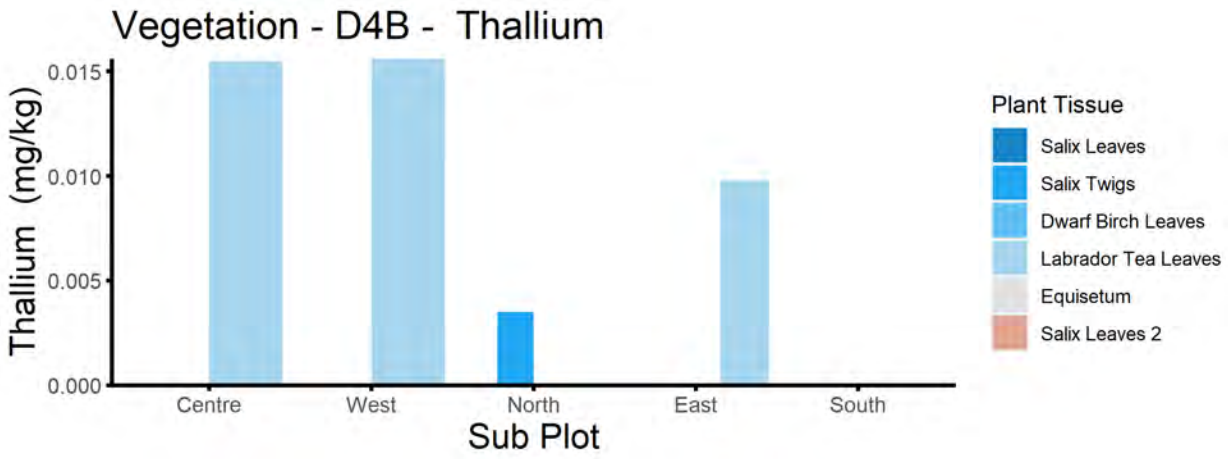

Vegetation - D4B - Selenium
Selenium (mg/kg)
0.00
0.05
0.10
0.15
0.20
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

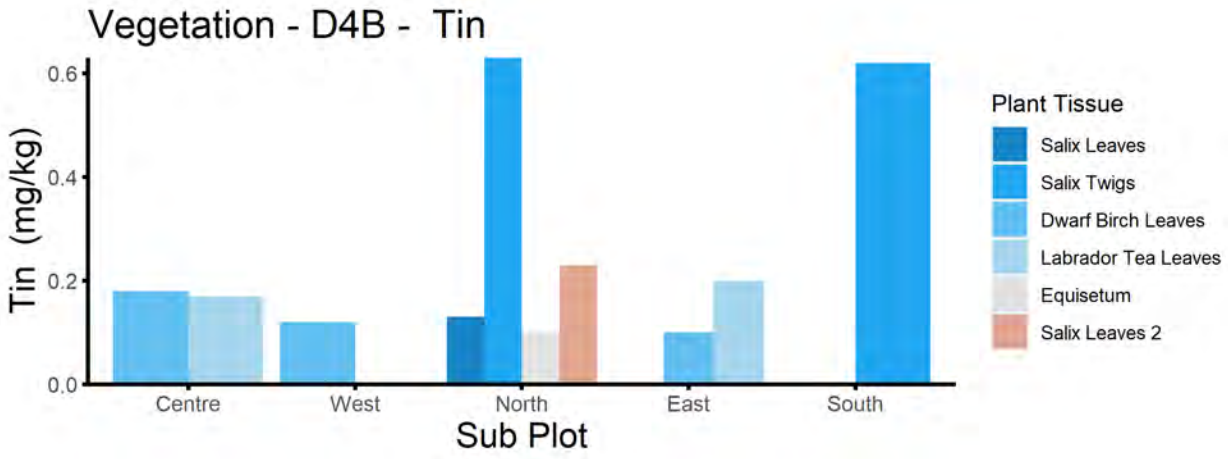

Vegetation - D4B - Silver
Silver (mg/kg)
0.000
0.005
0.010
0.015
0.020
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

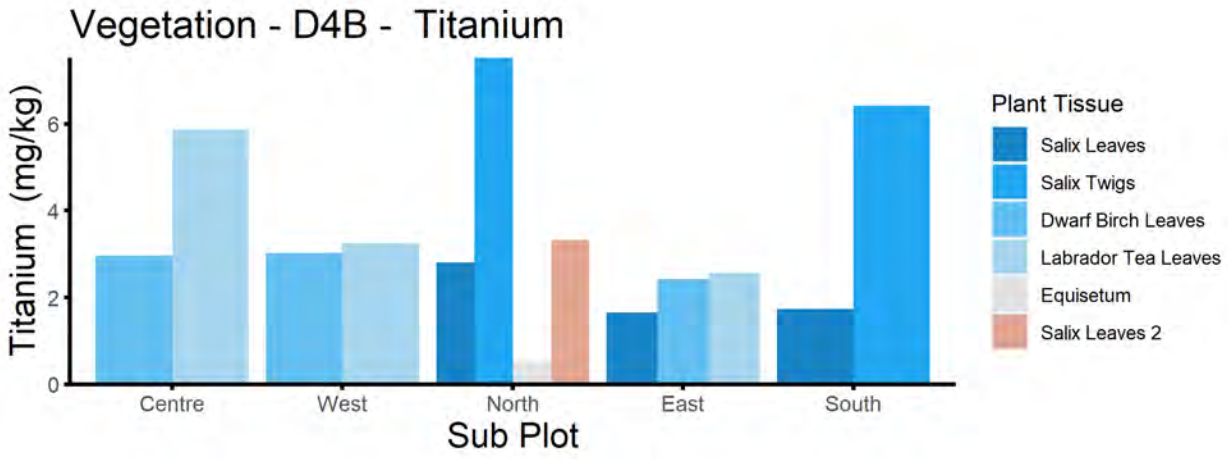

Vegetation - D4B - Sodium
Sodium (mg/kg)
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

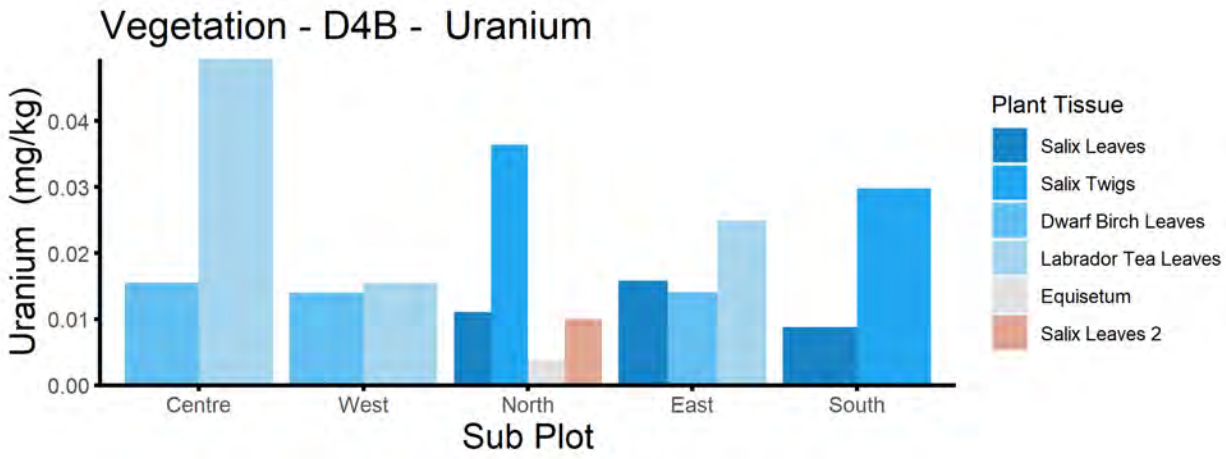

Vegetation - D4B - Strontium
Strontium (mg/kg)
0
20
40
60
80
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

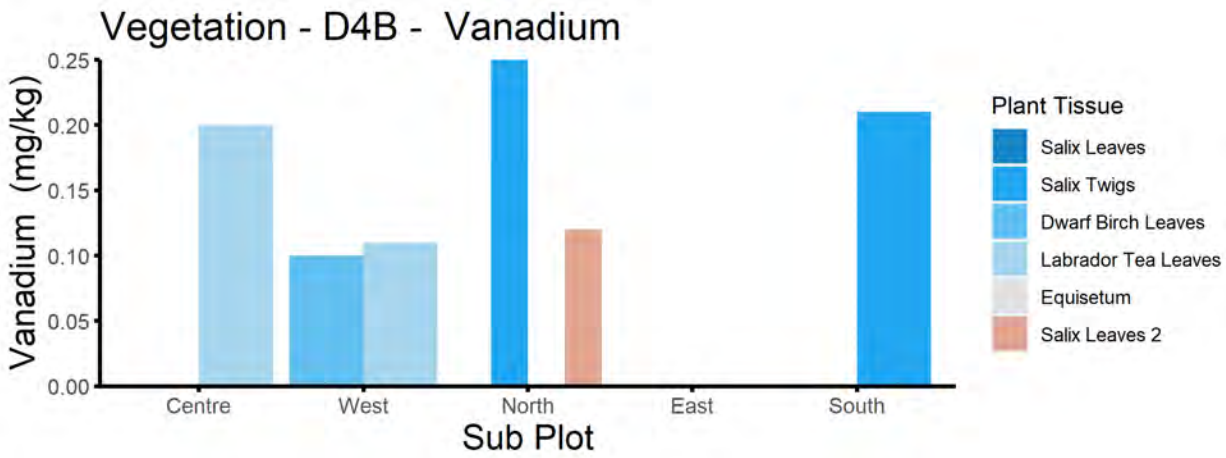

Vegetation - D4B - Tellurium
Tellurium (mg/kg)
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

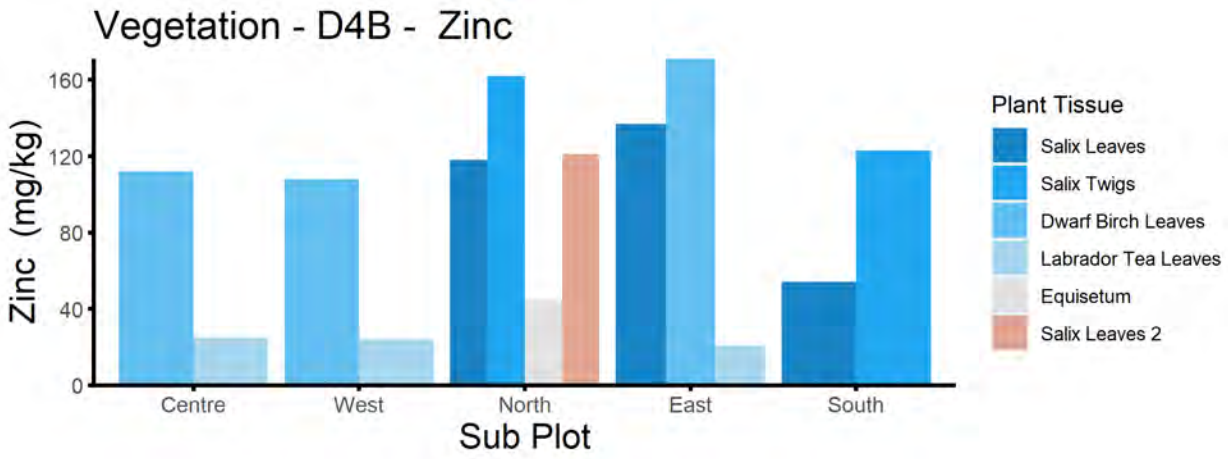

Vegetation - D4B - Thallium
Thallium (mg/kg)
0.015
0.010
0.005
0.000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

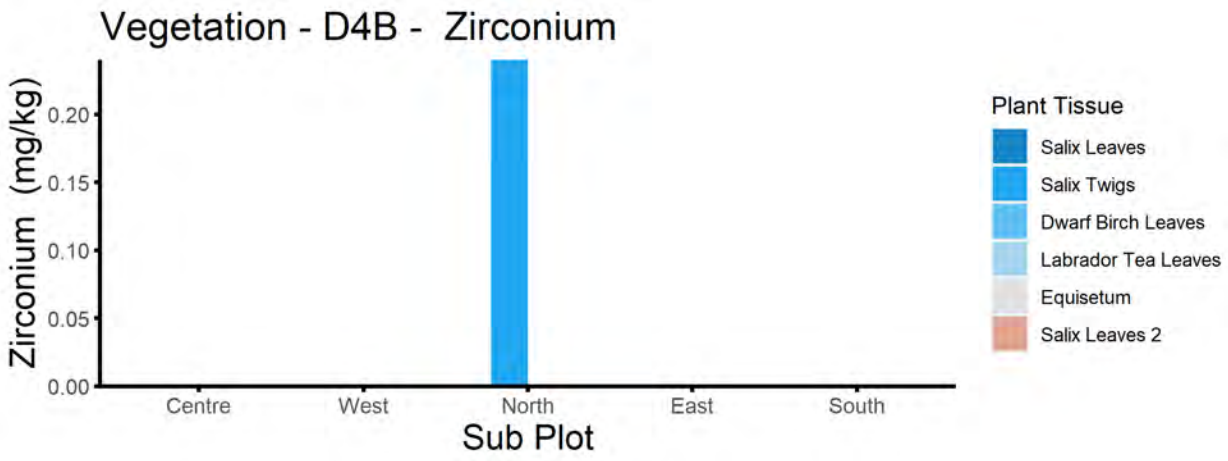

Vegetation - D4B - Tin
Tin (mg/kg)
0.6
0.4
0.2
0.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

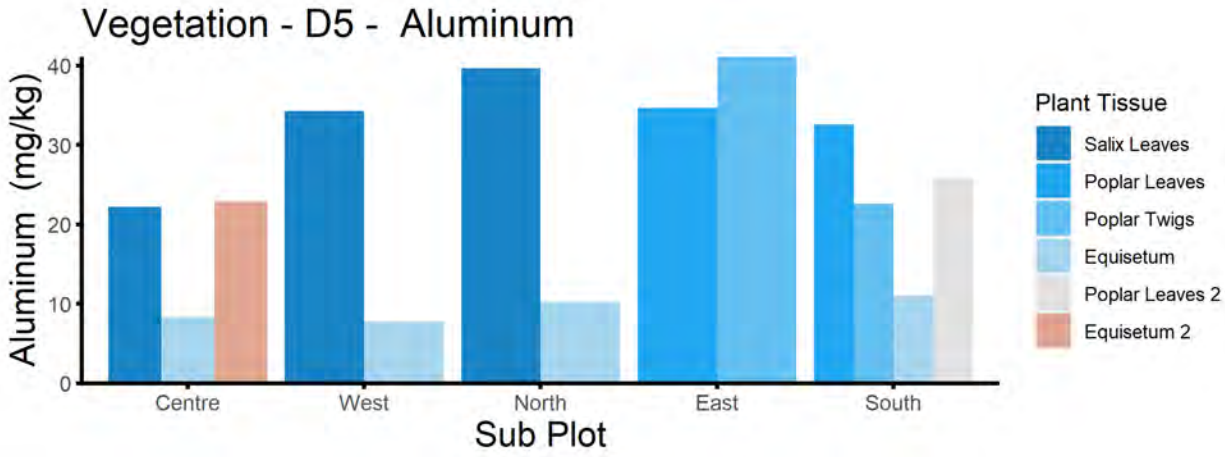

Vegetation - D4B - Titanium
Titanium (mg/kg)
6
4
2
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

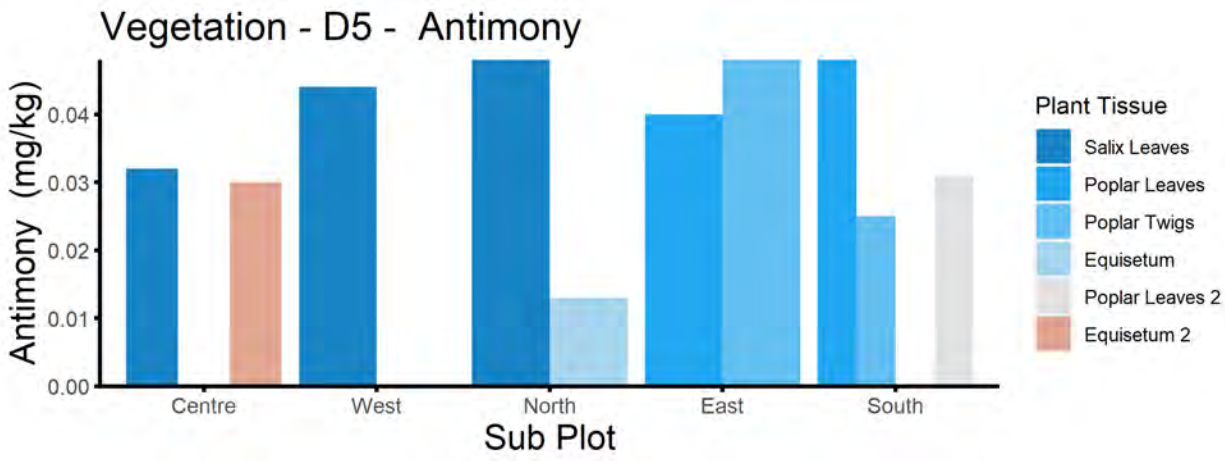

Vegetation - D4B - Uranium
Uranium (mg/kg)
0.04
0.03
0.02
0.01
0.00
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

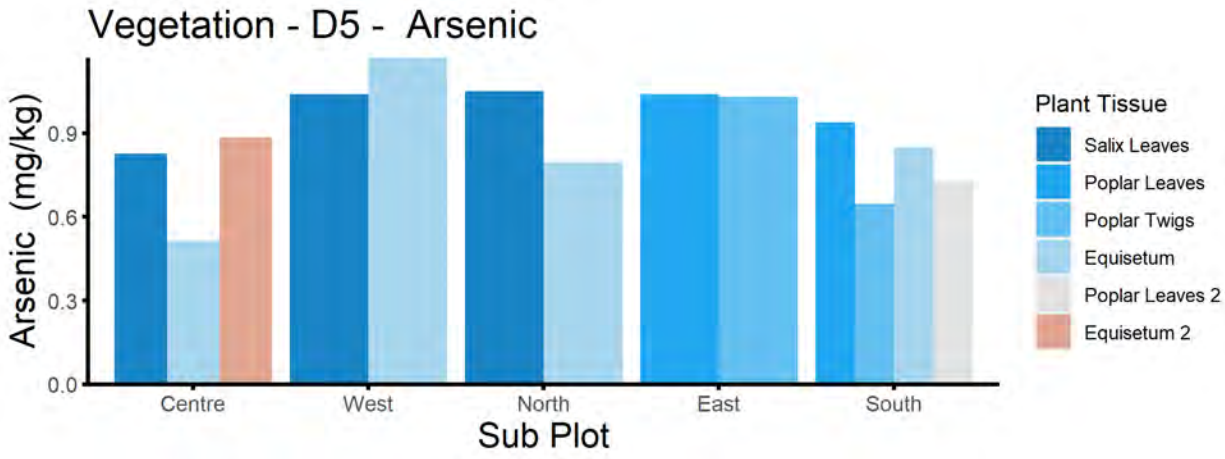

Vegetation - D4B - Vanadium
Vanadium (mg/kg)
0.25
0.20
0.15
0.10
0.05
0.00
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

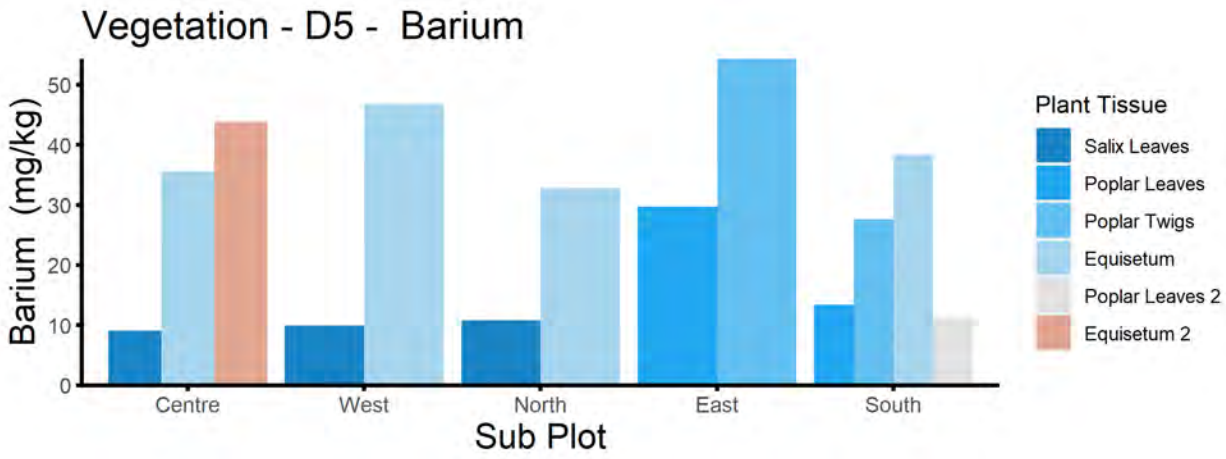

Vegetation - D4B - Zinc
Zinc (mg/kg)
160
120
80
40
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

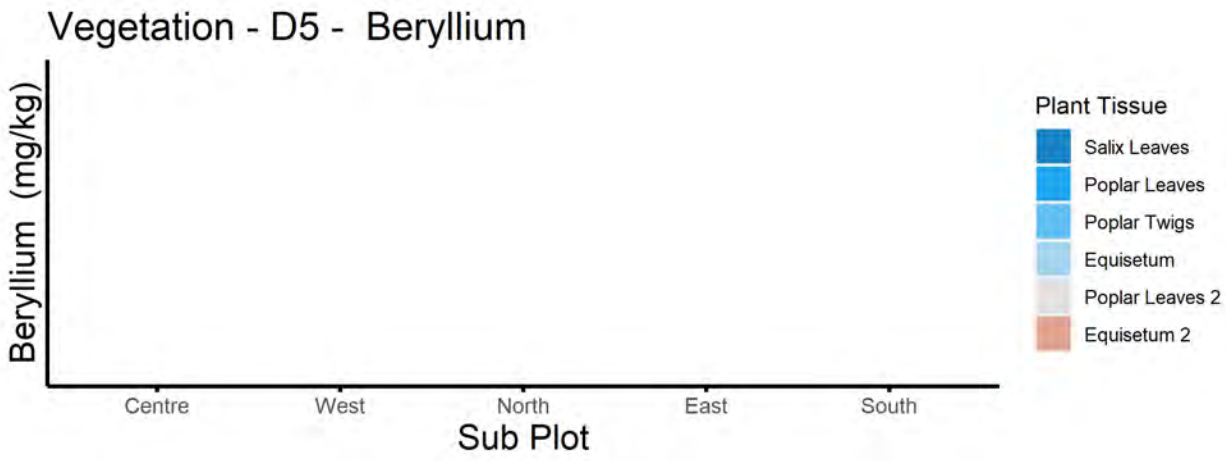

Vegetation - D4B - Zirconium
Zirconium (mg/kg)
0.20
0.15
0.10
0.05
0.00
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Salix Twigs
Dwarf Birch Leaves
Labrador Tea Leaves
Equisetum
Salix Leaves 2

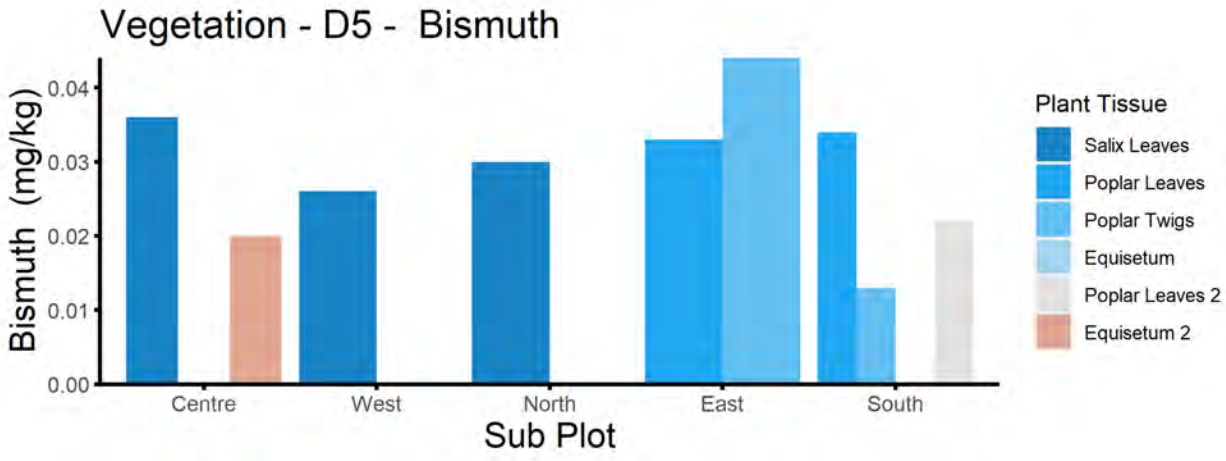

Vegetation - D5 - Aluminum
Aluminum (mg/kg)
40
30
20
10
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

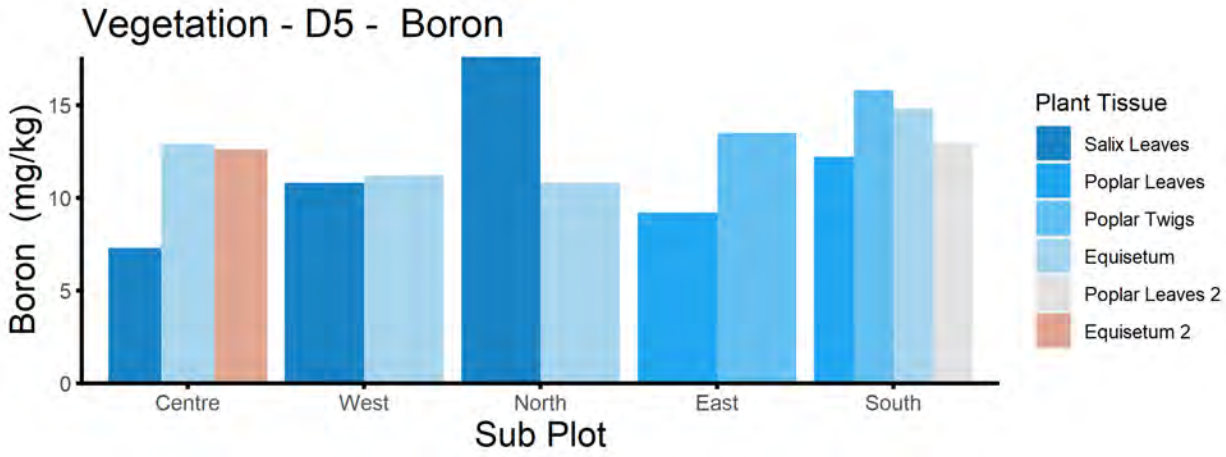

Vegetation - D5 - Antimony
Antimony (mg/kg)
0.04
0.03
0.02
0.01
0.00
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

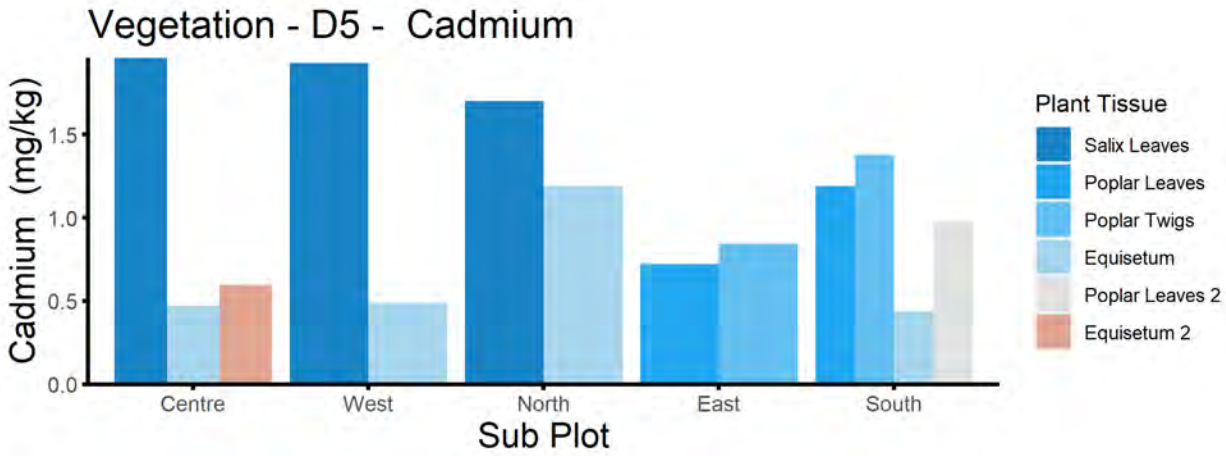

Vegetation - D5 - Arsenic
Arsenic (mg/kg)
0.9
0.6
0.3
0.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

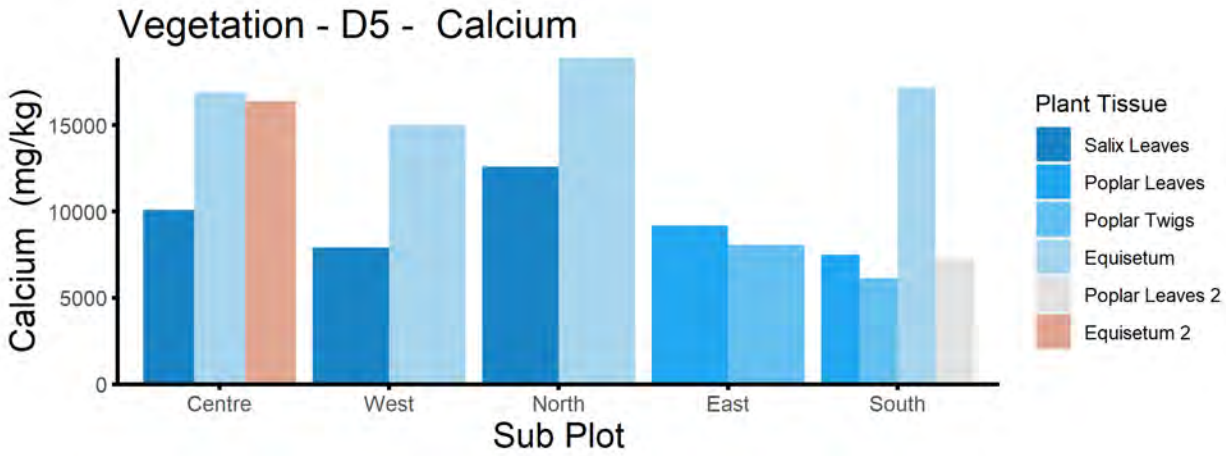

Vegetation - D5 - Barium
Barium (mg/kg)
0
10
20
30
40
50
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

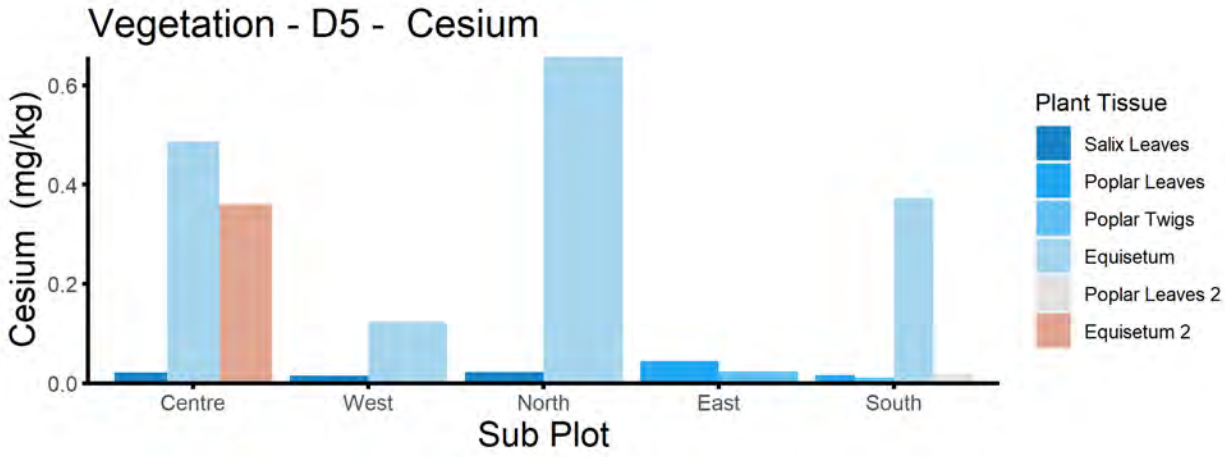

Vegetation - D5 - Beryllium
Beryllium (mg/kg)
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

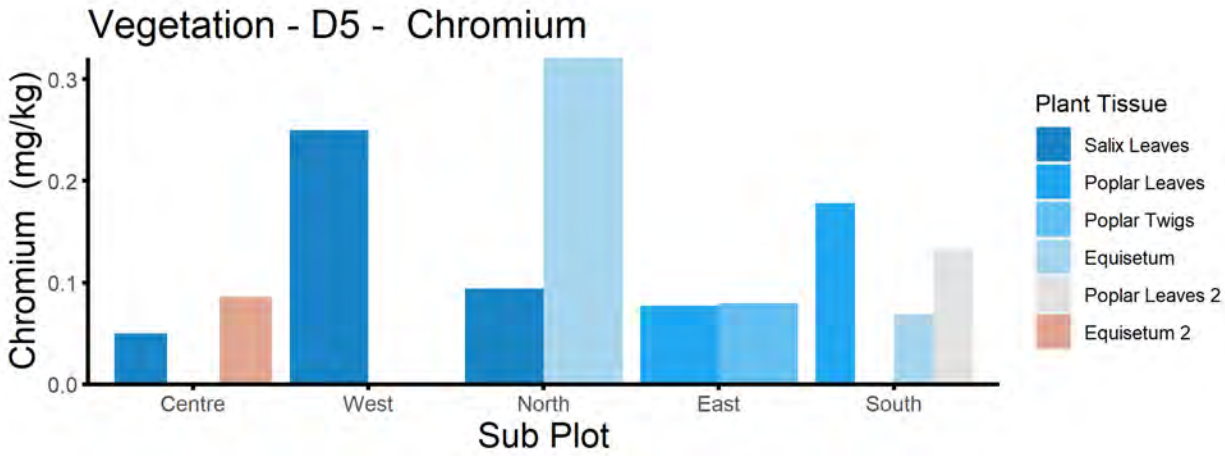

Vegetation - D5 - Bismuth
Bismuth (mg/kg)
0.00
0.01
0.02
0.03
0.04
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

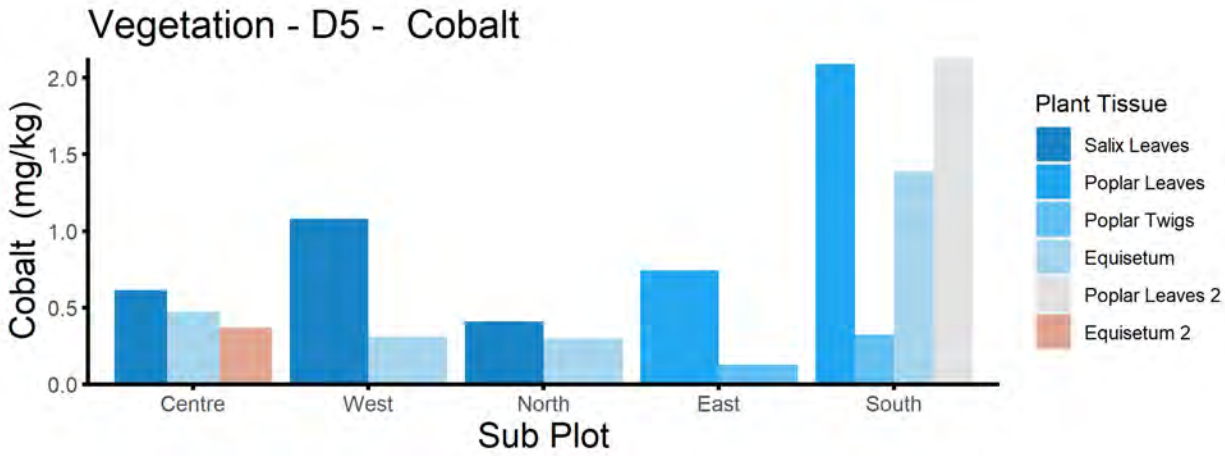

Vegetation - D5 - Boron
Boron (mg/kg)
0
5
10
15
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

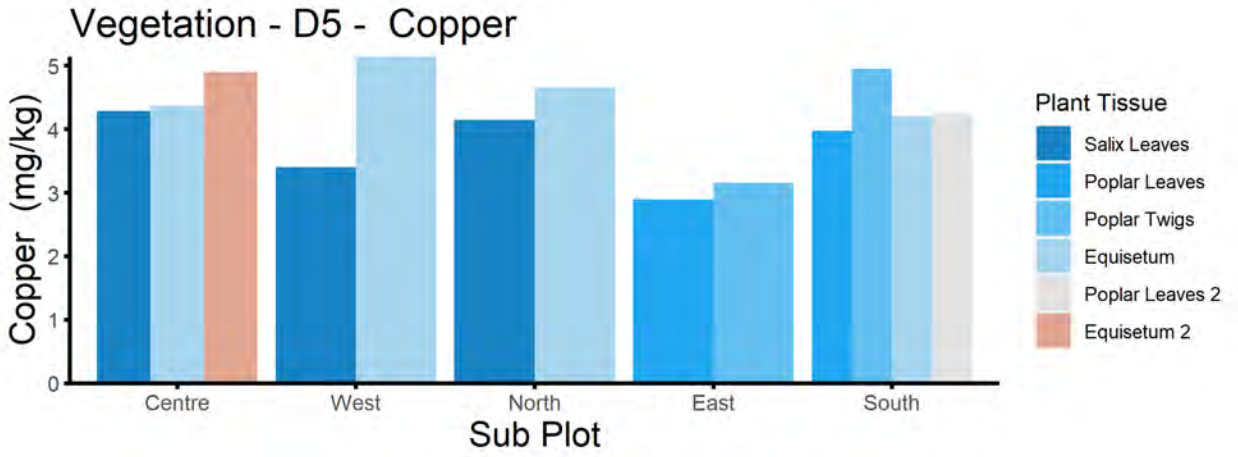

Vegetation - D5 - Cadmium
Cadmium (mg/kg)
0.0
0.5
1.0
1.5
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

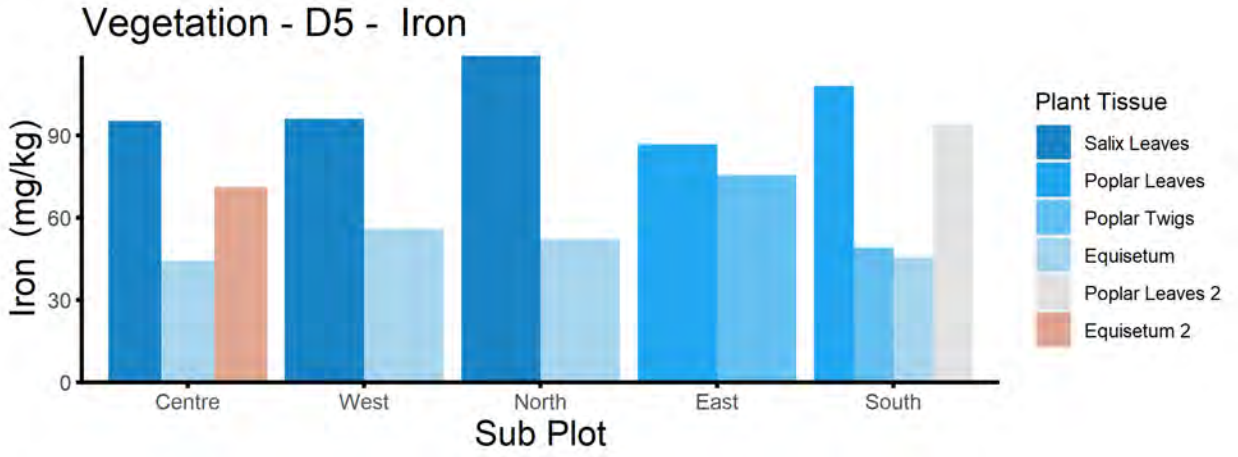

Vegetation - D5 - Calcium
Calcium (mg/kg)
0
5000
10000
15000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

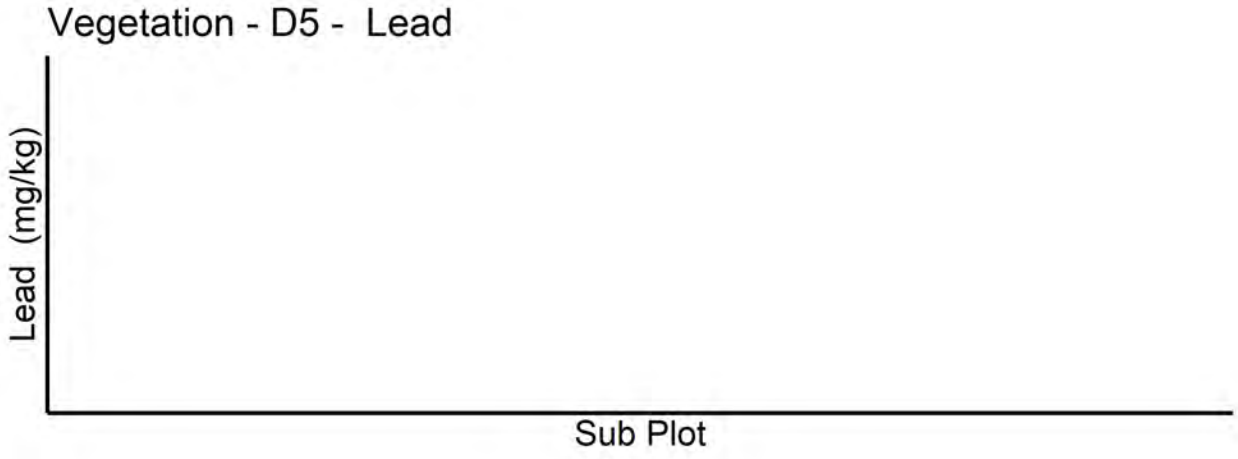

Vegetation - D5 - Cesium
Cesium (mg/kg)
0.0
0.2
0.4
0.6
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

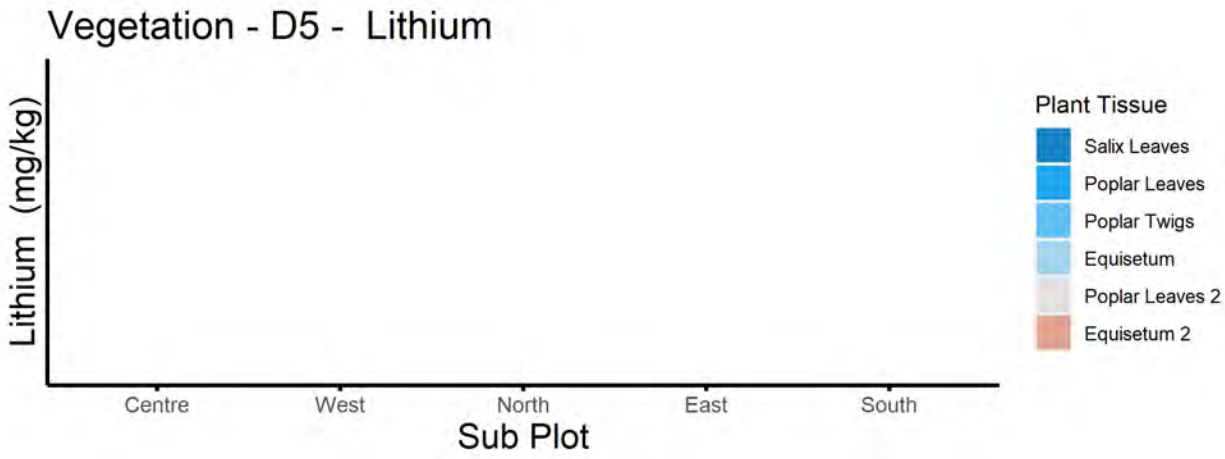

Vegetation - D5 - Chromium
Chromium (mg/kg)
0.0
0.1
0.2
0.3
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

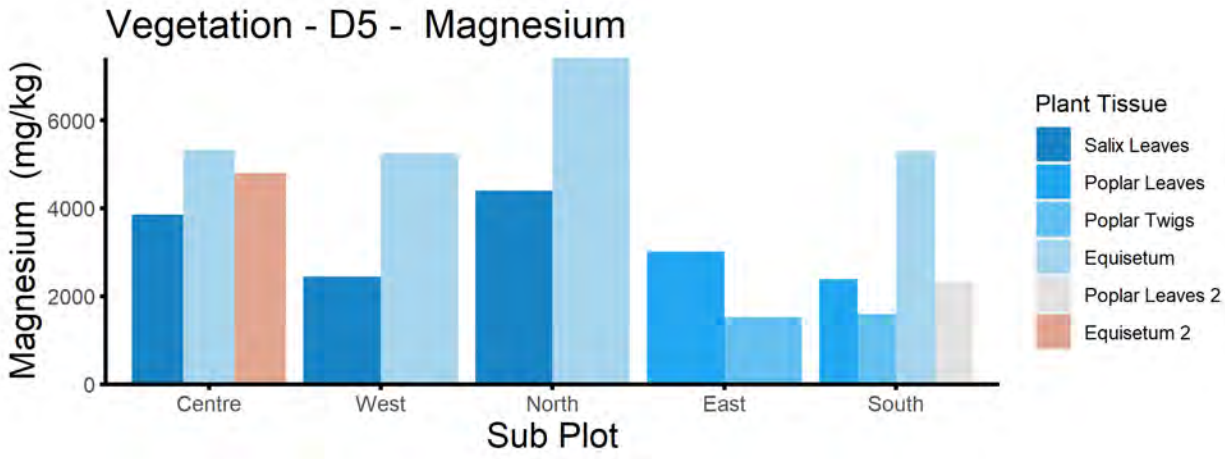

Vegetation - D5 - Cobalt
Cobalt (mg/kg)
0.0
0.5
1.0
1.5
2.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

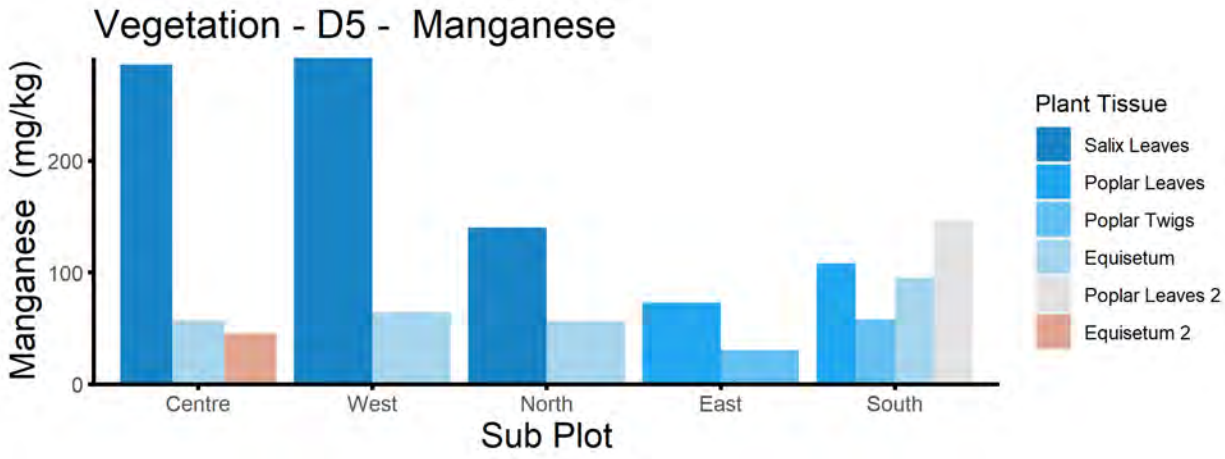

Vegetation - D5 - Copper
Copper (mg/kg)
0
1
2
3
4
5
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

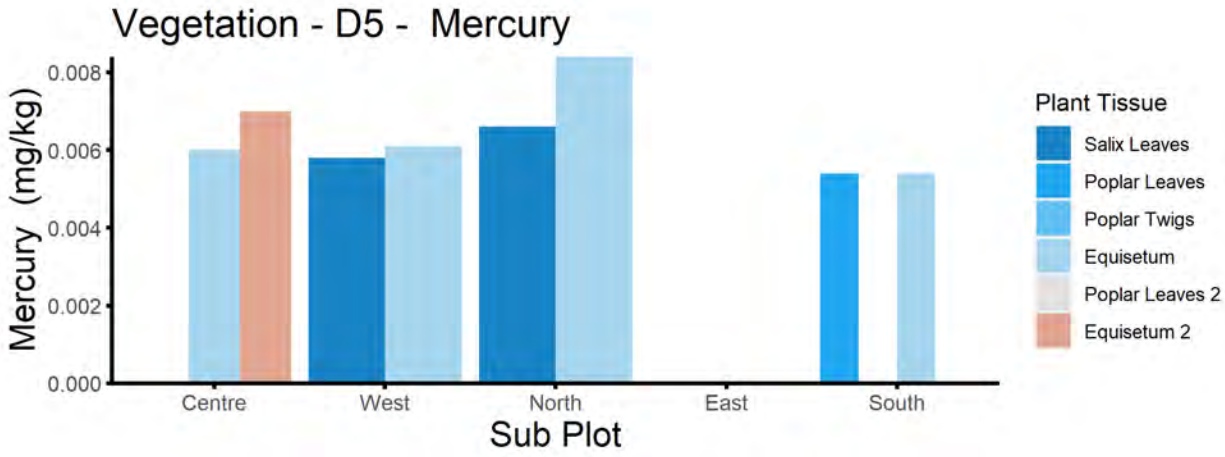

Vegetation - D5 - Iron
Iron (mg/kg)
0
30
60
90
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

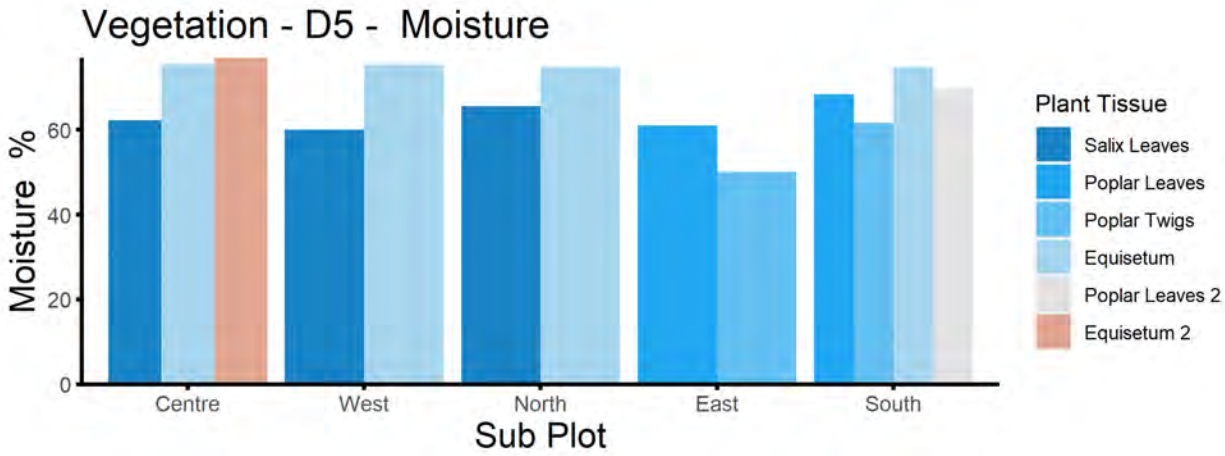

Vegetation - D5 - Lead
Lead (mg/kg)
Sub Plot

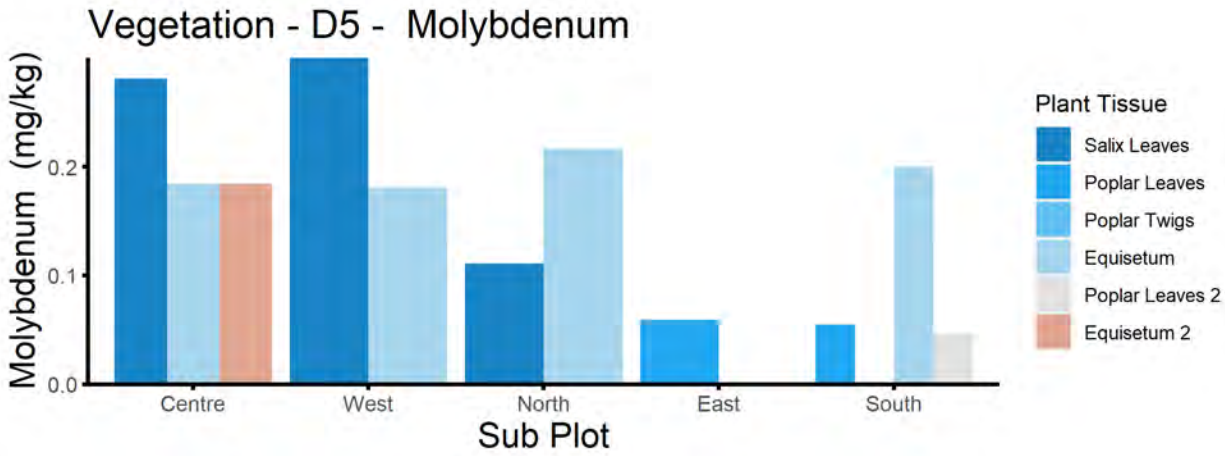

Vegetation - D5 - Lithium
Lithium (mg/kg)
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

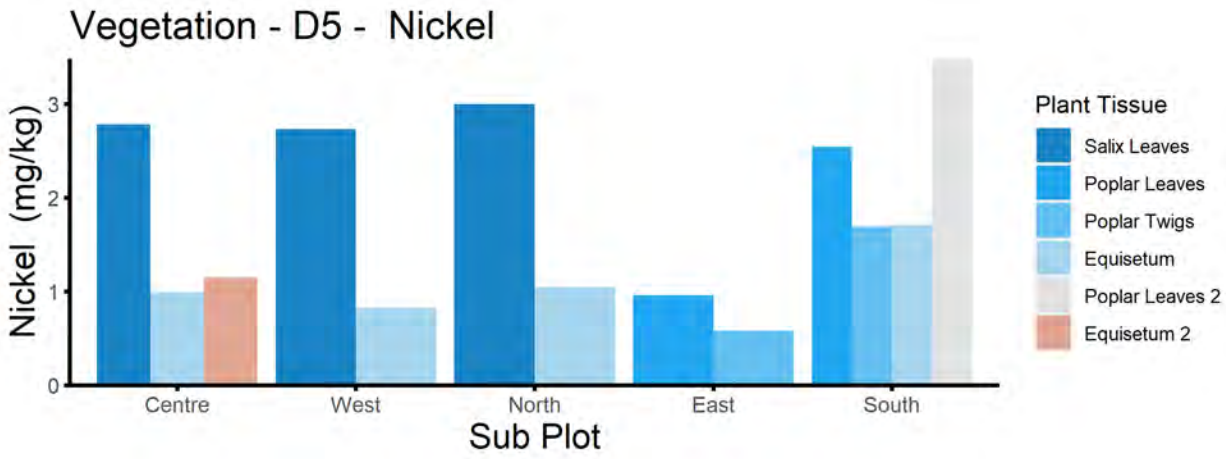

Vegetation - D5 - Magnesium
Magnesium (mg/kg)
6000
4000
2000
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

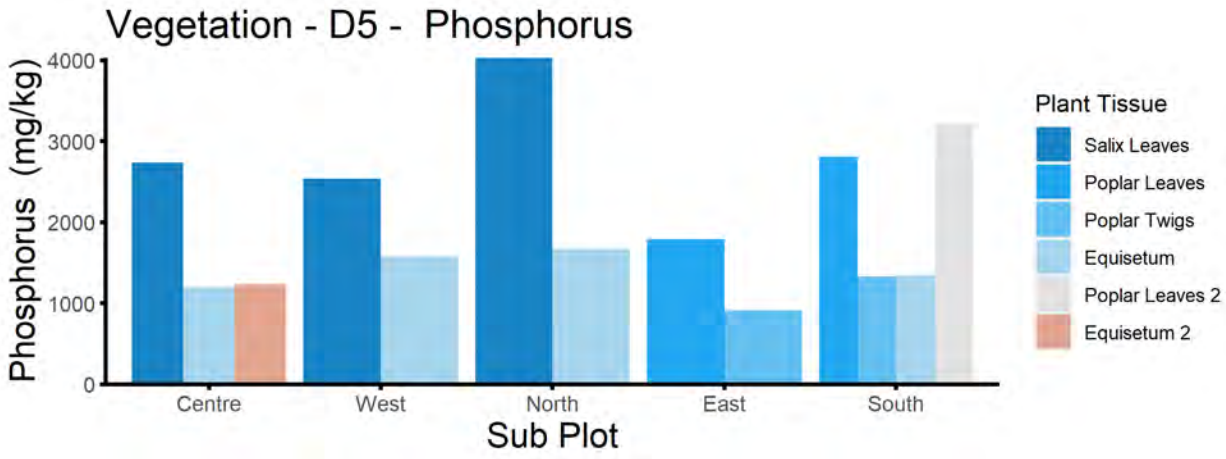

Vegetation - D5 - Manganese
Manganese (mg/kg)
200
100
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

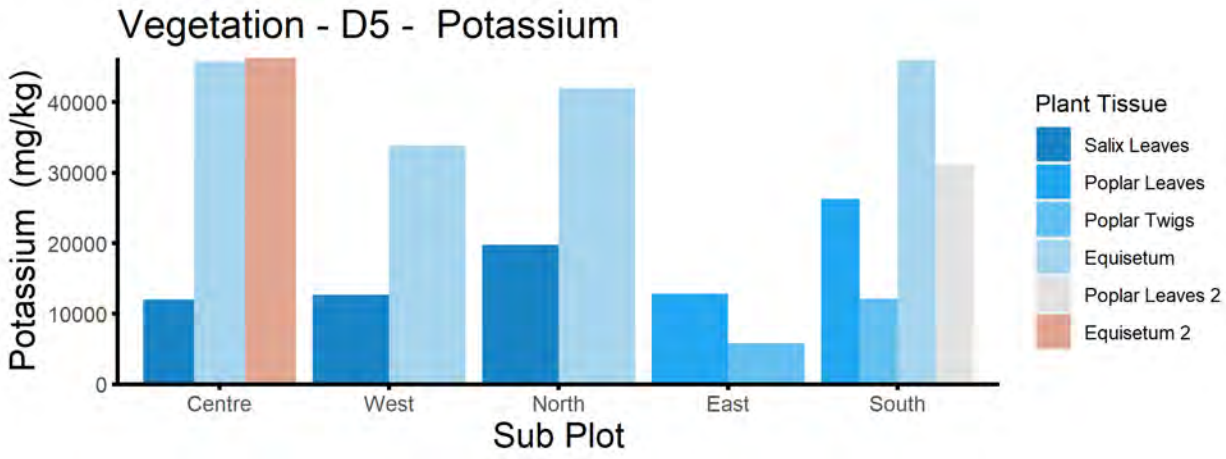

Vegetation - D5 - Mercury
Mercury (mg/kg)
0.008
0.006
0.004
0.002
0.000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

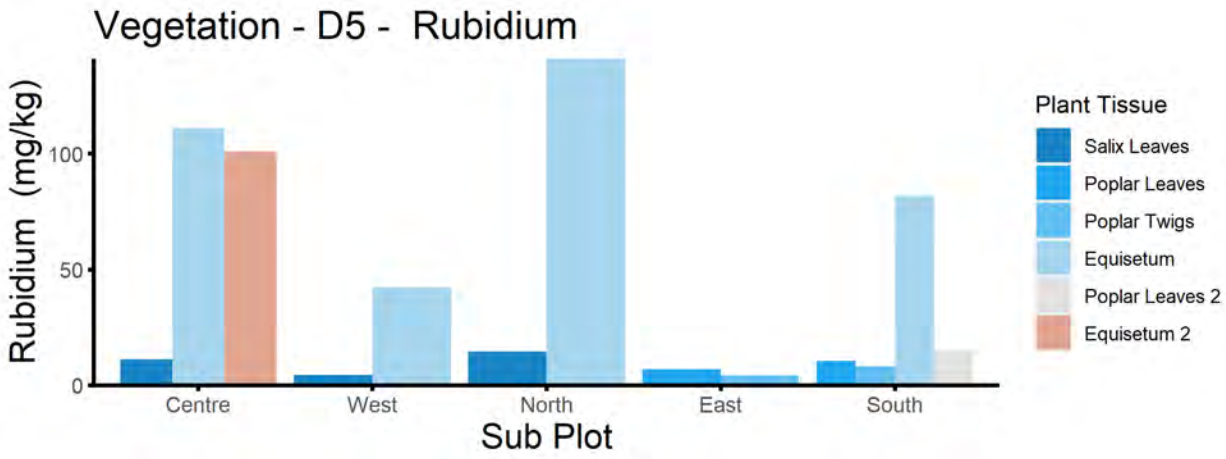

Vegetation - D5 - Moisture
Moisture %
60
40
20
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

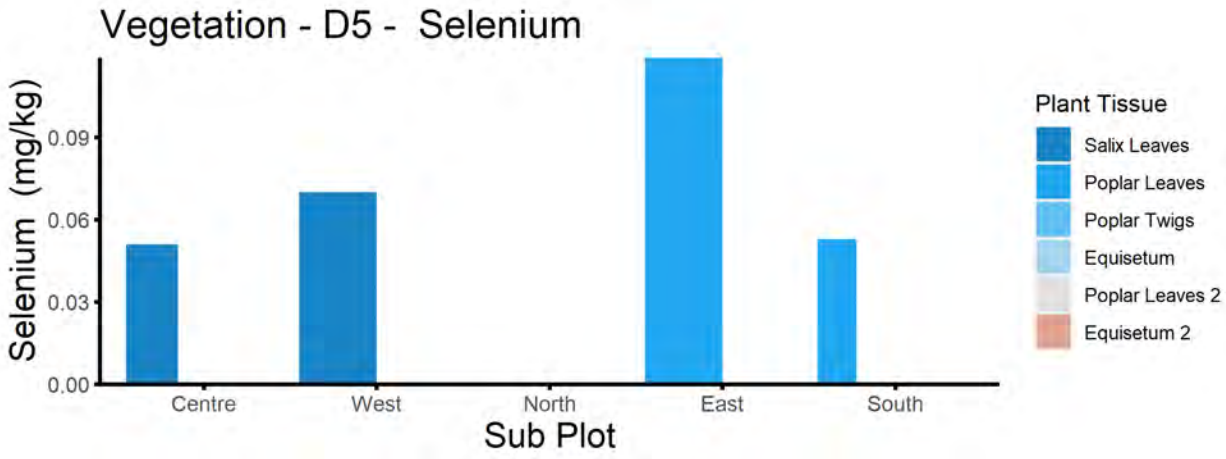

Vegetation - D5 - Molybdenum
Molybdenum (mg/kg)
0.2
0.1
0.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

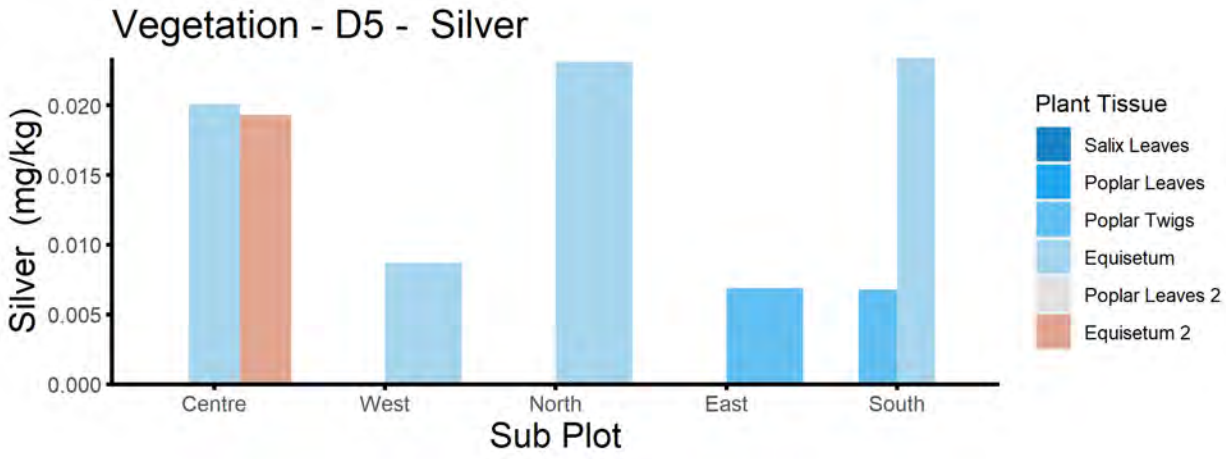

Vegetation - D5 - Nickel
Nickel (mg/kg)
0
1
2
3
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

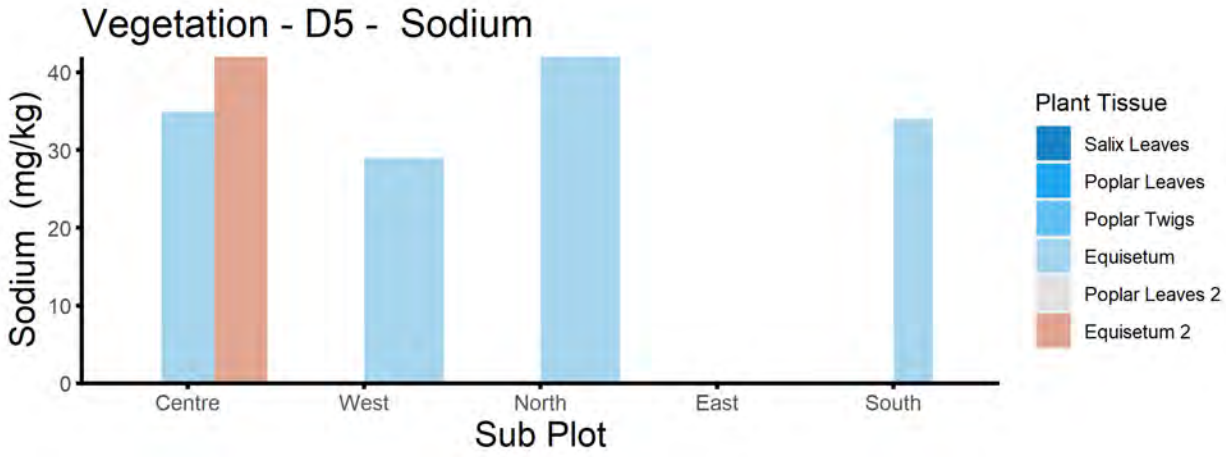

Vegetation - D5 - Phosphorus
Phosphorus (mg/kg)
0
1000
2000
3000
4000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

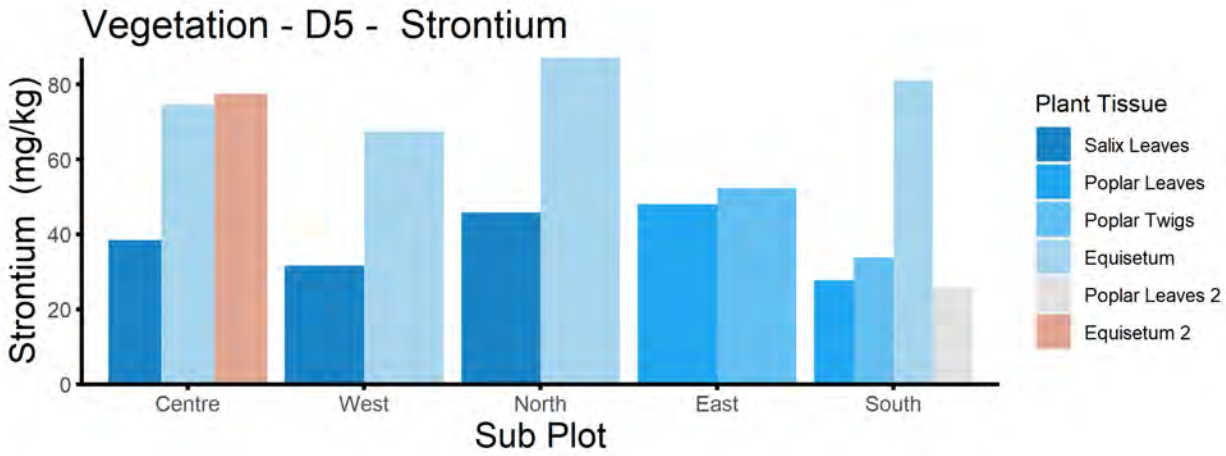

Vegetation - D5 - Potassium
Potassium (mg/kg)
0
10000
20000
30000
40000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

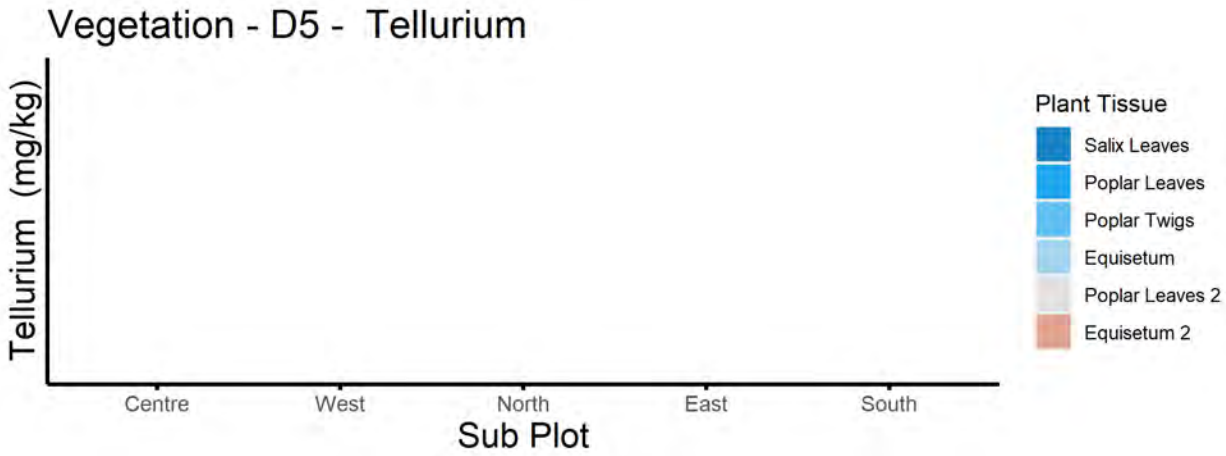

Vegetation - D5 - Rubidium
Rubidium (mg/kg)
100
50
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

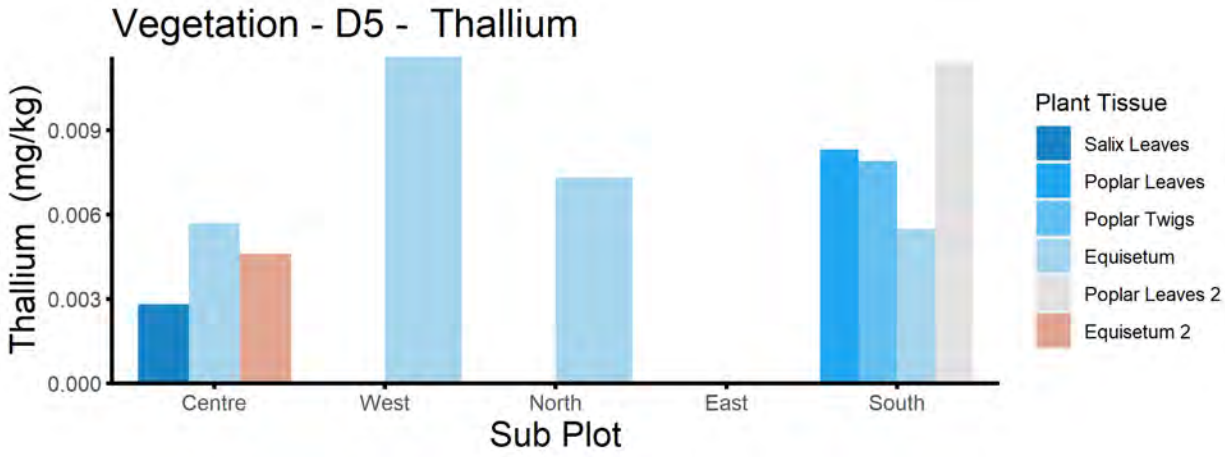

Vegetation - D5 - Selenium
Selenium (mg/kg)
0.09
0.06
0.03
0.00
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

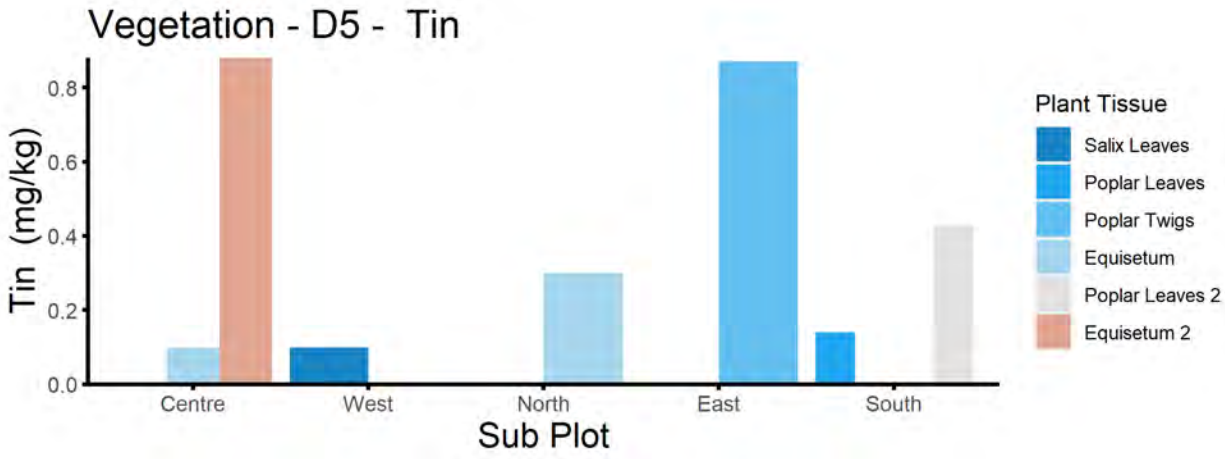

Vegetation - D5 - Silver
Silver (mg/kg)
0.020
0.015
0.010
0.005
0.000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

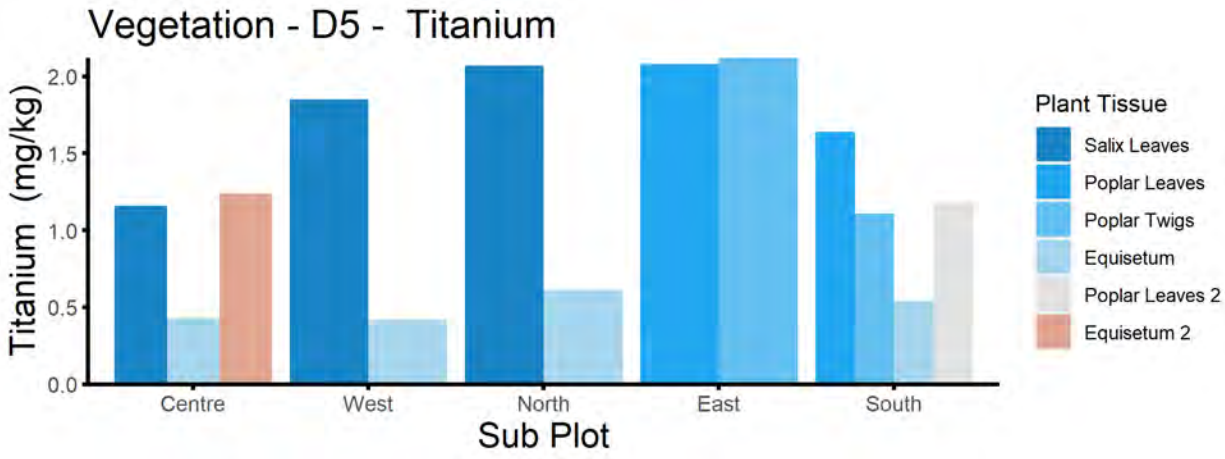

Vegetation - D5 - Sodium
Sodium (mg/kg)
0
10
20
30
40
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

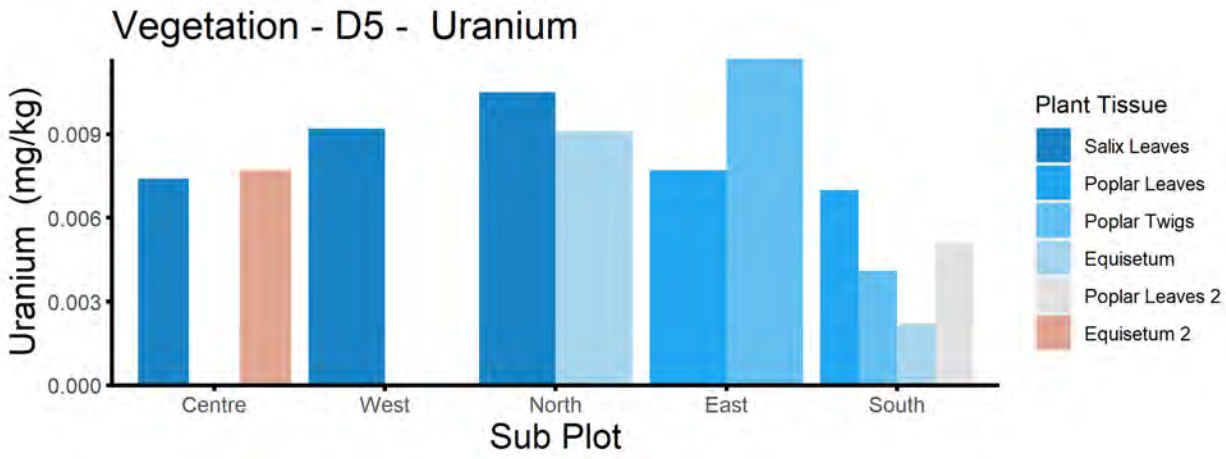

Vegetation - D5 - Strontium
Strontium (mg/kg)
0
20
40
60
80
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

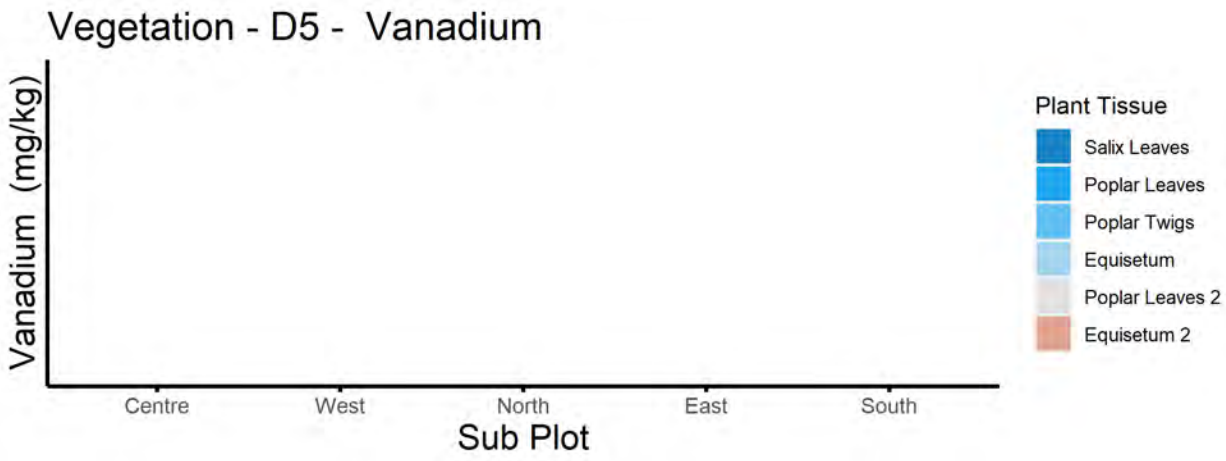

Vegetation - D5 - Tellurium
Tellurium (mg/kg)
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

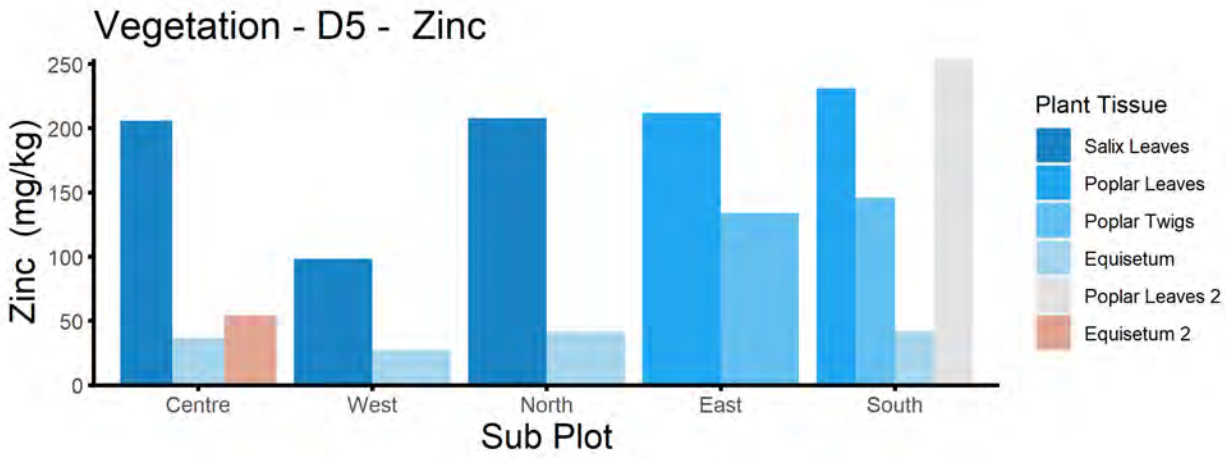

Vegetation - D5 - Thallium
Thallium (mg/kg)
0.009
0.006
0.003
0.000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2


Vegetation - D5 - Tin
Tin (mg/kg)
0.8
0.6
0.4
0.2
0.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2


Vegetation - D5 - Titanium
Titanium (mg/kg)
2.0
1.5
1.0
0.5
0.0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2


Vegetation - D5 - Uranium
Uranium (mg/kg)
0.009
0.006
0.003
0.000
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2


Vegetation - D5 - Vanadium
Vanadium (mg/kg)
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2


Vegetation - D5 - Zinc
Zinc (mg/kg)
250
200
150
100
50
0
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

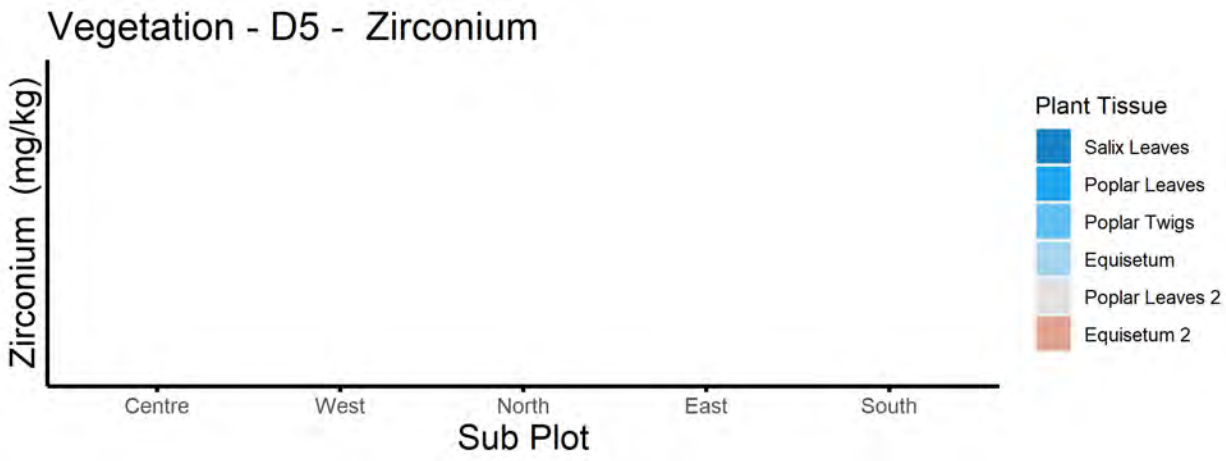

Vegetation - D5 - Zirconium
Zirconium (mg/kg)
Centre
West
North
East
South
Sub Plot
Plant Tissue
Salix Leaves
Poplar Leaves
Poplar Twigs
Equisetum
Poplar Leaves 2
Equisetum 2

Table B-1 Range of Detected Metals (mg/kg) in All Tissue Types

	D1-B (N = 16)		D2-B (N = 14)		D3-B (N = 15)		D4-B (N = 12)		D5 (N = 11)		Maximum Tolerance Level	
Parameter	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Cattle	Rodent
Aluminum	5.2	33.9	12.2	87.9	69.2	209	10.5	137	7.8	41.1	1000	200
Antimony	0.012	0.022	0.016	0.152	0.06	0.25	0.017	0.246	0.013	0.048	NA	70-150
Arsenic	0.069	0.323	0.234	1.92	0.89	3.62	0.901	4.22	0.514	1.17	30	30
Barium	14.6	78.2	23.2	168	24.3	193	10.2	84.8	9.07	54.3	NA	250
Beryllium	0.011	0.021	ND		0.013	0.02	ND		ND		NA	NA
Bismuth	0.014	0.017	0.011	0.092	0.033	0.12	0.012	0.177	0.013	0.044	NA	NA
Boron	1.7	8.5	1.2	17.1	1.8	8.3	2.8	12.6	7.3	17.6	150	150
Cadmium	0.125	5.62	0.106	5.55	0.137	2.04	0.0058	1.29	0.438	1.96	10	10
Calcium	1670	7540	3840	24000	2960	8820	4180	21900	6150	18900	NA	NA
Cesium	0.0246	0.233	0.0072	0.106	0.0536	0.118	0.0135	0.316	0.0116	0.657	NA	NA
Chromium	0.061	0.091	0.052	0.272	0.136	0.449	0.064	0.312	0.05	0.321	100	100
Cobalt	0.107	5.84	0.029	1.44	0.42	10.6	0.047	0.493	0.129	2.09	25	25
Copper	2.85	5.74	2.76	5.67	2.32	6.14	1.56	5.37	2.89	5.14	40	500
Iron	22.6	65	26.6	201	132	344	50.6	269	44.3	119	500	500
Lead	0.033	0.43	0.044	1.04	0.225	0.869	0.049	0.753	0.034	0.212	100	10
Lithium	ND		0.62	0.62	ND		ND		ND		25	25
Magnesium	612	2910	521	7000	982	3340	1080	5660	1530	7420	NA	NA
Manganese	257	2670	8.51	1030	105	2370	48.1	616	30.5	292	2000	2000
Mercury	0.0051	0.0054	0.0052	0.0089	0.005	0.0062	0.0052	0.007	0.0054	0.0084	NA	0.2
Molybdenum	0.021	0.122	0.033	0.833	0.039	0.181	0.023	0.535	0.055	0.3	5	7
Nickel	1.27	7.32	0.54	9.71	4.44	10.6	0.24	3.34	0.58	3	100	50
Phosphorus	1000	3420	690	4660	1220	5420	870	1890	911	4030	NA	NA
Potassium	3860	17700	2140	34100	3160	14200	4400	27900	5830	46000	NA	NA
Rubidium	9.06	53.2	1.54	30.4	6.02	25.4	1.79	56	4.1	141	NA	200
Selenium	ND		0.055	26.5	0.083	0.176	0.067	0.202	0.051	0.119	5	5
Silver	0.0056	0.0171	0.0069	0.0974	0.006	0.0207	0.0066	0.0231	0.0068	0.0234	NA	NA
Sodium	ND		23	34	0		0		29	42	NA	NA
Strontium	8.47	51.8	19.5	75.6	9.51	94.2	8.3	81.9	27.7	87.1	NA	NA
Tellurium	ND		ND		ND		ND		ND		NA	NA
Thallium	ND		0.002	0.0092	0.0021	0.0055	0.0035	0.0156	0.0028	0.0116	NA	NA
Tin	0.13	0.87	0.11	0.98	0.11	1.01	0.1	0.63	0.1	0.87	NA	NA
Titanium	0.25	1.25	0.7	4.21	3.25	12.3	0.53	7.52	0.42	2.12	100	100
Uranium	0.0034	0.004	0.0025	0.0241	0.011	0.0321	0.0038	0.0494	0.0022	0.0117	NA	100
Vanadium	ND		0.1	0.16	0.12	0.39	0.1	0.25	ND		50	NA
Zinc	26.6	293	23.8	150	34.5	188	20.6	171	27.3	231	500	500
Zirconium	ND		ND		ND		0.24	0.24	ND		NA	NA

Table B-2 RPD % and PQL for Duplicate Tissue Sampling

Parameter	Lowest Detection Limit	Units	D1-B Centre Salix Leaves	DUP-1	RPD %	PQL	D1-B East Salix Leaves	DUP-2	RPD %	PQL	D1-B South Salix Leaves	DUP-3	RPD %	PQL	D4-B Centre Labrador Tea Leaves	DUP-4	RPD %	PQL	D4-B North Salix Leaves	DUP-5	RPD %
Moisture	0.5	%	63.7	66.4	4.151	NA	64.9	63.1	2.813	NA	64.2	62.7	2.364	NA	54.6	54.3	0.551	NA	61.3	64.3	4.777
Aluminum	2	mg/Kg	17.4	17	2.326	NA	33.9	31.6	7.023	NA	25.4	25.7	1.174	NA	95.9	122	23.96	10	52.5	65.2	21.58
Antimony	0.01	mg/Kg	ND	ND	NA	NA	0.013	ND	NA	NA	0.012	0.015	22.22	0.05	0.155	0.178	13.81	NA	0.067	0.08	17.69
Arsenic	0.02	mg/Kg	0.098	0.096	2.062	NA	0.184	0.188	2.151	NA	0.163	0.204	22.34	0.1	4.22	5.28	22.32	0.1	1.39	1.76	23.49
Barium	0.05	mg/Kg	22.8	28.8	23.26	0.25	51.9	41.6	22.03	0.25	26.6	29.1	8.977	NA	84.8	75.8	11.21	NA	18.6	16.2	13.79
Beryllium	0.01	mg/Kg	0.011	ND	NA	NA	0.021	0.022	4.651	NA	0.012	0.012	0	NA	ND	ND	NA	NA	ND	ND	NA
Bismuth	0.01	mg/Kg	ND	ND	NA	NA	ND	0.01	NA	NA	ND	0.011	NA	NA	0.117	0.12	2.532	NA	0.04	0.046	13.95
Boron	1	mg/Kg	2.8	2.8	0	NA	2.9	2.9	0	NA	4	4.4	9.524	NA	12.2	12.1	0.823	NA	12.6	12.8	1.575
Cadmium	0.005	mg/Kg	2.94	2.9	1.37	NA	4.94	4.62	6.695	NA	2.93	3.22	9.431	NA	0.0079	0.0079	0	NA	1.17	1.31	11.29
Calcium	20	mg/Kg	4540	4550	0.22	NA	7540	7590	0.661	NA	5290	5320	0.566	NA	4180	4720	12.13	NA	10200	10400	1.942
Cesium	0.005	mg/Kg	0.124	0.0867	35.41	0.025	0.227	0.244	7.219	NA	0.0639	0.0622	2.696	NA	0.0633	0.0822	25.98	0.025	0.0585	0.0608	3.856
Chromium	0.05	mg/Kg	ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA	0.187	0.248	28.05	0.25	0.126	0.169	29.15
Cobalt	0.02	mg/Kg	3.48	3.74	7.202	NA	4.93	5.1	3.39	NA	5.84	5.72	2.076	NA	0.079	0.111	33.68	0.1	0.277	0.289	4.24
Copper	0.1	mg/Kg	3.18	3.06	3.846	NA	3.5	3.36	4.082	NA	3.2	3.22	0.623	NA	4.29	5.35	21.99	0.5	3.63	3.91	7.427
Iron	3	mg/Kg	55.7	59.1	5.923	NA	58.4	59.4	1.698	NA	59.4	62.3	4.766	NA	195	235	18.6	NA	132	168	24
Lead	0.02	mg/Kg	0.047	0.053	12	NA	0.172	0.113	41.4	0.1	0.089	0.121	30.48	0.1	0.4	0.459	13.74	NA	0.181	0.223	20.79
Lithium	0.5	mg/Kg	ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA
Magnesium	2	mg/Kg	1580	1610	1.881	NA	2910	2960	1.704	NA	1520	1410	7.509	NA	1190	1390	15.5	NA	3940	4030	2.258
Manganese	0.05	mg/Kg	940	1080	13.86	NA	1170	1190	1.695	NA	1220	1190	2.49	NA	368	568	42.74	0.25	231	256	10.27
Mercury	0.005	mg/Kg	ND	ND	NA	NA	0.0053	0.0058	9.009	NA	0.0052	0.0054	3.774	NA	0.0065	0.0087	28.95	0.025	0.0052	ND	NA
Molybdenum	0.02	mg/Kg	0.074	0.079	6.536	NA	0.111	0.113	1.786	NA	0.058	0.055	5.31	NA	0.029	0.083	96.43	0.1	0.151	0.173	13.58
Nickel	0.2	mg/Kg	4.32	3.65	16.81	NA	6.17	6.26	1.448	NA	4.56	4.69	2.811	NA	0.43	0.43	0	NA	1.17	1.14	2.597
Phosphorus	10	mg/Kg	3240	3170	2.184	NA	2500	2430	2.84	NA	2250	2000	11.76	NA	1330	1220	8.627	NA	1440	1270	12.55
Potassium	20	mg/Kg	15400	12800	18.44	NA	8960	8570	4.45	NA	10500	10000	4.878	NA	6040	5620	7.204	NA	12400	12500	0.803
Rubidium	0.05	mg/Kg	36.8	26	34.39	0.25	25.8	25.6	0.778	NA	18.2	18.2	0	NA	11.7	11.1	5.263	NA	12.2	13.3	8.627
Selenium	0.05	mg/Kg	ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA
Silver	0.005	mg/Kg	0.0056	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA	0.0066	0.0075	12.77	NA	ND	ND	NA
Sodium	20	mg/Kg	ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA
Strontium	0.05	mg/Kg	25	27.6	9.886	NA	51.8	47.1	9.505	NA	34.3	34.2	0.292	NA	8.3	7.57	9.2	NA	34.8	32.3	7.452
Tellurium	0.02	mg/Kg	ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA
Thallium	0.002	mg/Kg	ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA	0.012	0.0155	25.45	0.01	ND	ND	NA
Tin	0.1	mg/Kg	ND	ND	NA	NA	ND	0.23	NA	NA	ND	ND	NA	NA	ND	0.17	NA	NA	0.13	0.23	55.56
Titanium	0.25	mg/Kg	0.58	0.58	0	NA	0.78	0.7	10.81	NA	0.75	0.84	11.32	NA	5	5.86	15.84	NA	2.8	3.32	16.99
Uranium	0.002	mg/Kg	ND	ND	NA	NA	ND	0.0026	NA	NA	ND	ND	NA	NA	0.0494	0.0233	71.8	0.01	0.0111	0.0101	9.434
Vanadium	0.1	mg/Kg	ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA	0.17	0.2	16.22	NA	ND	0.12	NA
Zinc	0.5	mg/Kg	113	119	5.172	NA	103	86.7	17.19	NA	91.4	96.6	5.532	NA	25	24.8	0.803	NA	118	121	2.51
Zirconium	0.2	mg/Kg	ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA

ND = not detected
NA = Not applicable

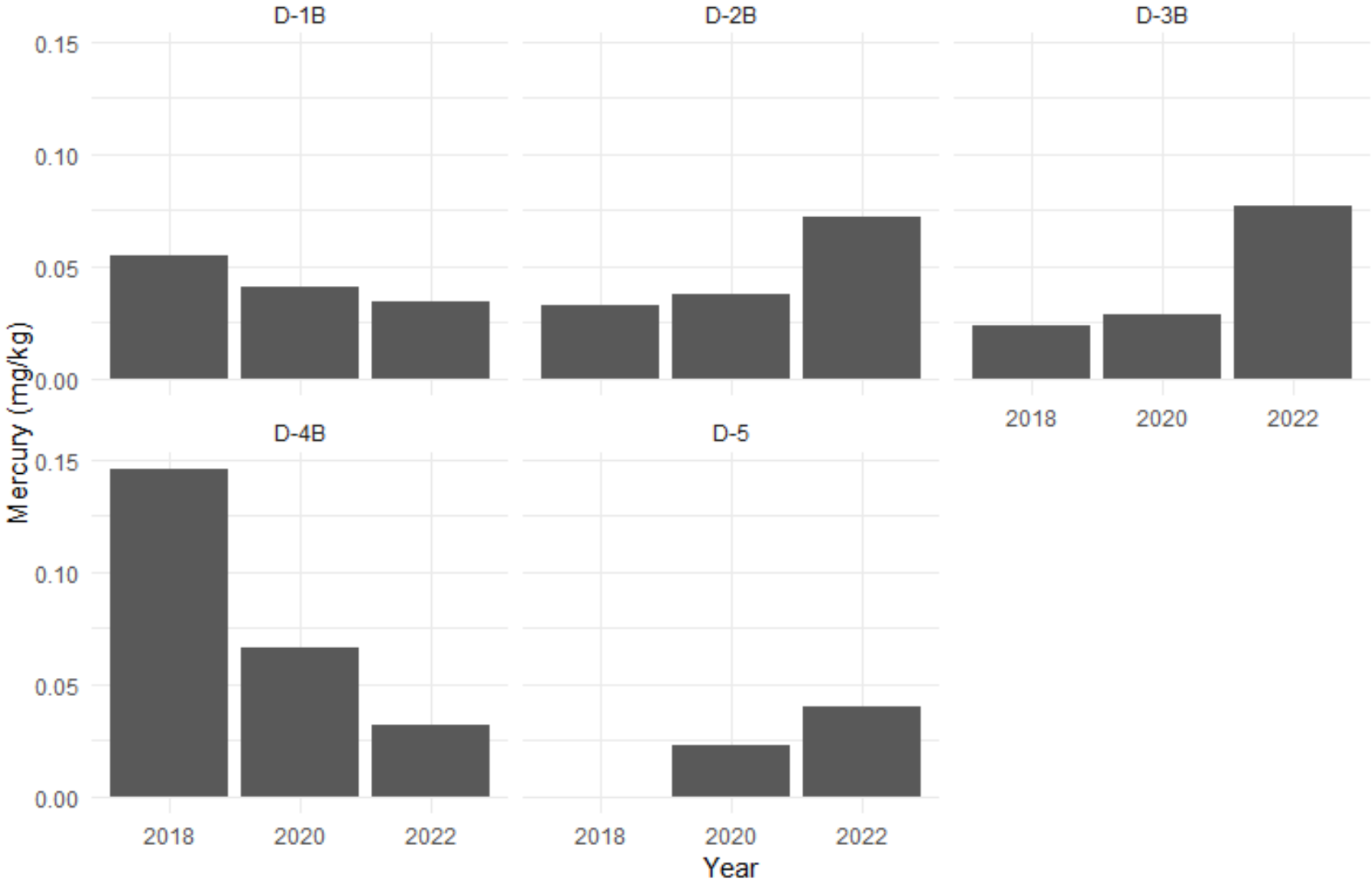
Values in red have an RPD > 20% but PQL < 5 times the DL
Values in shaded cells have an RPD >20% and a PQL > 5 times the DL

PQL	D5 Centre Equisetum	DUP-6	RPD %	PQL	D5 South Poplar Leaves	DUP-7	RPD %	PQL
NA	75.5	77	1.967	NA	68.4	69.7	1.883	NA
10	8.3	22.9	93.59	10	32.6	25.9	22.91	10
NA	ND	0.03	NA	NA	0.048	0.031	43.04	0.05
0.1	0.514	0.884	52.93	0.1	0.938	0.726	25.48	0.1
NA	35.6	43.8	20.65	0.25	13.4	11.3	17	NA
NA	ND	ND	NA	NA	ND	ND	NA	NA
NA	ND	0.02	NA	NA	0.034	0.022	42.86	0.05
NA	12.9	12.6	2.353	NA	12.2	13	6.349	NA
NA	0.472	0.598	23.55	0.025	1.19	0.974	19.96	NA
NA	16900	16400	3.003	NA	7510	7280	3.11	NA
NA	0.487	0.36	29.99	0.025	0.0168	0.0182	8	NA
0.25	ND	0.086	NA	NA	0.178	0.133	28.94	0.25
NA	0.47	0.371	23.54	0.1	2.09	2.13	1.896	NA
NA	4.37	4.9	11.43	NA	3.98	4.25	6.561	NA
15	44.3	71.2	46.58	15	108	93.9	13.97	NA
0.1	0.034	0.133	118.6	0.1	0.119	0.084	34.48	0.1
NA	ND	ND	NA	NA	ND	ND	NA	NA
NA	5330	4810	10.26	NA	2390	2330	2.542	NA
NA	57.2	45.7	22.35	0.25	108	146	29.92	0.25
NA	0.006	0.007	15.38	NA	0.0054	ND	NA	NA
NA	0.184	0.184	0	NA	0.055	0.047	15.69	NA
NA	0.99	1.15	14.95	NA	2.54	3.48	31.23	1
NA	1200	1230	2.469	NA	2810	3220	13.6	NA
NA	45800	46300	1.086	NA	26300	31200	17.04	NA
NA	111	101	9.434	NA	10.6	15	34.38	0.25
NA	ND	ND	NA	NA	0.053	ND	NA	NA
NA	0.0201	0.0193	4.061	NA	ND	ND	NA	NA
NA	35	42	18.18	NA	ND	ND	NA	NA
NA	74.6	77.5	3.813	NA	27.7	26	6.331	NA
NA	ND	ND	NA	NA	ND	ND	NA	NA
NA	0.0057	0.0046	21.36	0.01	0.0083	0.0114	31.47	0.01
0.5	0.1	0.88	159.2	0.5	0.14	0.43	101.8	0.5
NA	0.43	1.24	97.01	1.25	1.64	1.18	32.62	1.25
NA	ND	0.0077	NA	NA	0.007	0.0051	31.4	0.01
NA	ND	ND	NA	NA	ND	ND	NA	NA
NA	36.7	54.4	38.86	2.5	231	254	9.485	NA
NA	ND	ND	NA	NA	ND	ND	NA	NA

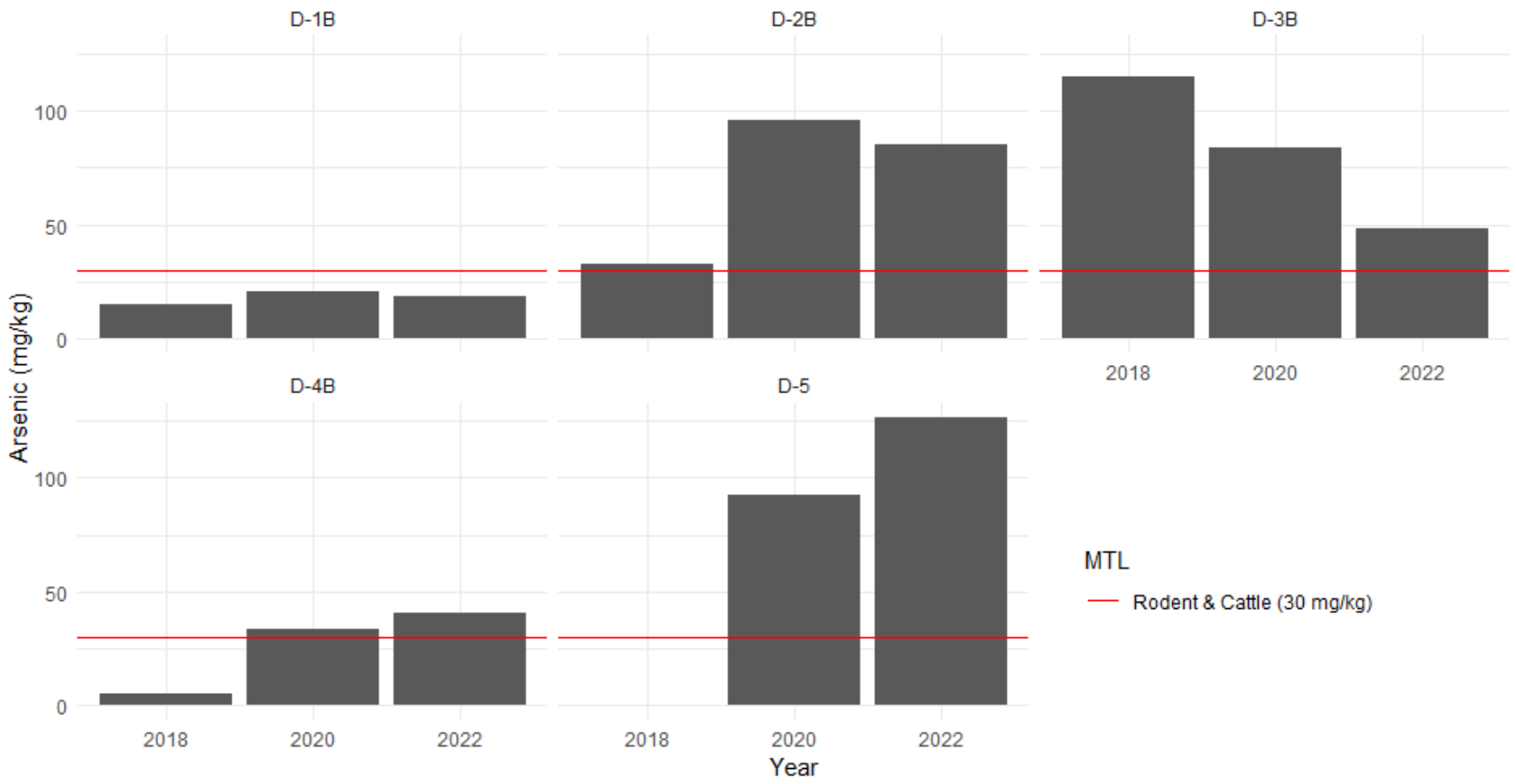
TABLE B-3		COMPARISONS OF METAL CONCENTRATIONS (mg/kg) 2018, 2019,						
Plot #		**Tissue**	**N**	**Arsenic**	**Cadmium**	**Chromium**	**Lead**	**Mercury**
D-1B	2022	Dwarf Birch	5	0.102	0.270	0.060	0.044	0.01
	2021		5	0.223	0.223	0.059	0.059	0.0052
	2020		4	0.206	0.277	0.095	0.091	0.0065
	2019		5	0.136	0.174	0.101	0.070	0.0053
	2018		5	0.187	0.187	ND	0.055	0.0054
	2022	Fescue	1	0.069	0.125	ND	0.082	ND
	2021		1	0.148	0.015	0.134	0.062	ND
	2020		1	0.157	0.095	0.074	0.203	ND
	2019		1	0.104	0.077	0.173	0.143	ND
	2018		5	0.113	0.055	0.073	0.108	ND
	2022	Willow leaves	5	0.132	2.580	ND	0.079	0.01
	2021		5	0.341	2.934	0.066	0.112	0.0058
	2020		5	0.236	4.074	0.079	0.141	0.0069
	2019		5	0.167	2.066	0.105	0.113	0.0067
	2018		5	0.187	1.758	ND	0.082	ND
D-2B	2022	Dwarf Birch	2	1.060	0.145	0.073	0.123	0.0057
	2021		1	1.530	0.152	0.230	0.366	0.0053
	2020		1	0.730	0.125	0.136	0.220	0.0076
	2019		1	1.280	0.123	0.200	0.262	0.0055
	2022	Equisetum	2	0.473	1.190	0.082	0.074	0.0089
	2021		3	1.217	0.691	0.139	0.162	0.0057
	2020		2	0.430	0.737	0.098	0.067	0.0068
	2019		1	0.583	1.030	0.135	0.107	0.0053
	2022	Paper Birch Leaves	1	1.590	0.588	0.195	0.405	0.0061
	2021		1	3.230	0.636	0.249	0.674	0.0061
	2020		1	1.290	0.636	0.133	0.364	0.0067
	2019		1	1.880	0.464	0.394	0.464	0.0058
	2022	Paper Birch Twigs	1	1.920	0.897	0.186	1.040	0.0058
	2021		1	0.457	0.344	<0.20	0.181	ND
	2020		1	0.502	0.791	0.367	0.250	ND
	2019		1	0.514	0.771	0.155	0.174	ND
	2022	Willow Leaves	4	1.390	2.390	0.171	0.260	0.0053
	2021		4	2.358	3.738	0.224	0.391	0.0054
	2020		4	1.004	3.228	0.574	0.300	0.0058
	2019		4	1.648	3.560	0.208	0.324	0.0064
	2022	Willow Twigs	4	0.942	3.150	0.090	0.180	ND
	2021		4	1.783	3.078	0.291	0.280	0.08
	2020		4	0.491	2.538	0.108	0.132	ND
	2019		3	1.002	2.737	0.393	0.213	ND
	2022	Dwarf Birch	5	1.112	0.196	0.182	0.280	0.0060
	2021		5	2.580	0.203	0.209	0.457	0.0056
	2020		5	1.990	0.198	0.224	0.494	0.0069
	2019		5	0.835	0.149	0.178	0.297	0.0056
	2018		5	0.410	0.188	ND	0.066	0.005

D-3	2022	Willow leaves	5	1.260	1.210	0.175	0.315	0.0051
	2021		4	3.290	2.058	0.322	0.529	0.0066
	2020		4	4.113	2.260	0.456	0.989	0.0078
	2019		5	1.267	1.761	0.259	0.377	0.0071
	2018		1	0.551	1.050	ND	0.132	0.0055
	2022	Willow twigs	4	2.280	1.360	0.290	0.530	ND
	2021		2	4.090	1.135	0.335	0.597	ND
	2020		1	0.915	1.280	0.828	0.379	ND
	2019		3	1.030	1.050	0.392	0.347	ND
	2018		1	0.311	1.030	0.068	0.102	ND
D-4B	2022	Dwarf Birch	2	1.930	0.097	0.128	0.242	0.0063
	2021		3	2.363	0.218	0.403	0.351	0.0067
	2020		3	0.821	0.120	0.115	0.254	0.0062
	2019		3	1.035	0.137	0.182	0.234	0.0061
	2022	Equisetum	1	1.060	0.435	ND	0.049	0.0052
	2021		1	1.690	0.262	0.108	0.136	0.0055
	2020		2	0.669	0.237	0.119	0.099	0.0068
	2019		2	0.545	0.803	0.147	0.086	0.0070
	2022	Willow Leaves	3	1.090	0.610	0.090	0.153	0.0052
	2021		3	1.827	0.868	0.159	0.269	0.0060
	2020		4	0.981	1.669	0.140	0.204	0.0063
	2019		4	0.996	1.607	0.173	0.171	0.0058
	2022	Willow Twigs	2	3.540	0.880	0.277	0.707	ND
	2021		2	1.347	0.761	ND	0.188	ND
	2020		3	0.686	1.242	0.161	0.194	ND
	2019		2	0.876	0.852	0.242	0.155	ND
D-5	2022	Equisetum	4	0.830	0.647	0.195	0.047	0.0060
	2021		4	1.560	0.466	0.151	0.062	0.0060
	2020		2	0.926	0.523	0.094	0.094	0.0066
	2022	Poplar leaves	2	0.989	0.956	0.128	0.134	0.0054
	2021		2	1.685	1.105	0.131	0.222	0.0053
	2020		2	0.828	1.615	0.119	0.205	ND
	2022	Poplar twigs	2	0.839	1.110	0.080	0.153	ND
	2021		1	0.510	0.876	0.379	0.065	ND
	2020		2	0.303	1.382	0.071	0.094	ND
	2022	Willow leaves	2	1.045	1.815	0.172	0.132	0.006
	2021		4	1.813	2.578	0.123	0.236	0.0055
	2020		3	0.674	3.012	0.090	0.139	0.0064
MTL for cattle (NRC, 2005)				30	10	100	100	N/A
ND = not detected N/A = not applicable								

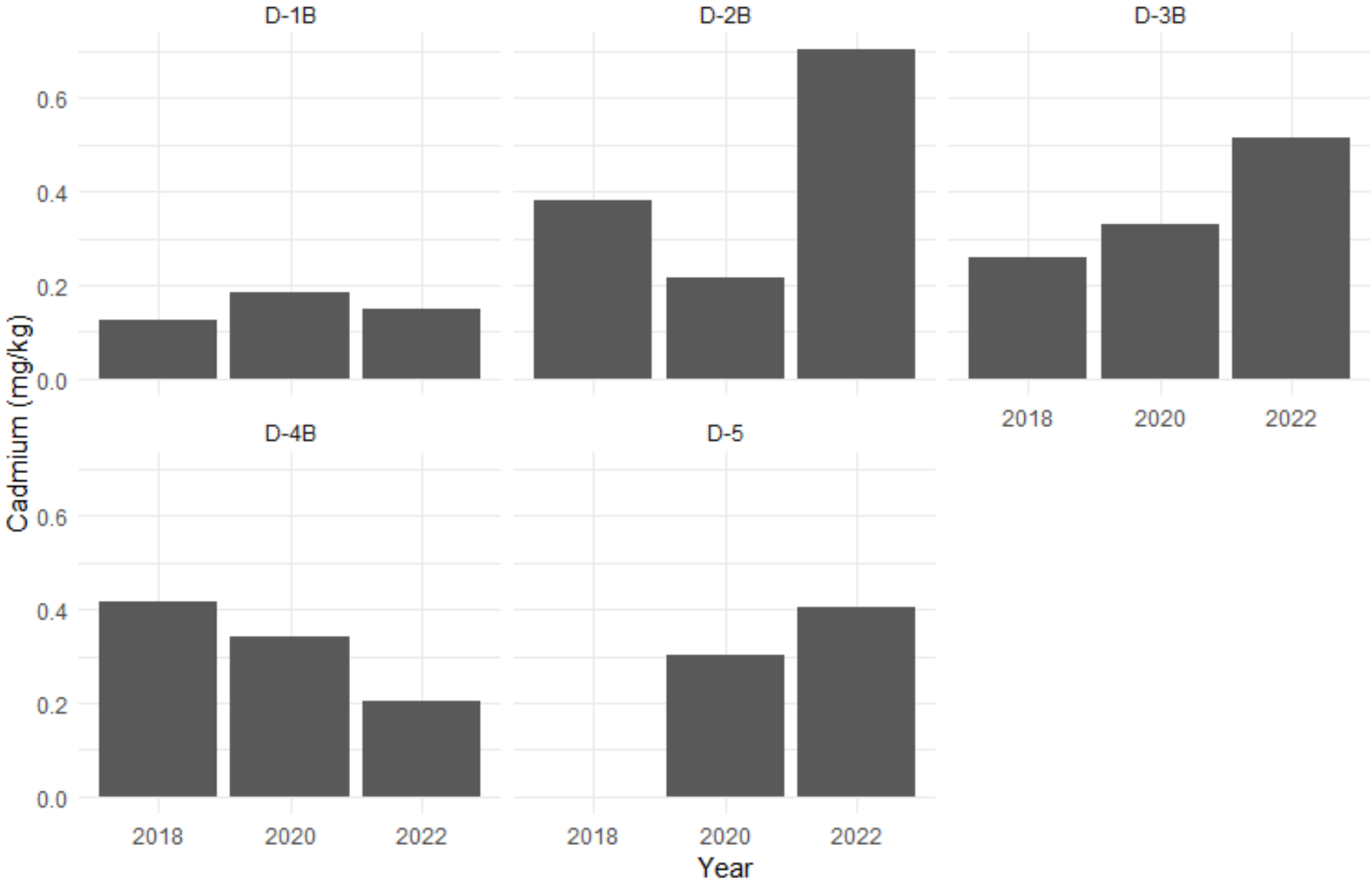
Appendix C – Soil Analysis



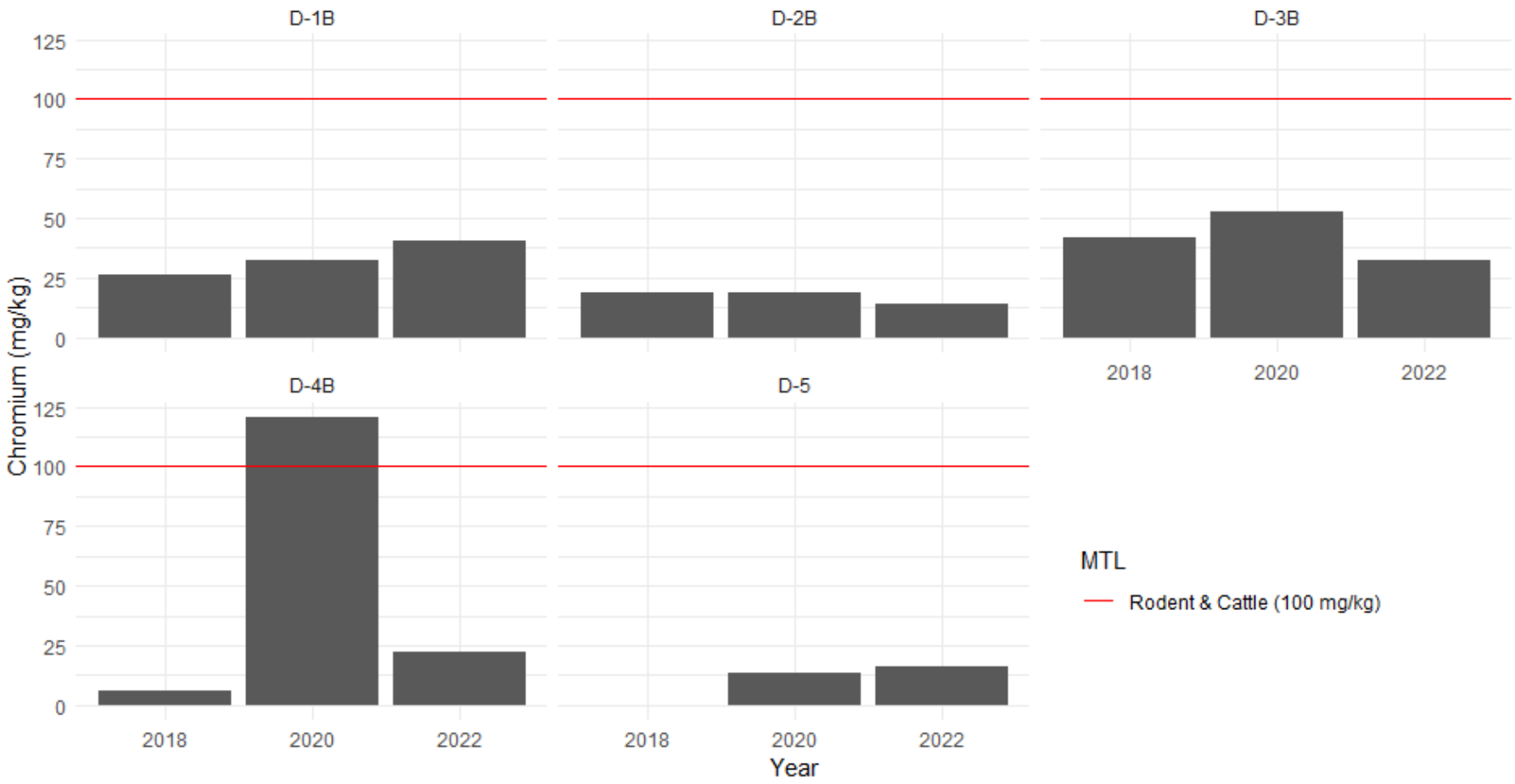
1: Mercury concentration in soil 2018, 2020, 2022 for each sampling plot. All samples are below the MTL for rodents (0.2 mg/kg), no MTL specified for cattle.



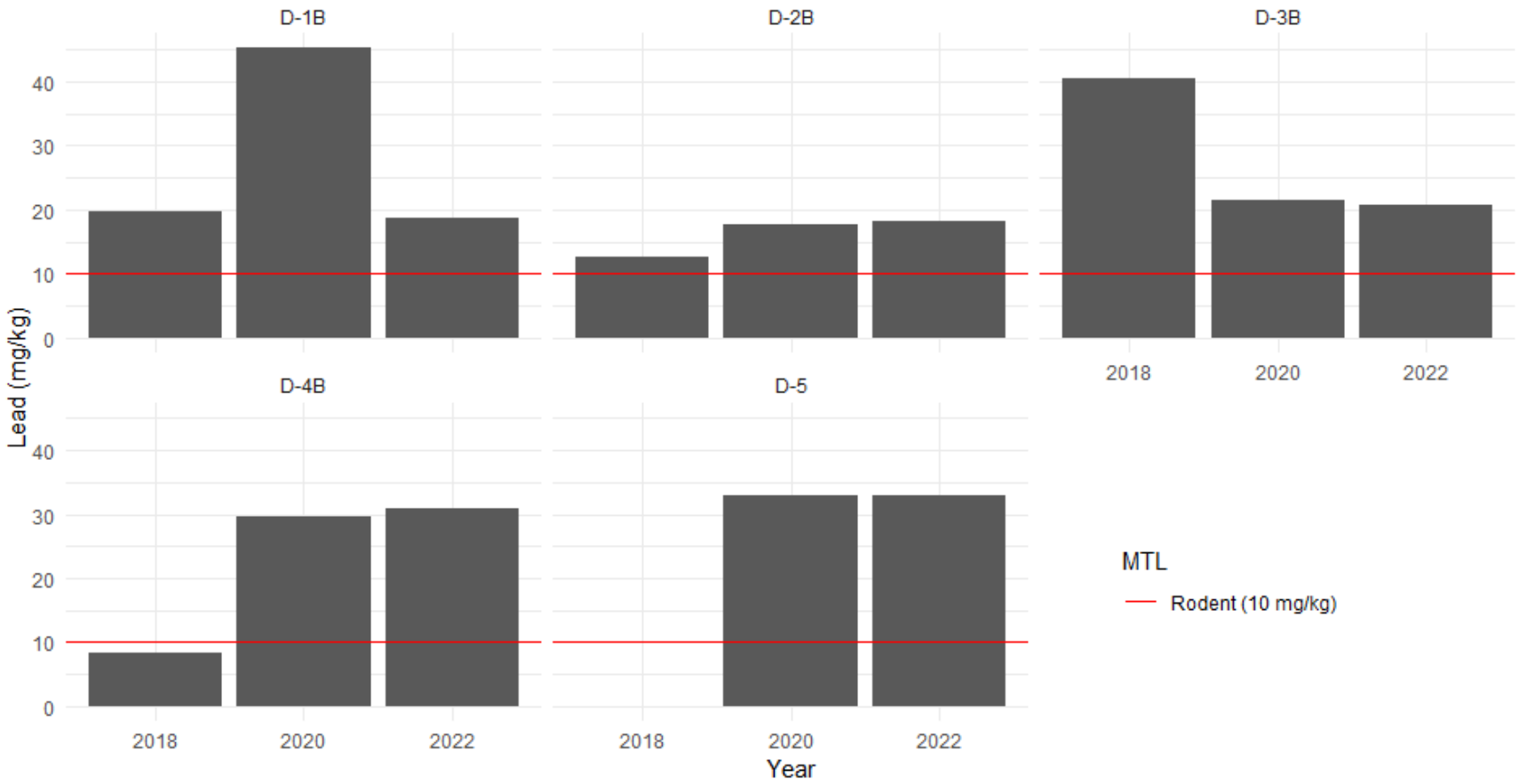
2: Arsenic concentration in soil 2018, 2020, 2022 for each sampling plot. Red line indicated MTL for rodents & cattle.



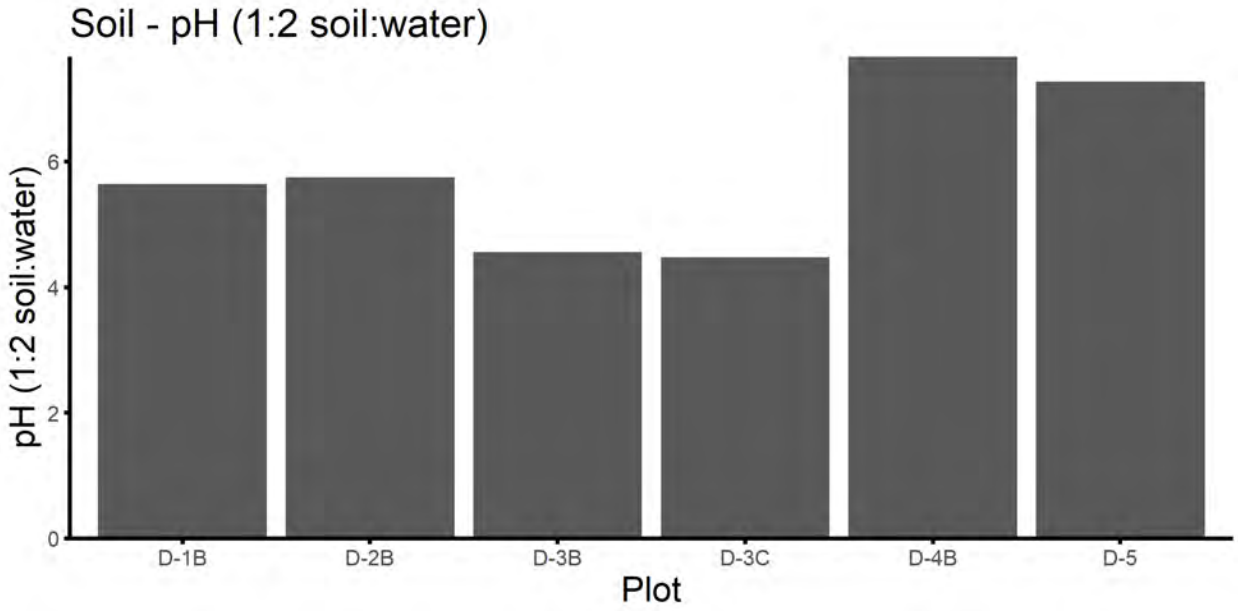
3: Cadmium concentration in soil 2018, 2020, 2022 for each sampling plot. All samples are below MTL for rodents and cattle (10 mg/kg),

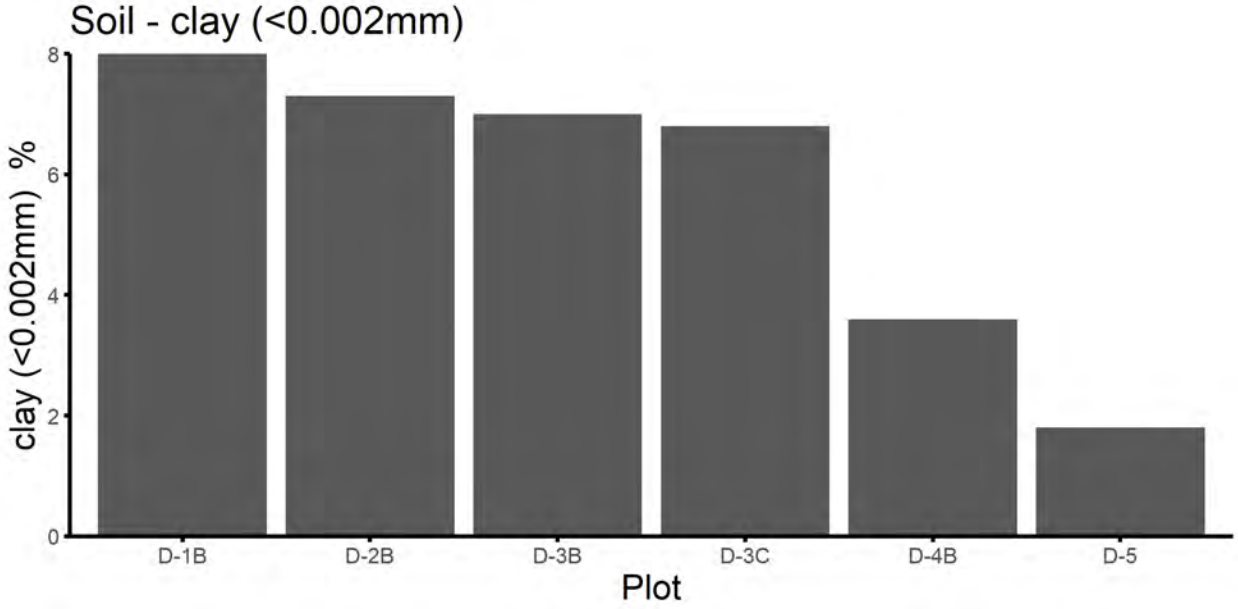


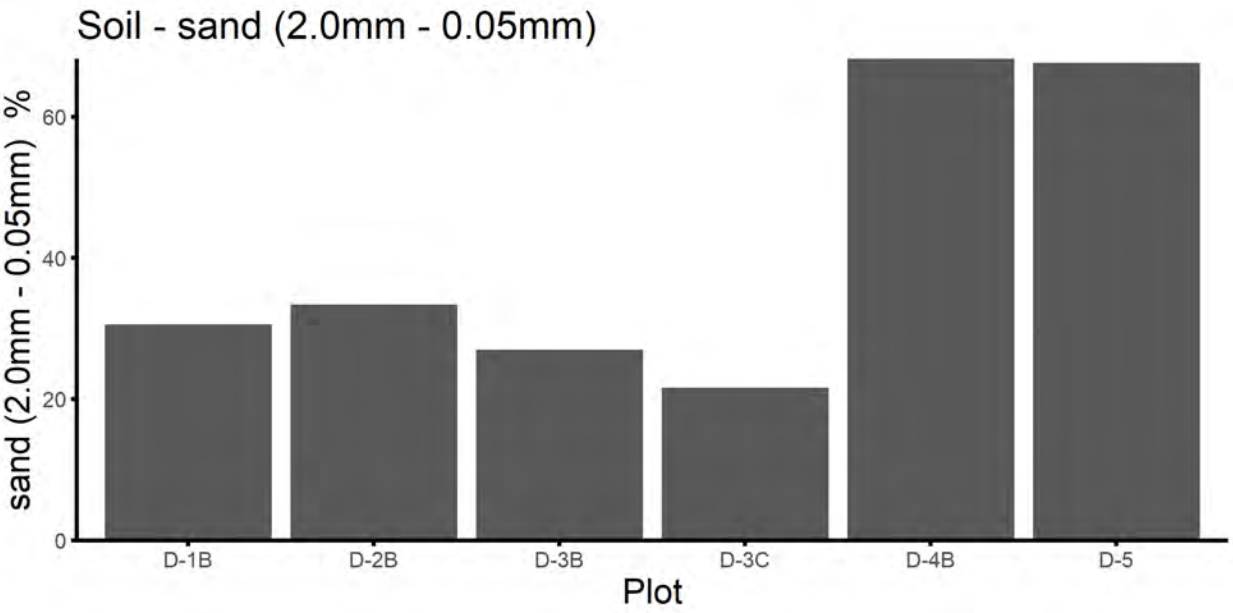
4: Chromium concentration in soil 2018, 2020, 2022 for each sampling plot. Red line indicated MTL for rodents & cattle.

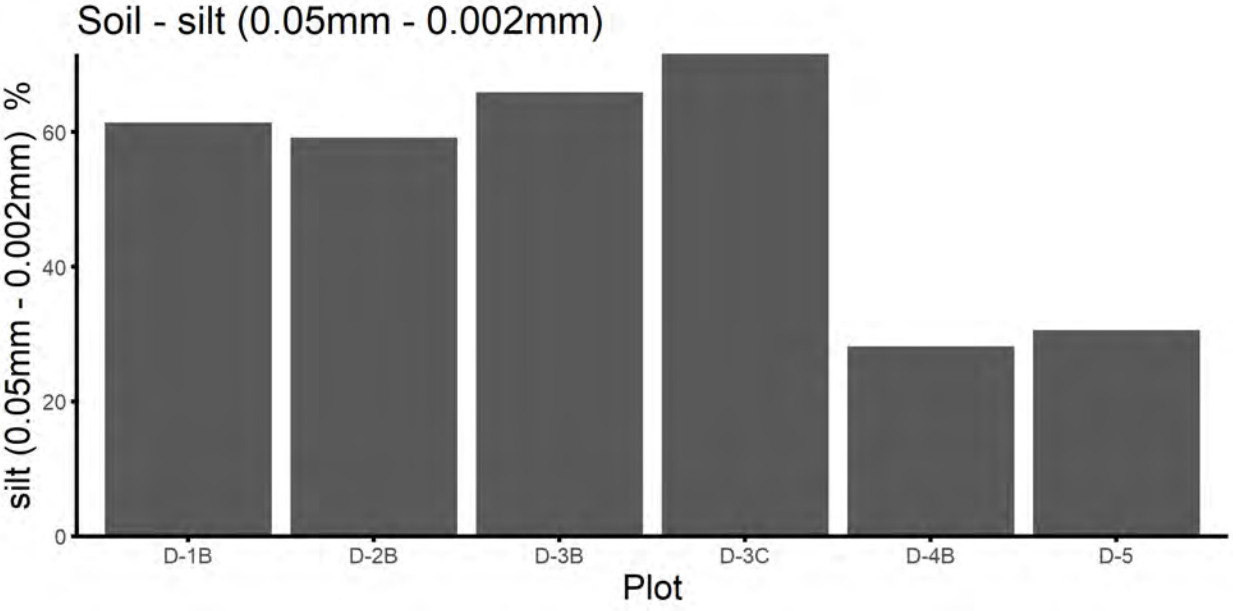


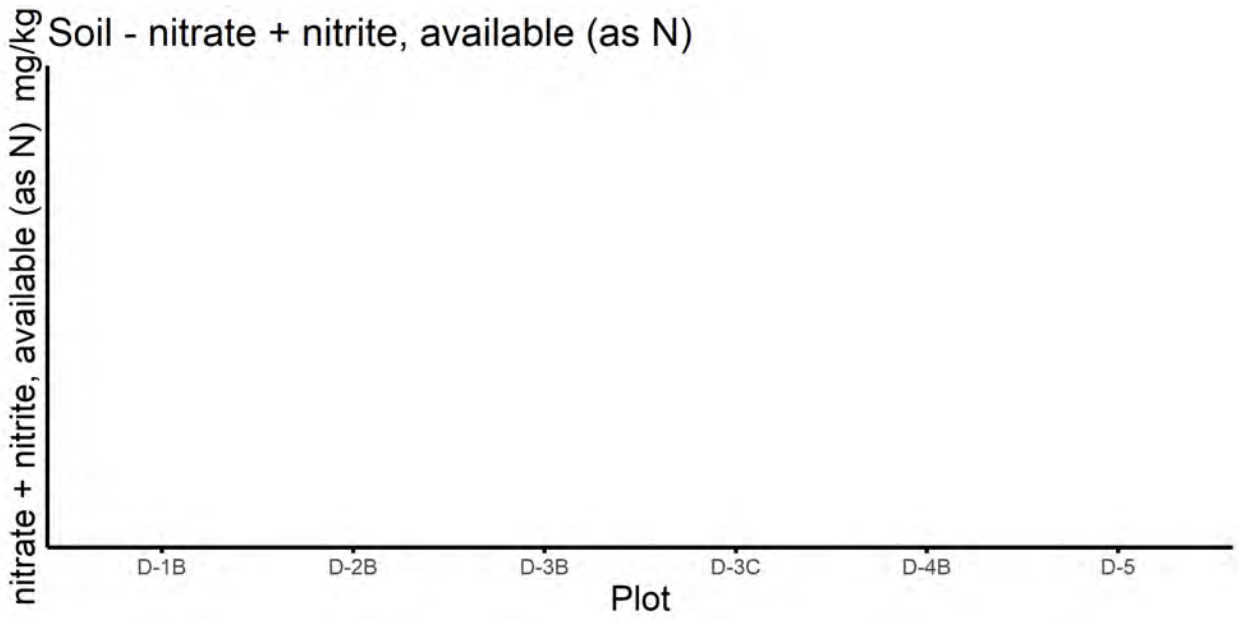
5: Lead concentration in soil 2018, 2020, 2022 for each sampling plot. Red dashed line indicated MTL for rodents. MTL for cattle is 100 mg/kg.

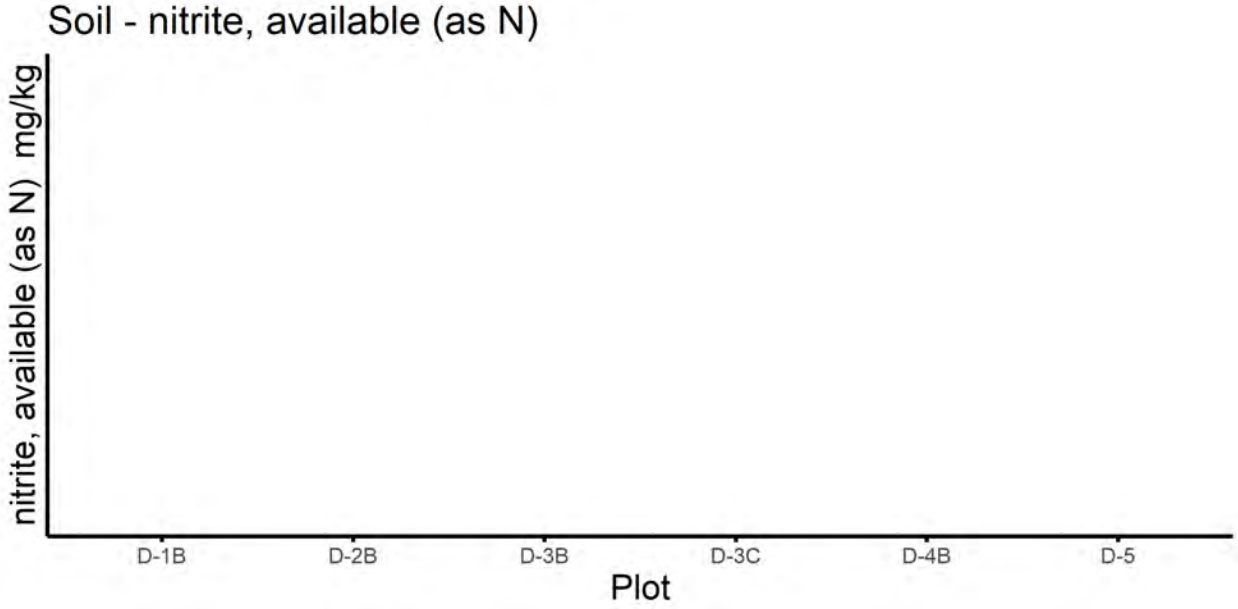

Soil - pH (1:2 soil:water)
pH (1:2 soil:water)
0
2
4
6
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

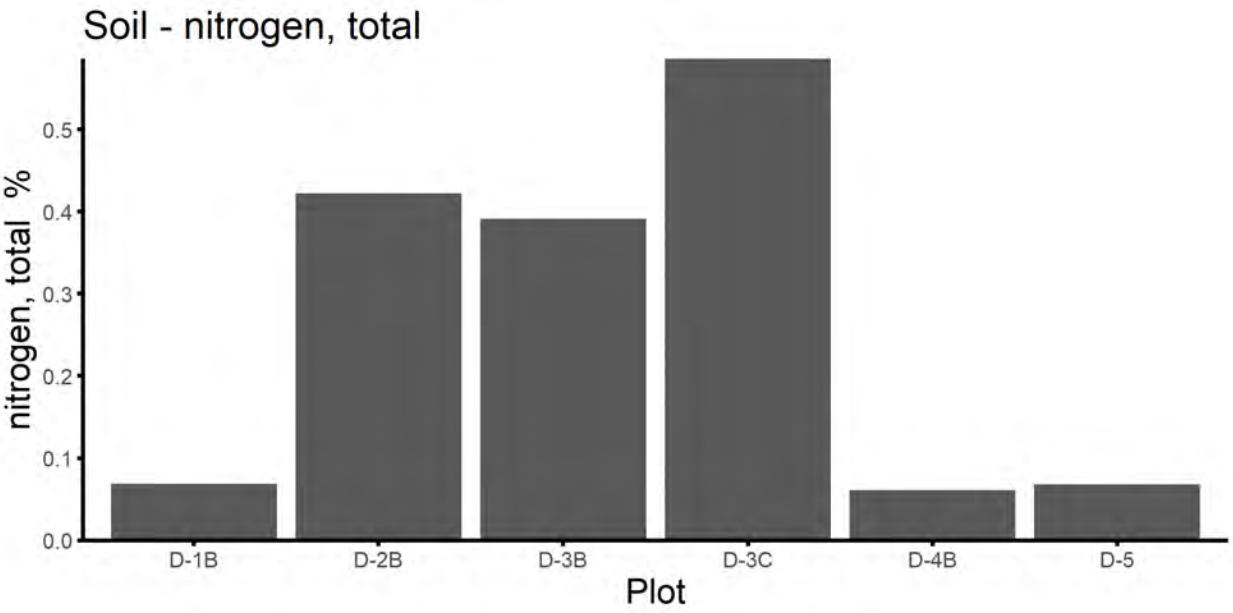

Soil - clay (<0.002mm)
clay (<0.002mm) %
0
2
4
6
8
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

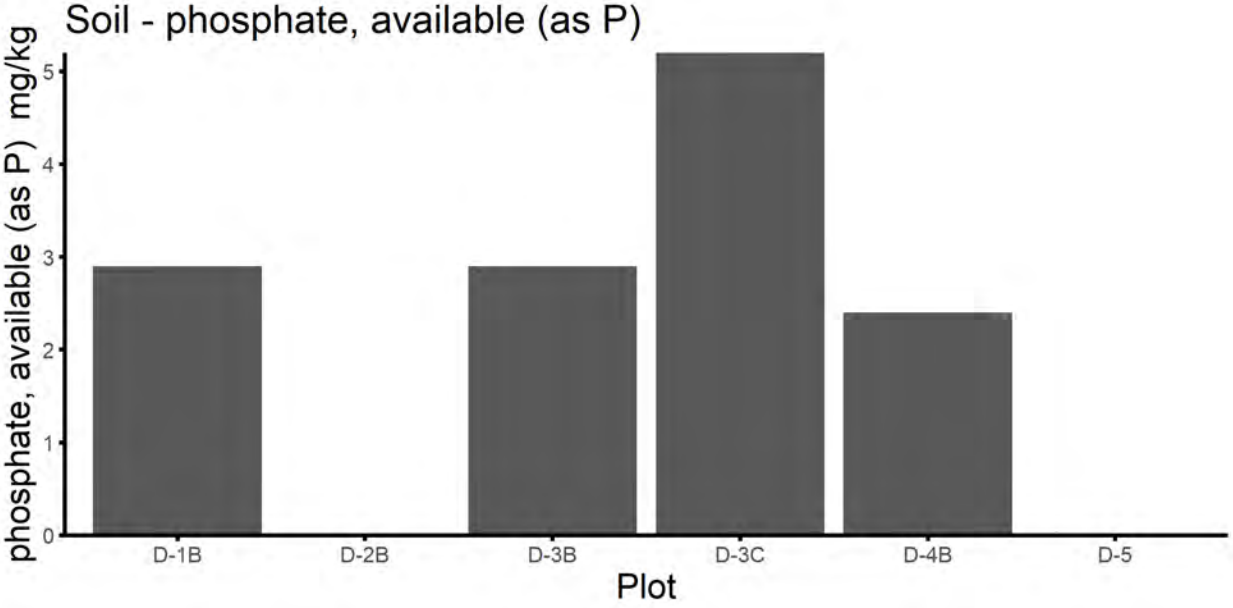

Soil - sand (2.0mm - 0.05mm)
sand (2.0mm - 0.05mm) %
0
20
40
60
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

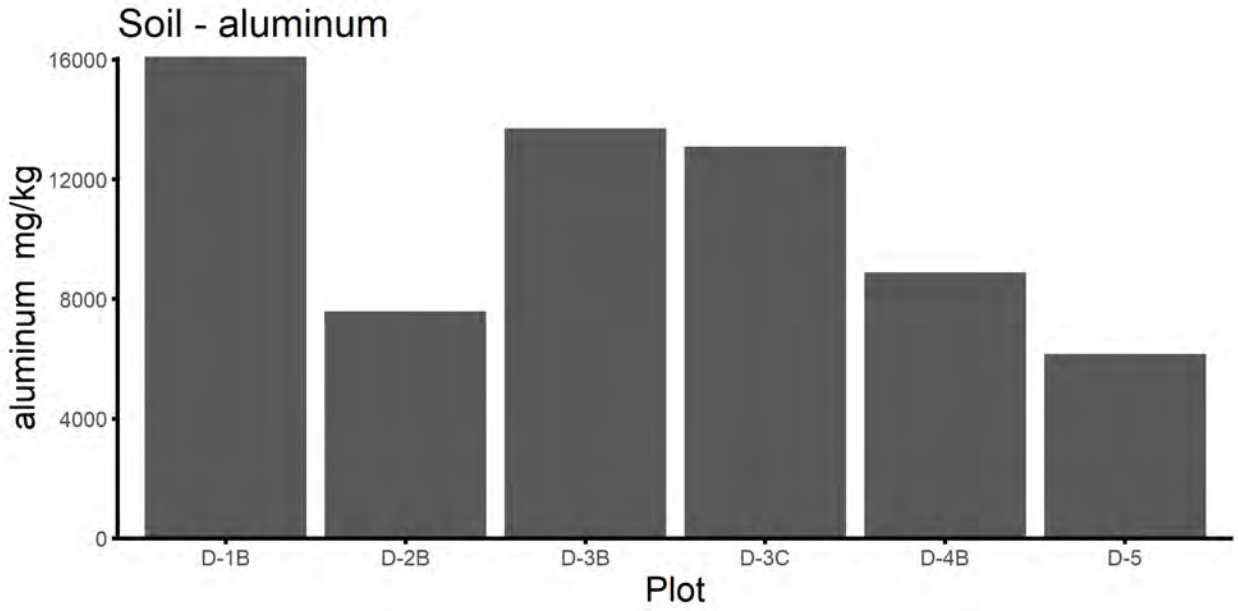

Soil - silt (0.05mm - 0.002mm)
silt (0.05mm - 0.002mm) %
0
20
40
60
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

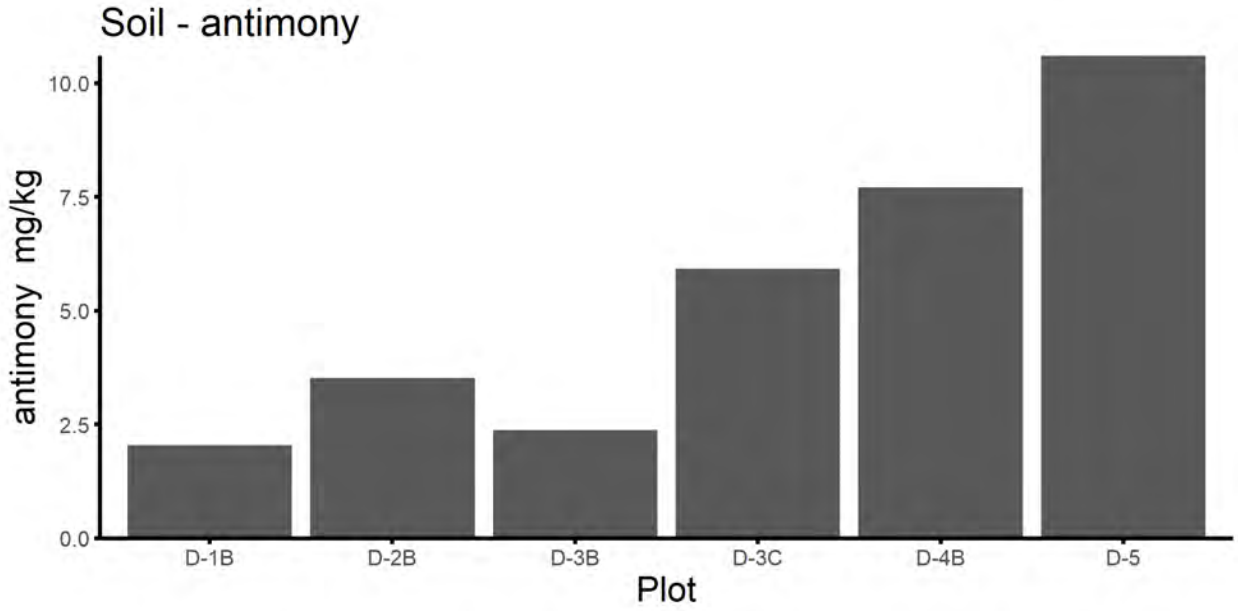

Soil - nitrate + nitrite, available (as N)
nitrate + nitrite, available (as N) mg/kg
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

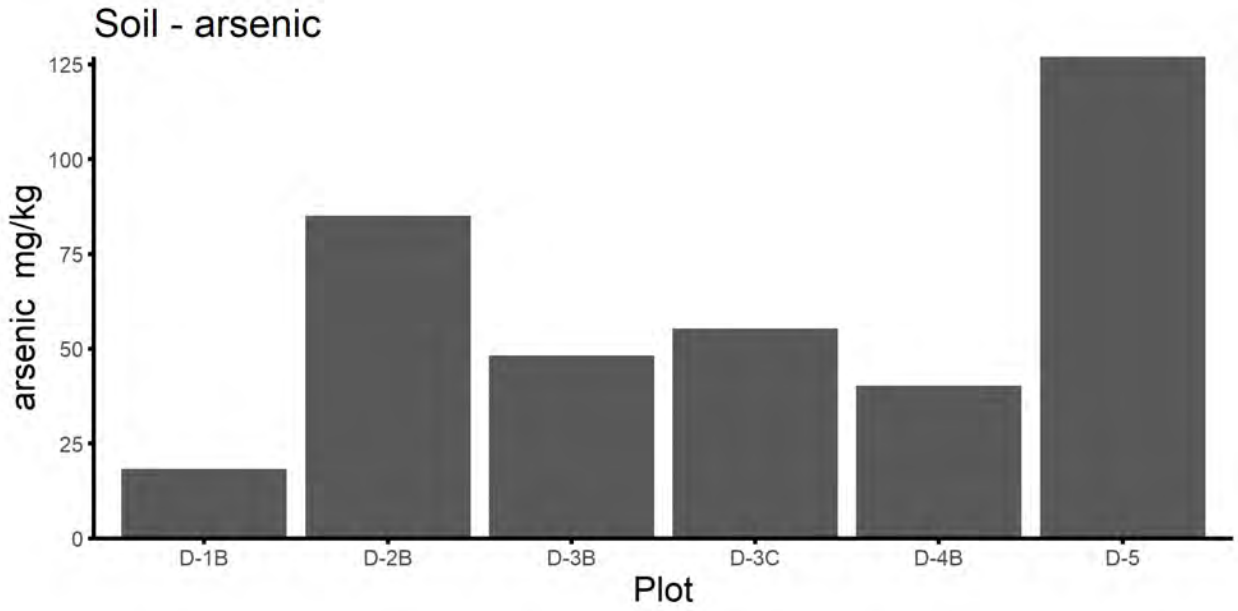

Soil - nitrite, available (as N)
nitrite, available (as N) mg/kg
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

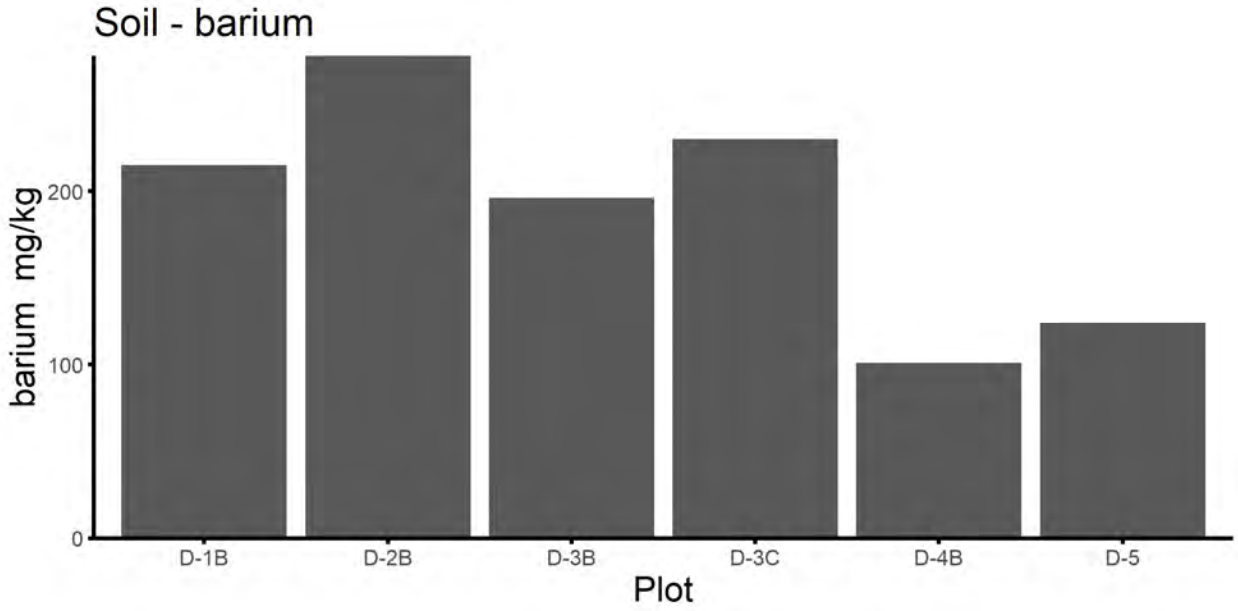

Soil - nitrogen, total
nitrogen, total %
0.0
0.1
0.2
0.3
0.4
0.5
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

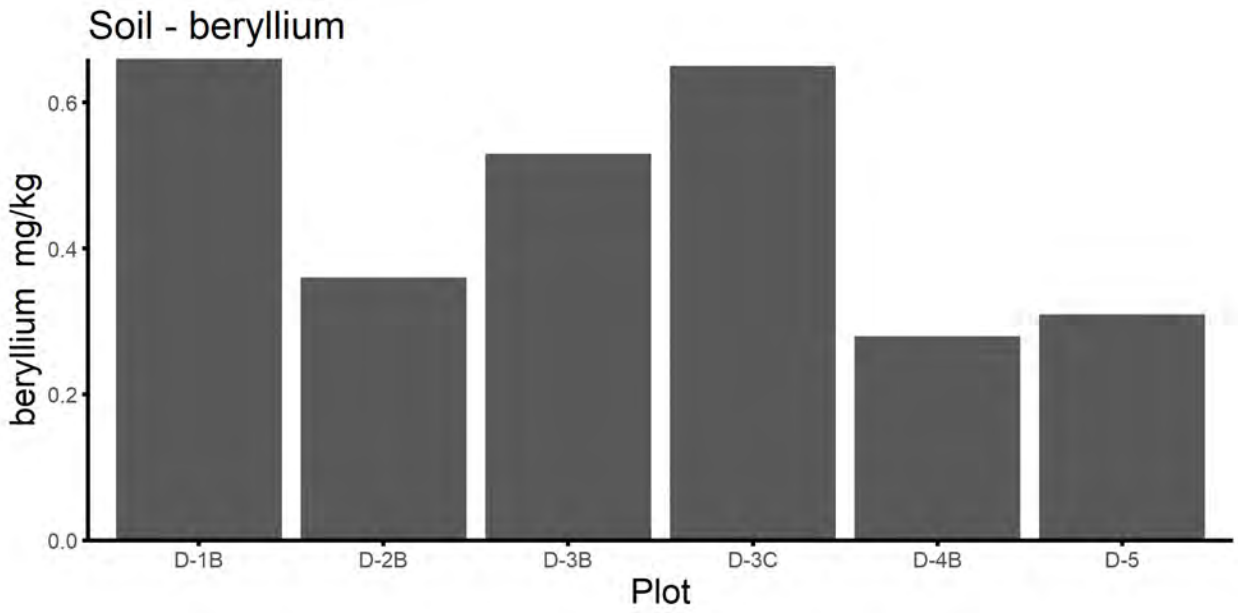

Soil - phosphate, available (as P)
phosphate, available (as P) mg/kg
0
1
2
3
4
5
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

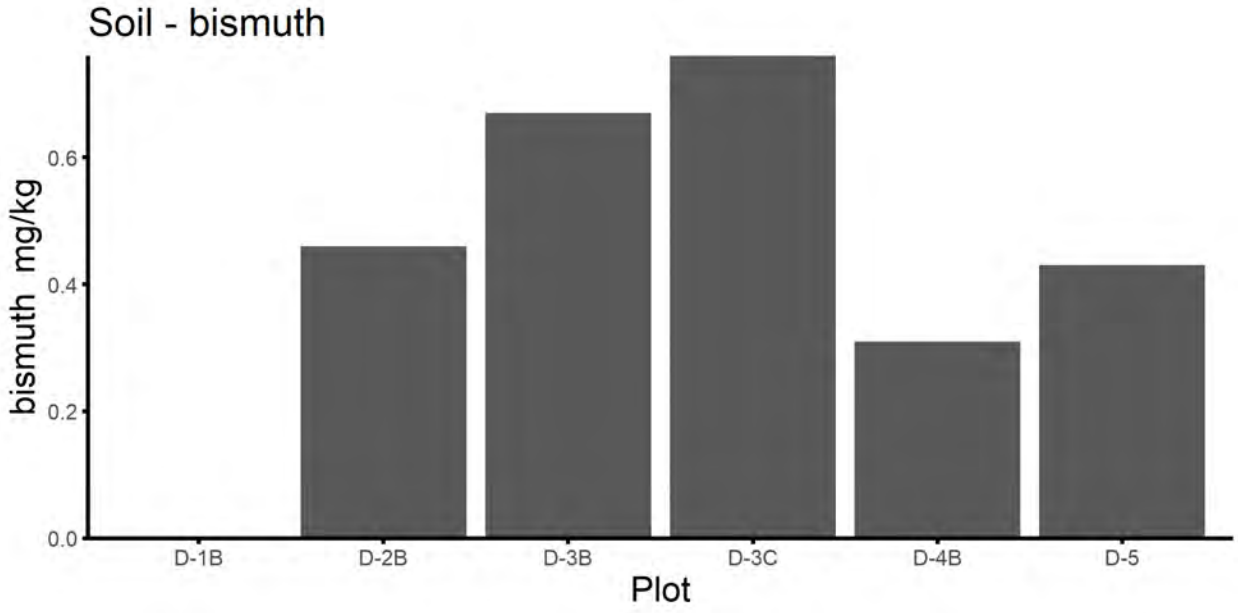

Soil - aluminum
aluminum mg/kg
16000
12000
8000
4000
0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

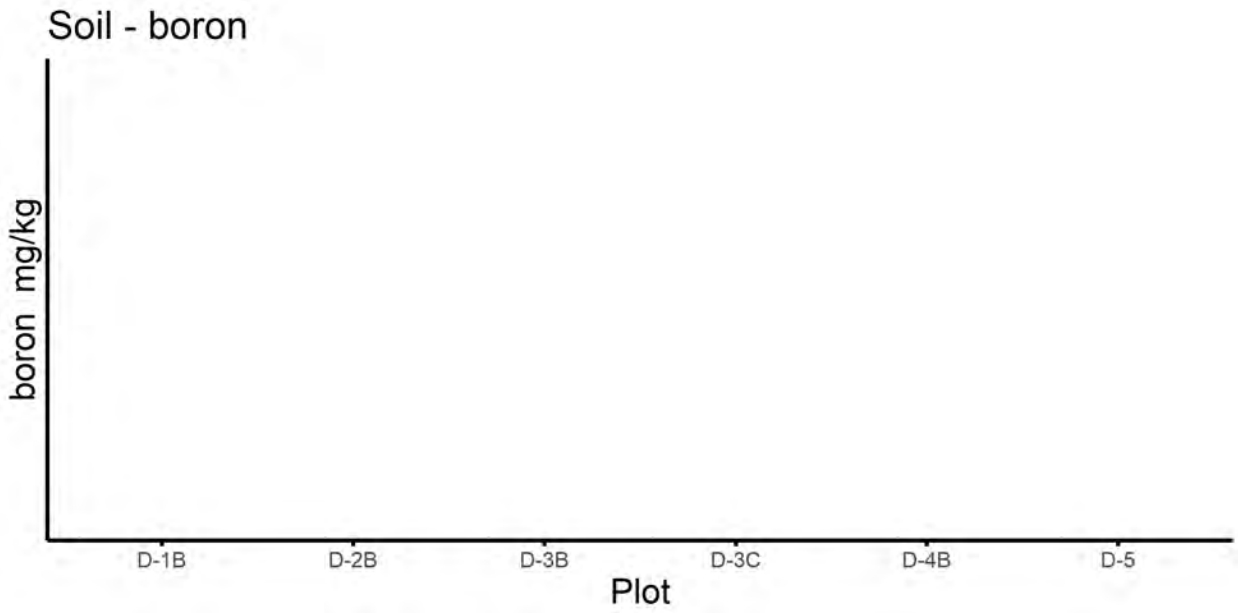

Soil - antimony
antimony mg/kg
10.0
7.5
5.0
2.5
0.0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

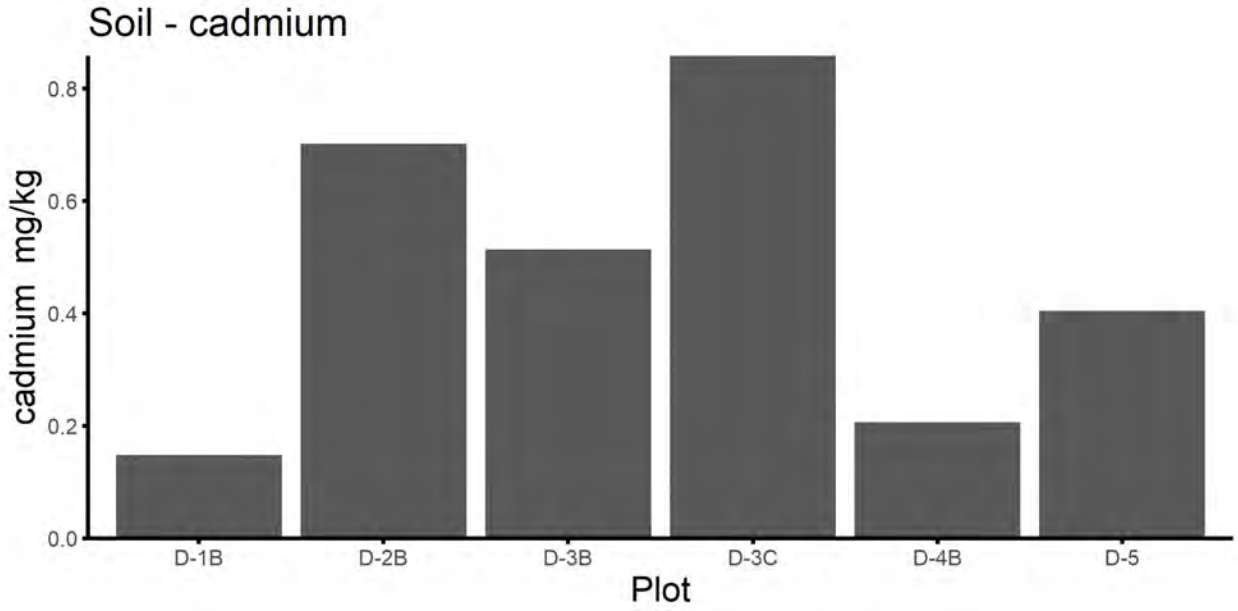

Soil - arsenic
arsenic mg/kg
125
100
75
50
25
0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

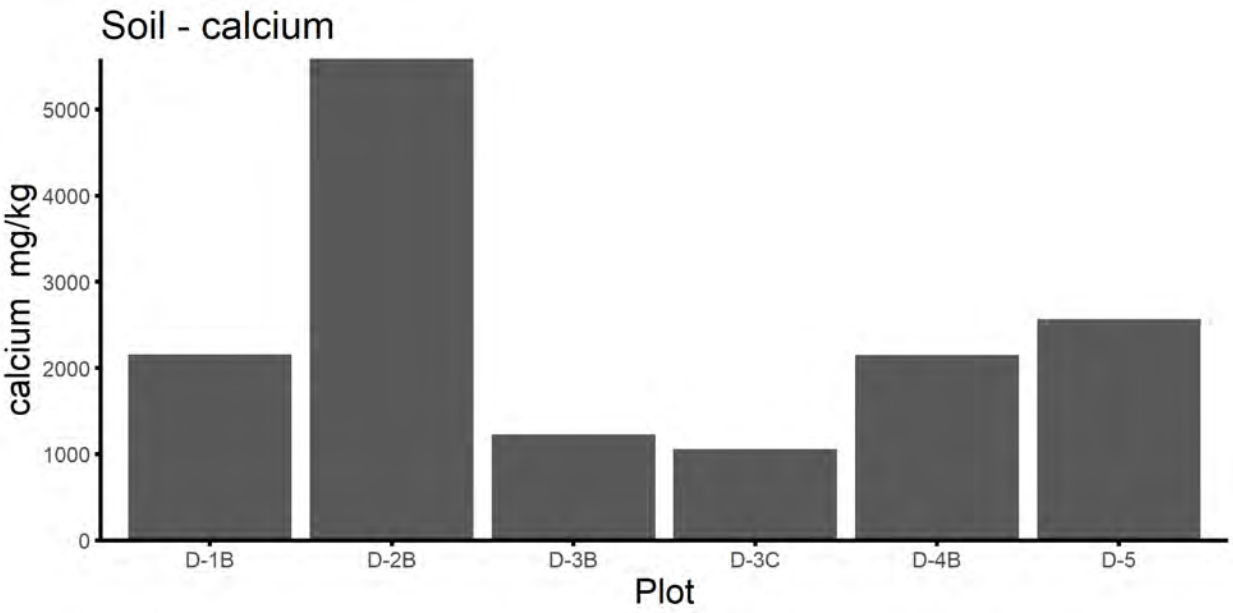

Soil - barium
barium mg/kg
200
100
0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

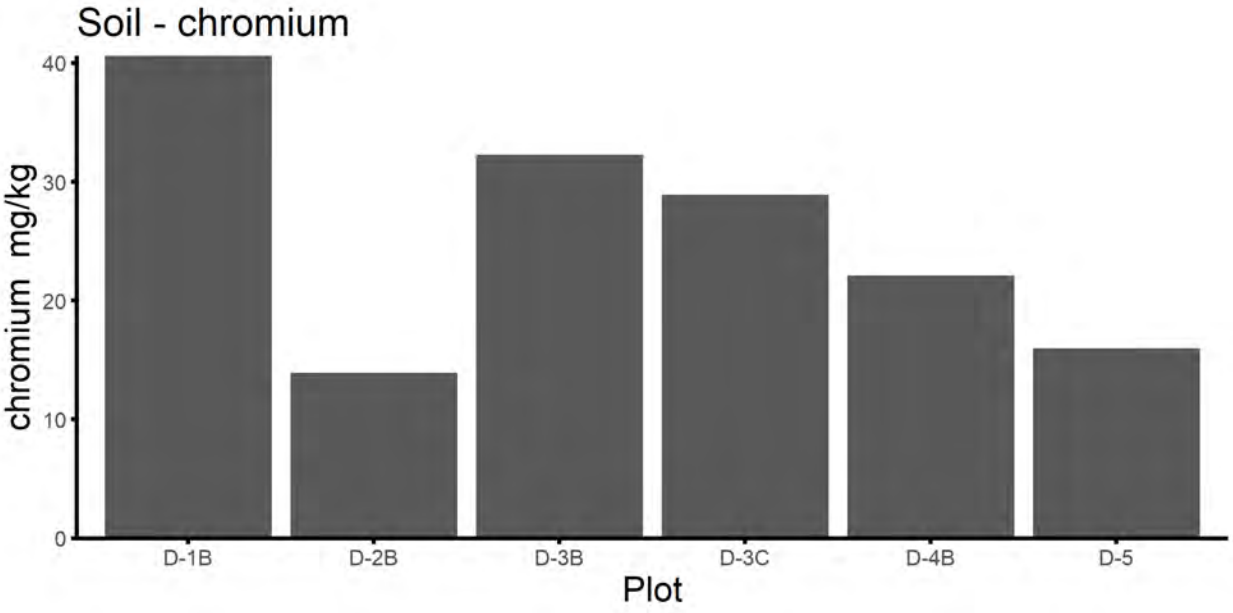

Soil - beryllium
beryllium mg/kg
0.0
0.2
0.4
0.6
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

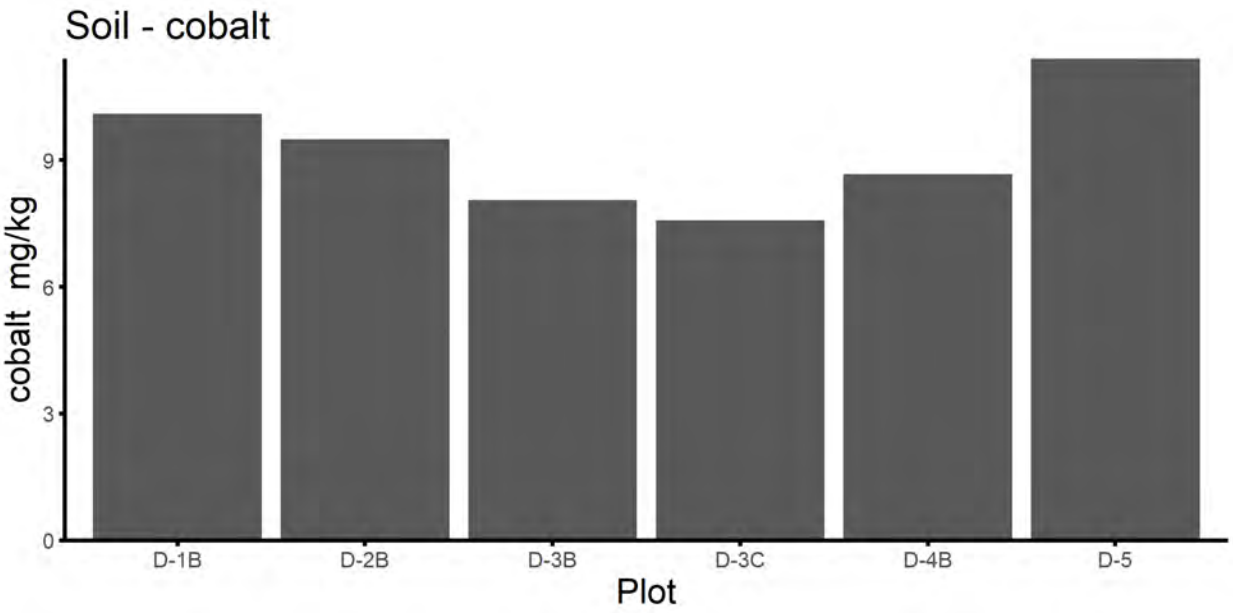

Soil - bismuth
bismuth mg/kg
0.0
0.2
0.4
0.6
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

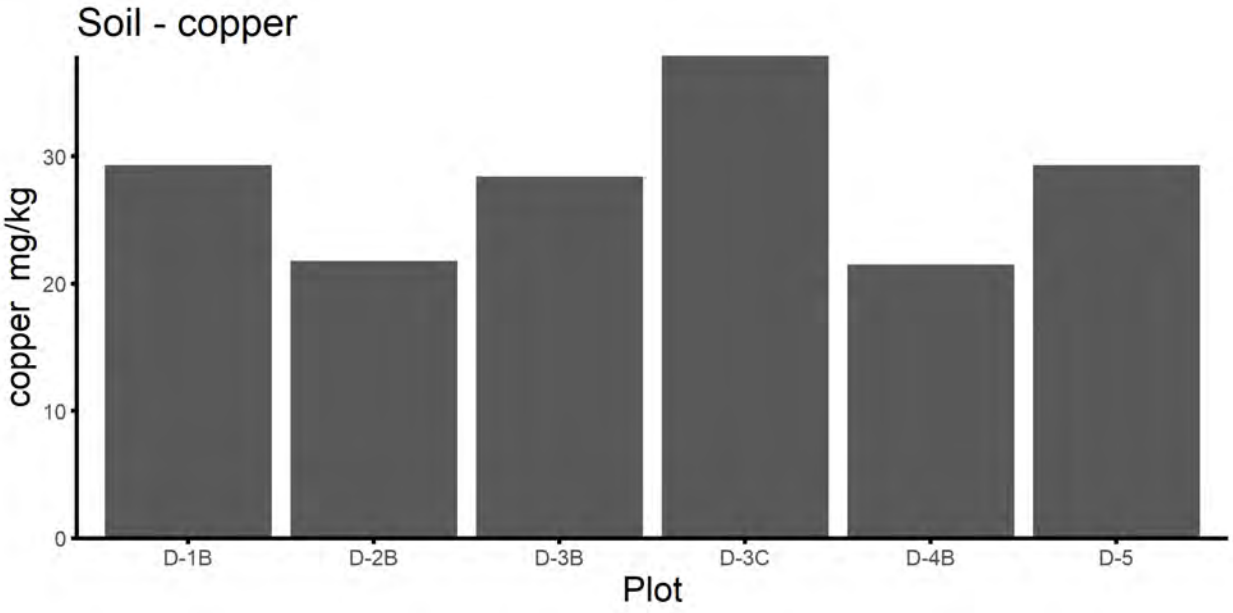

Soil - boron
boron mg/kg
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

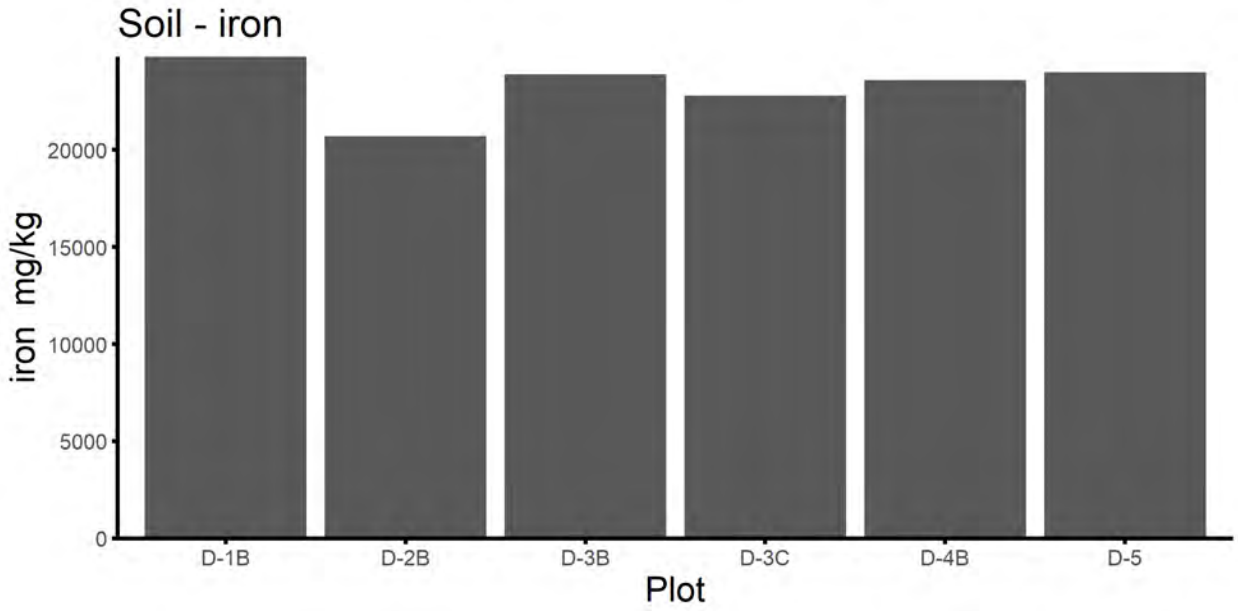

Soil - cadmium
cadmium mg/kg
0.0
0.2
0.4
0.6
0.8
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

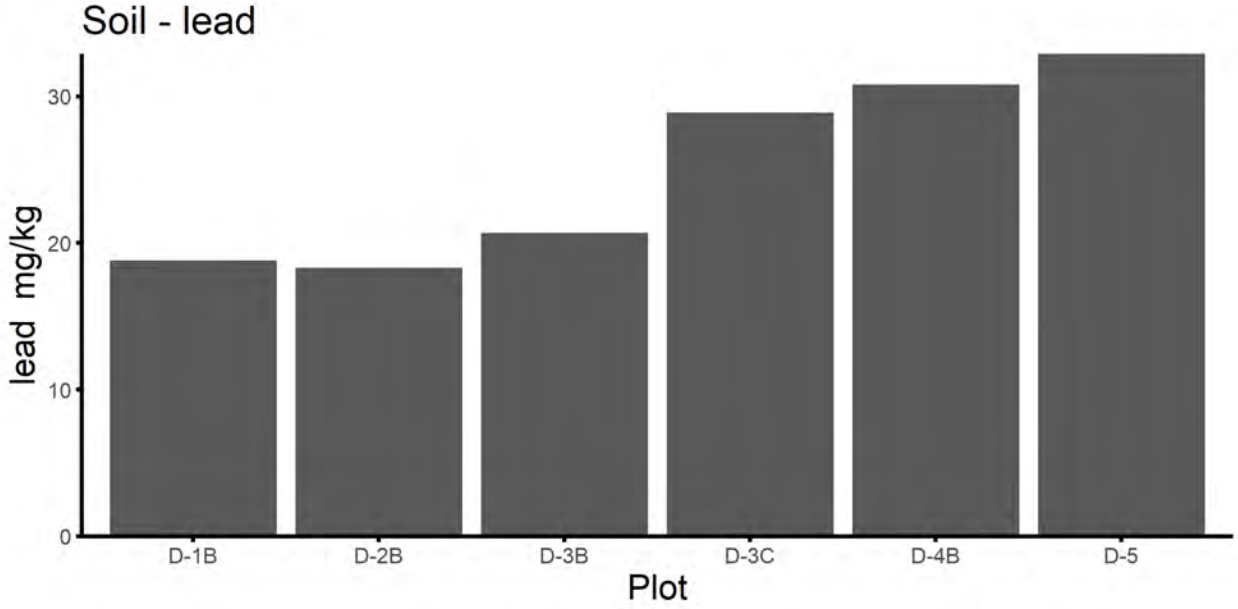

Soil - calcium
calcium mg/kg
5000
4000
3000
2000
1000
0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

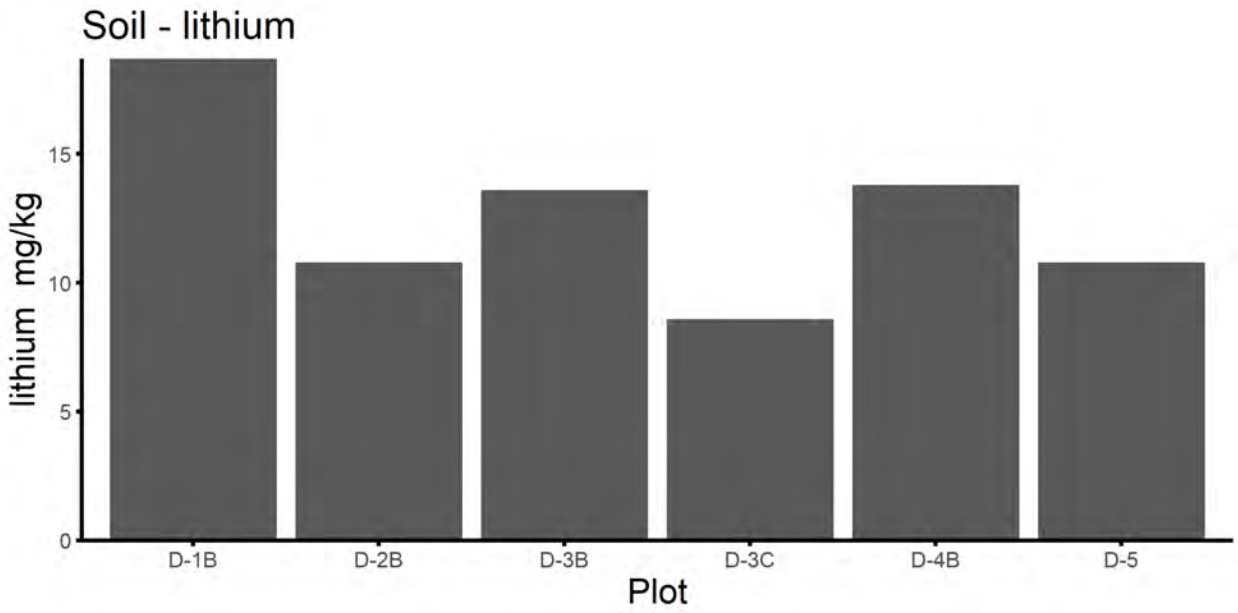

Soil - chromium
chromium mg/kg
40
30
20
10
0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

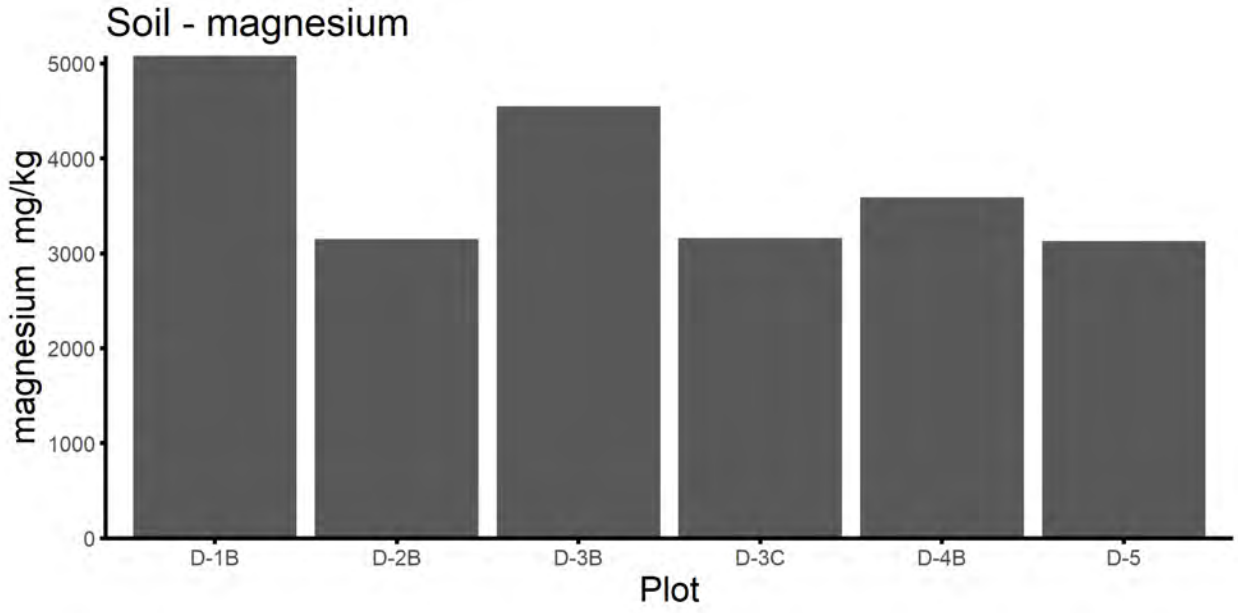

Soil - cobalt
cobalt mg/kg
0
3
6
9
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

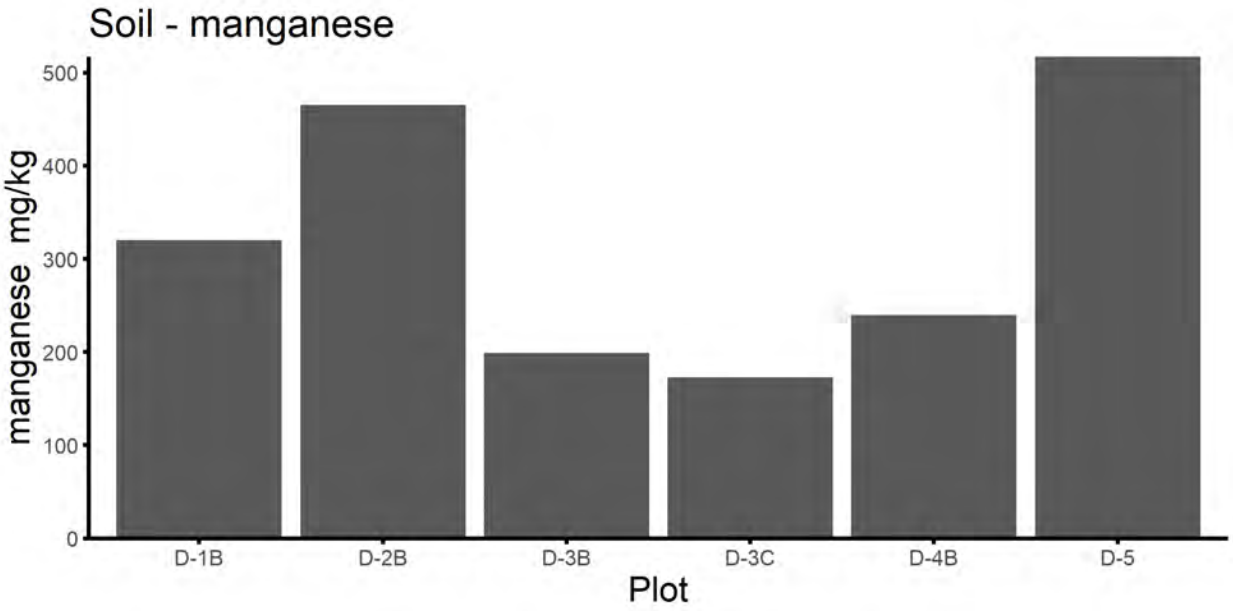

Soil - copper
copper mg/kg
0
10
20
30
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

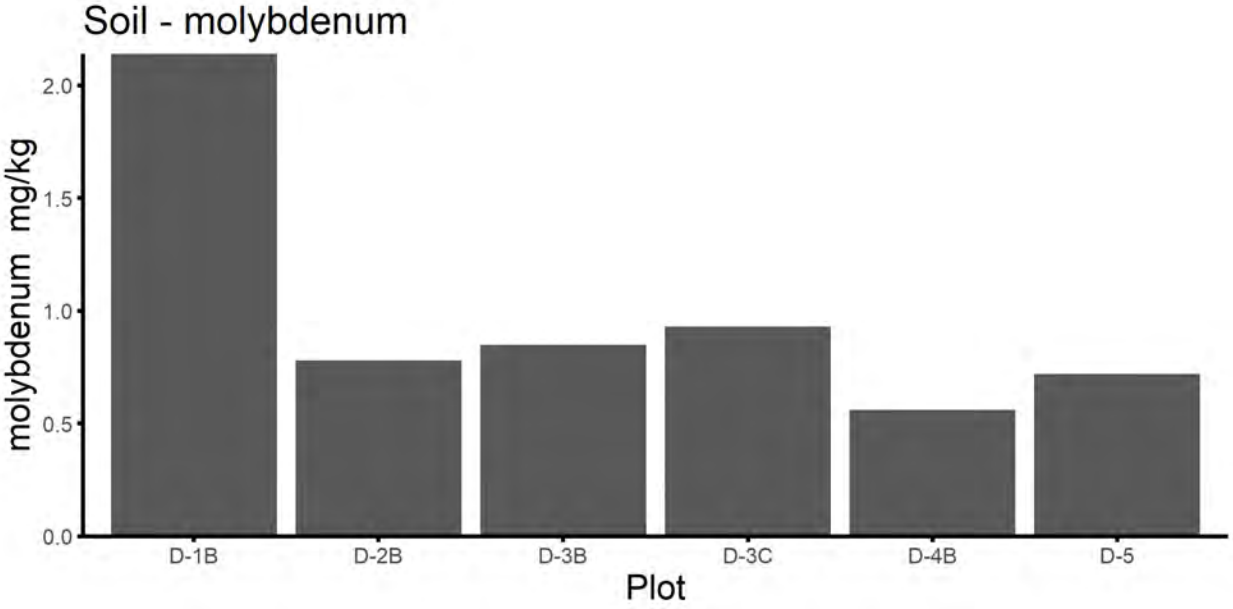

Soil - iron
iron mg/kg
20000
15000
10000
5000
0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

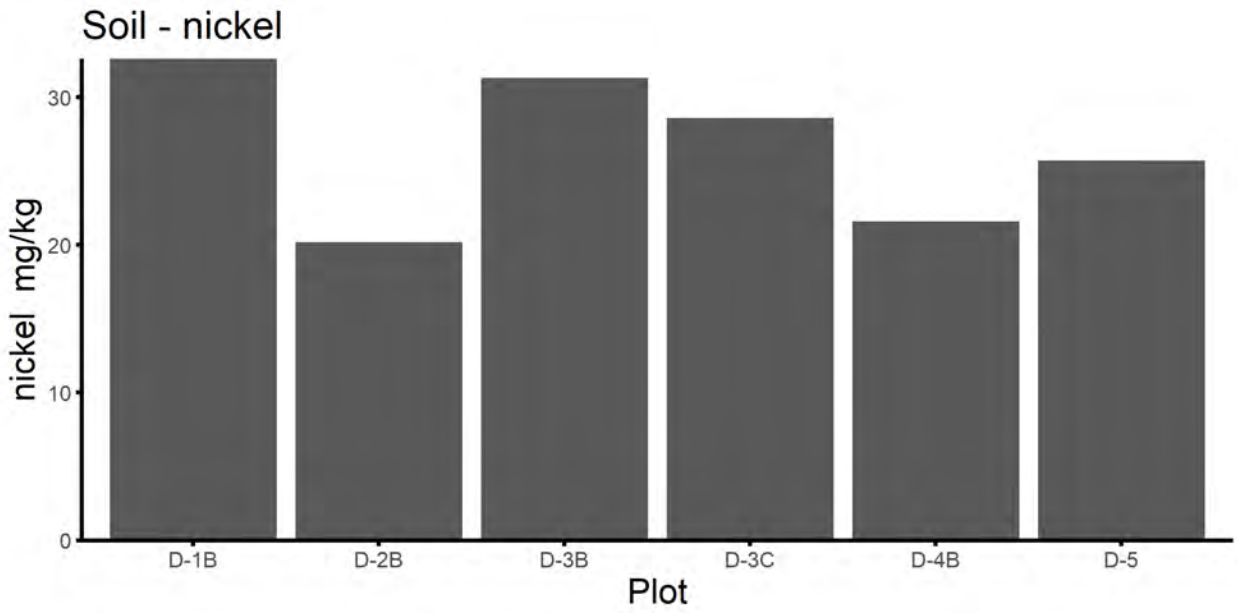

Soil - lead
lead mg/kg
30
20
10
0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

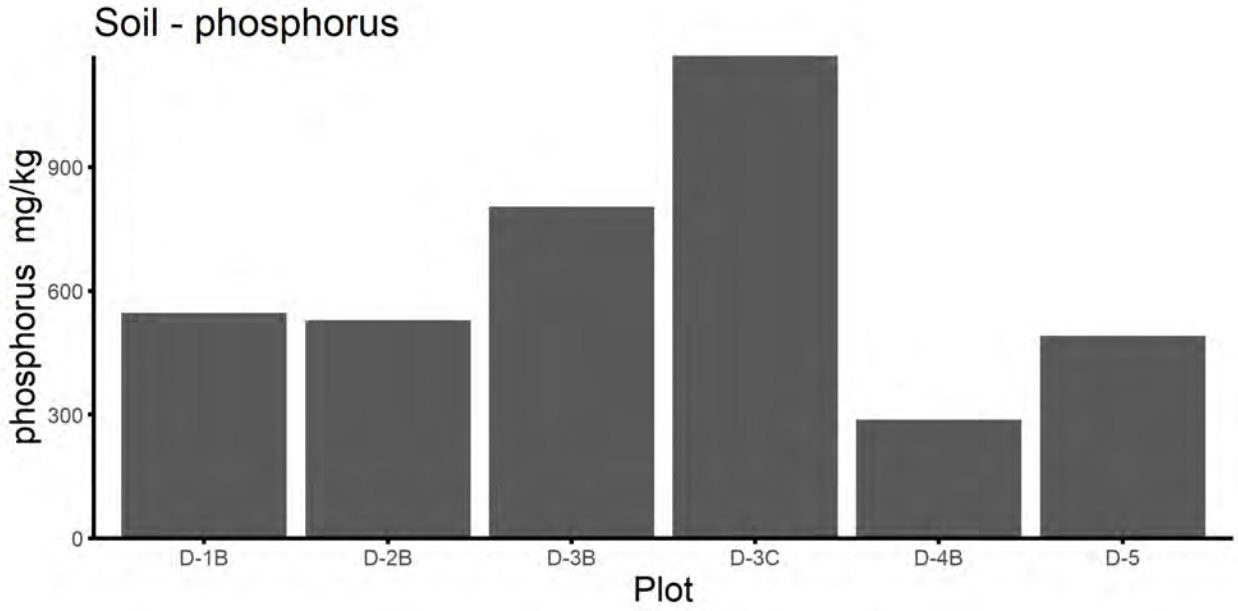

Soil - lithium
lithium mg/kg
15
10
5
0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

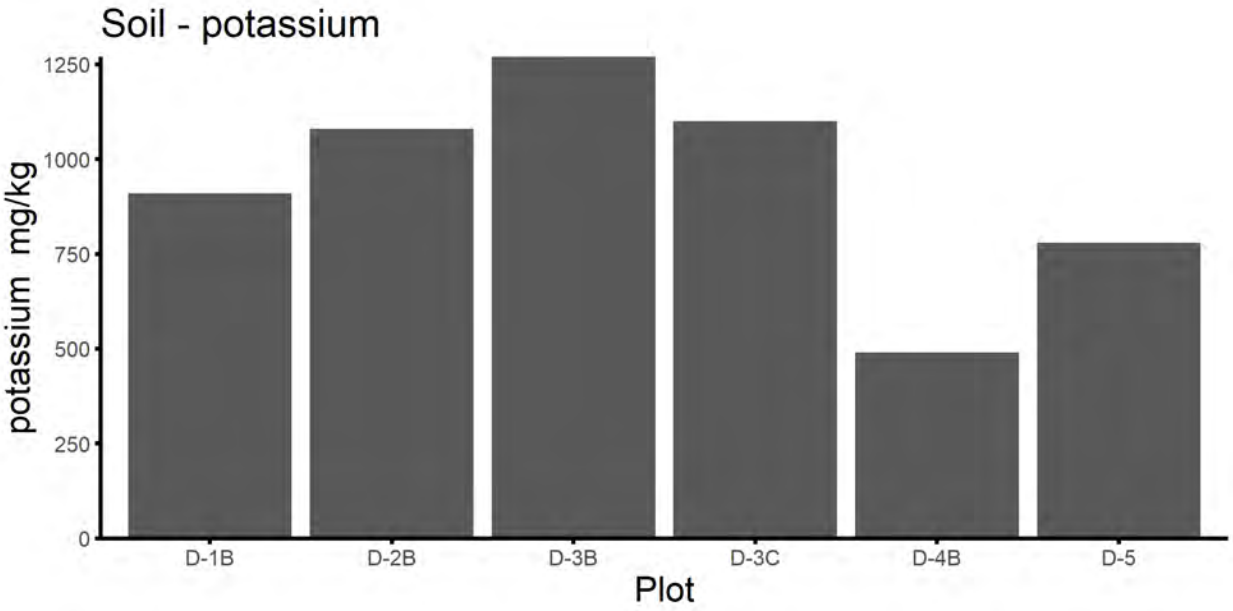

Soil - magnesium
magnesium mg/kg
5000
4000
3000
2000
1000
0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

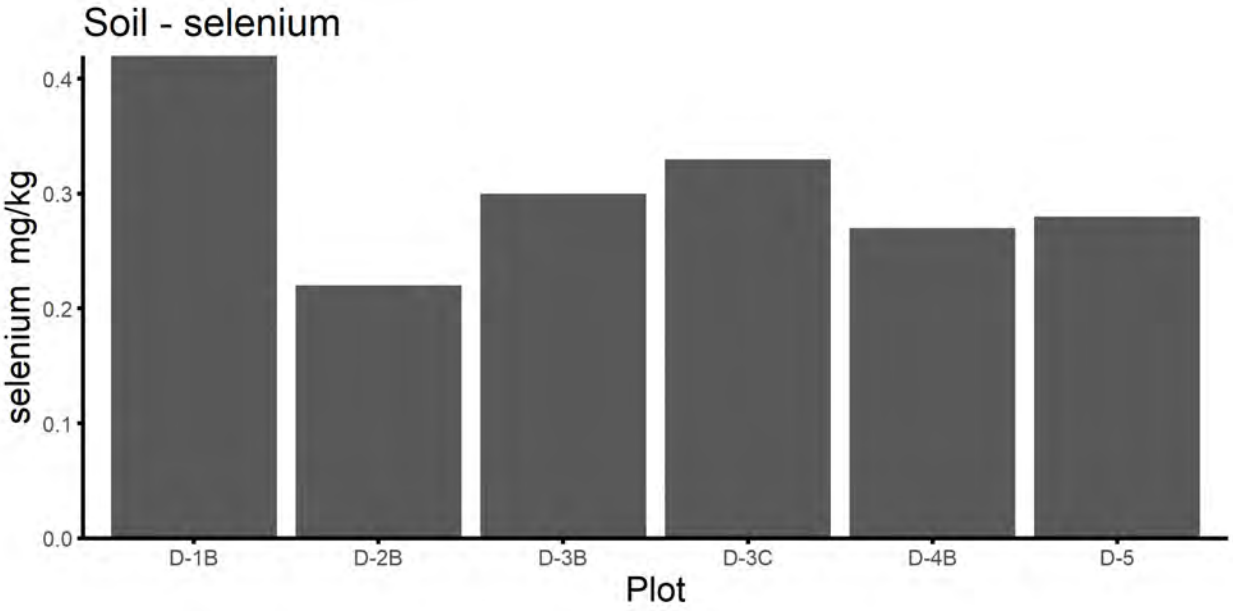

Soil - manganese
manganese mg/kg
500
400
300
200
100
0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

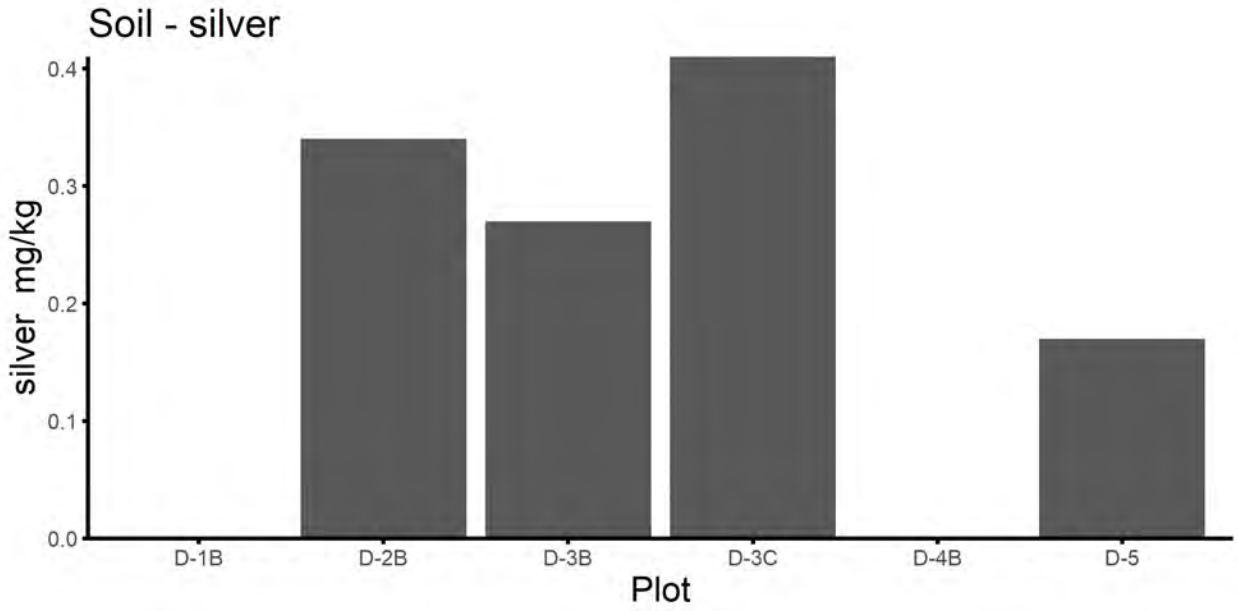

Soil - molybdenum
molybdenum mg/kg
2.0
1.5
1.0
0.5
0.0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

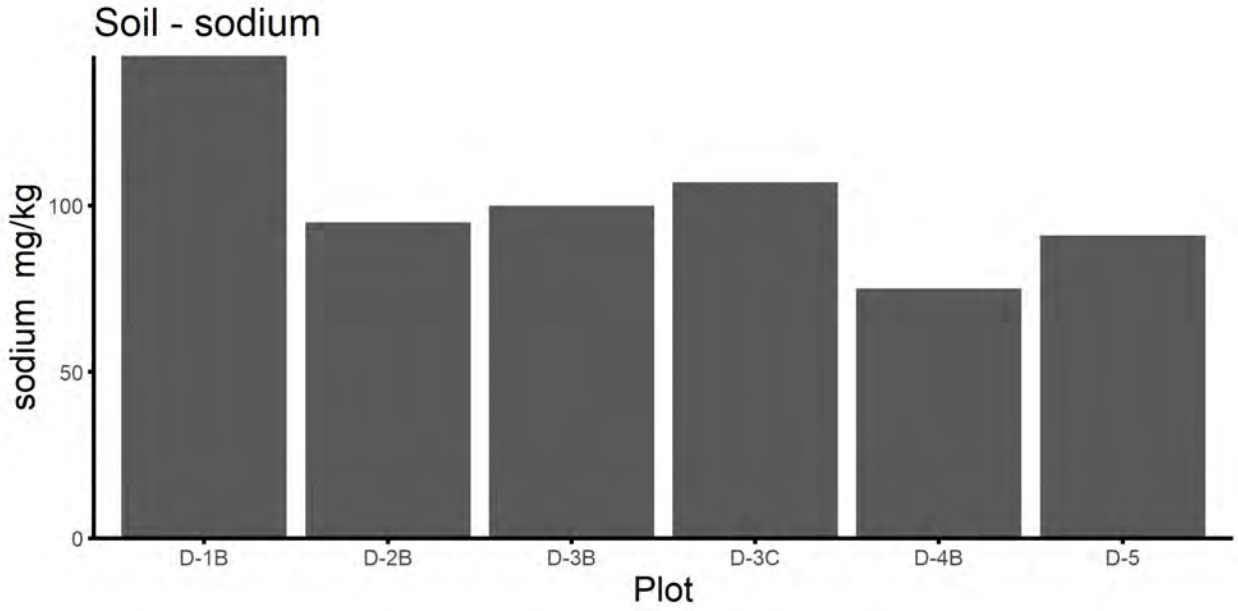

Soil - nickel
nickel mg/kg
30
20
10
0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

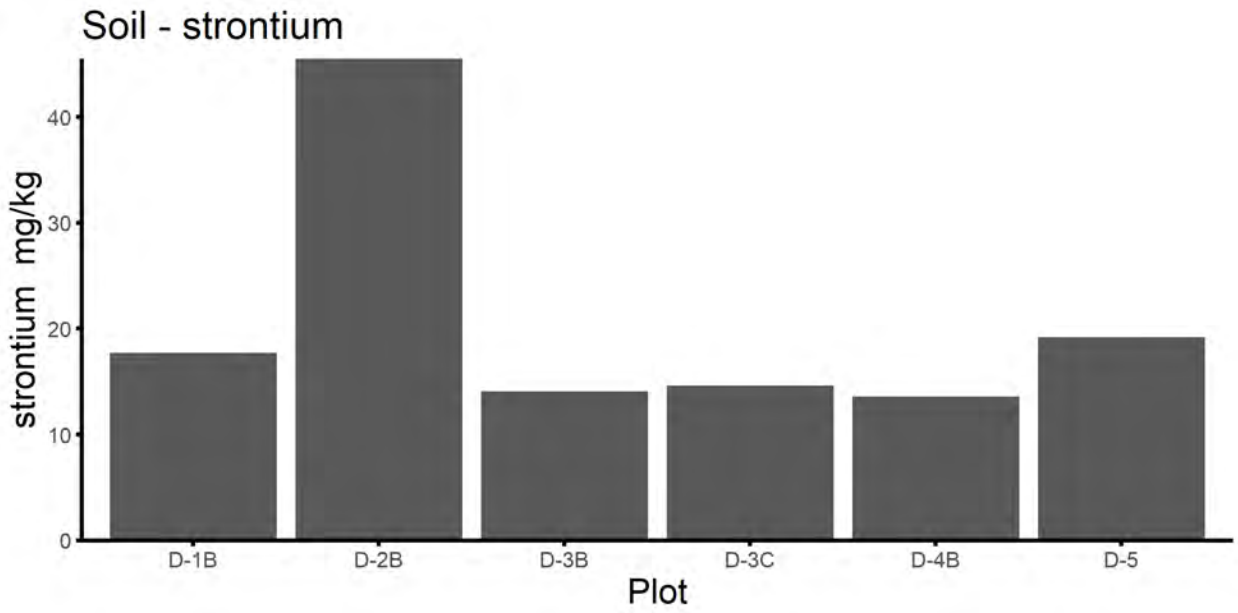

Soil - phosphorus
phosphorus mg/kg
900
600
300
0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

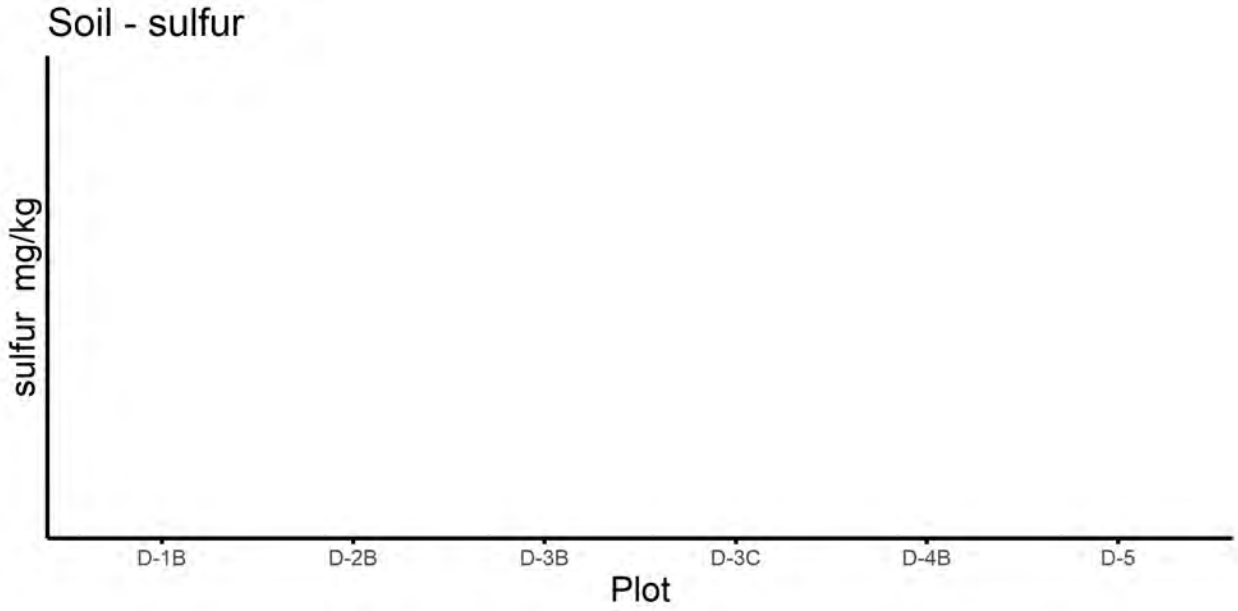

Soil - potassium
potassium mg/kg
1250
1000
750
500
250
0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

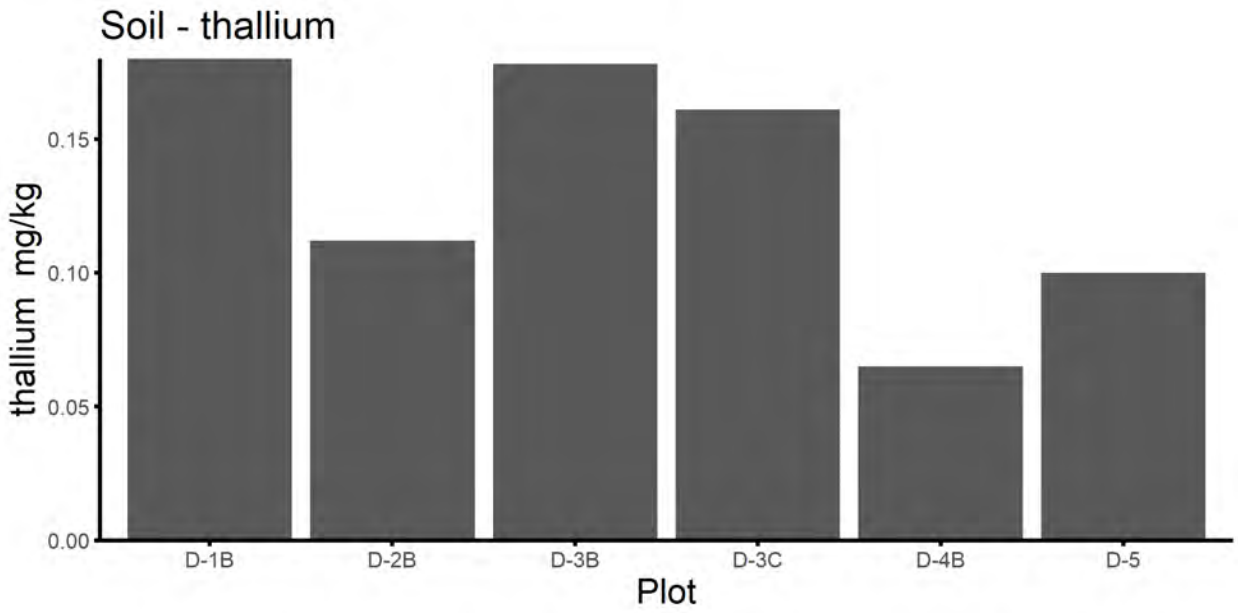

Soil - selenium
selenium mg/kg
0.4
0.3
0.2
0.1
0.0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

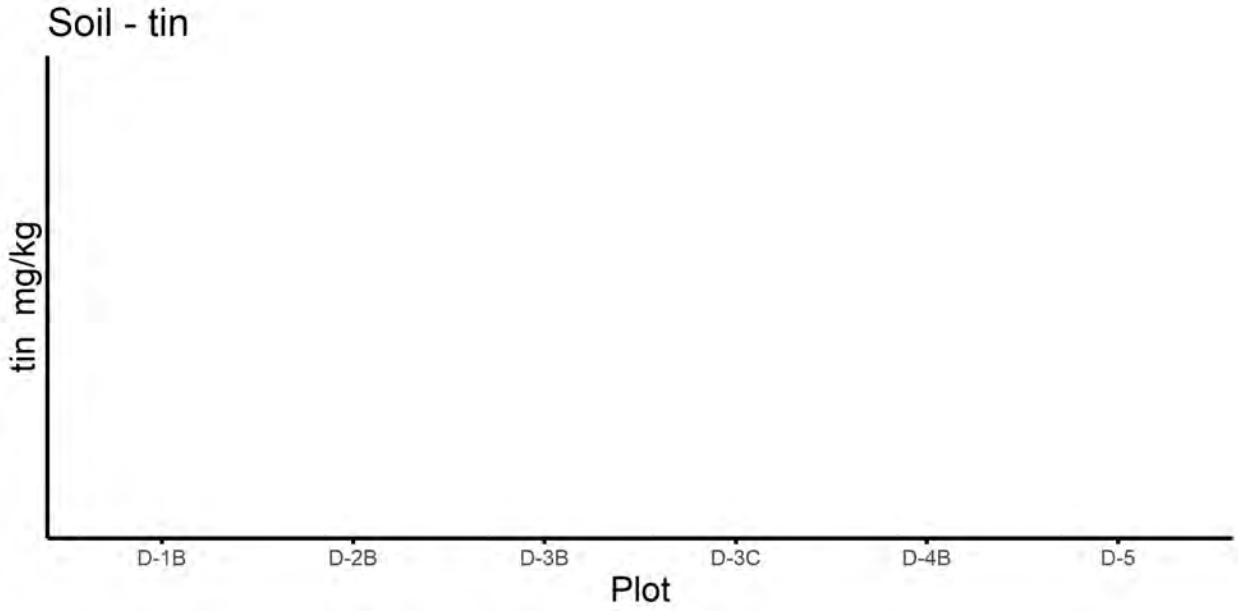

Soil - silver
silver mg/kg
0.4
0.3
0.2
0.1
0.0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

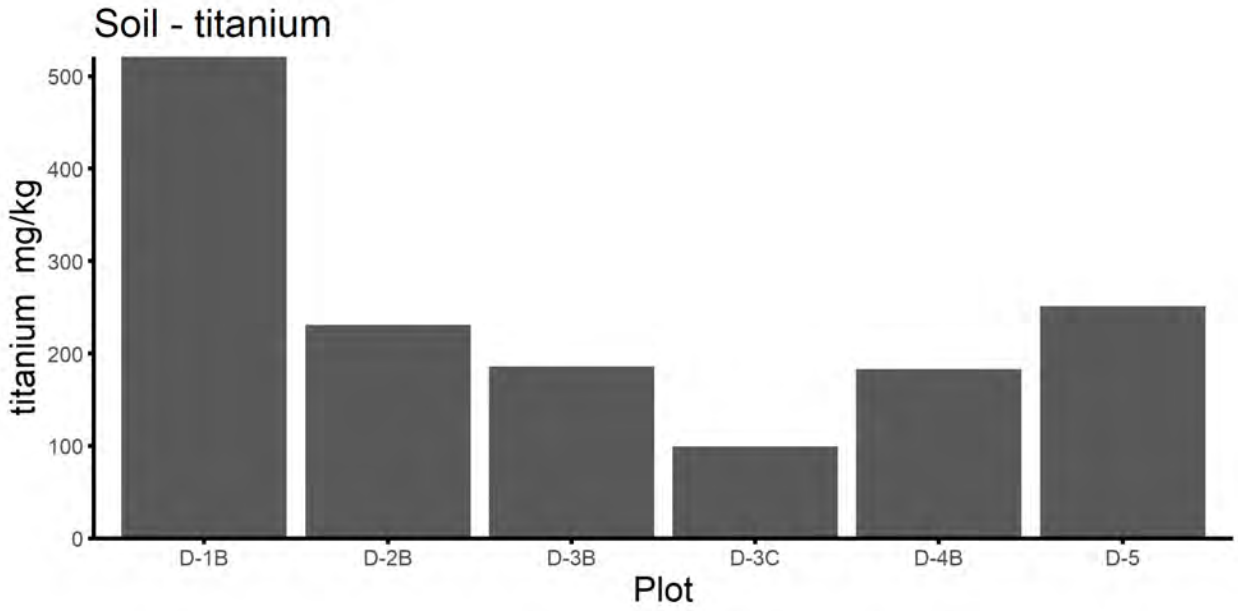

Soil - sodium
sodium mg/kg
100
50
0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

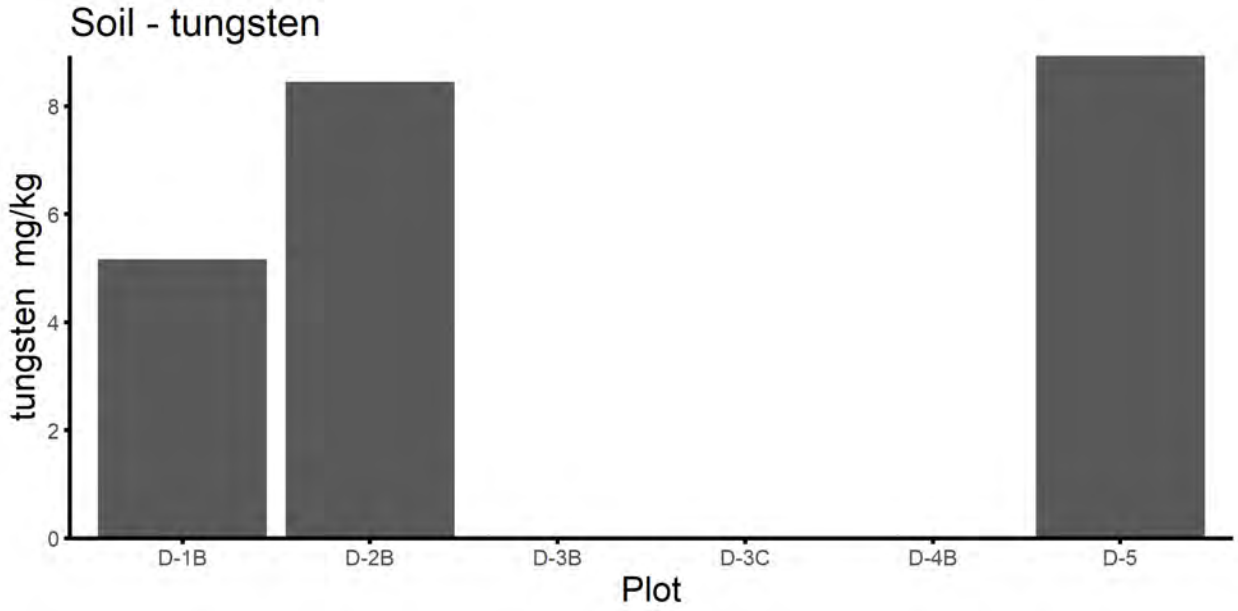

Soil - strontium
strontium mg/kg
0
10
20
30
40
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

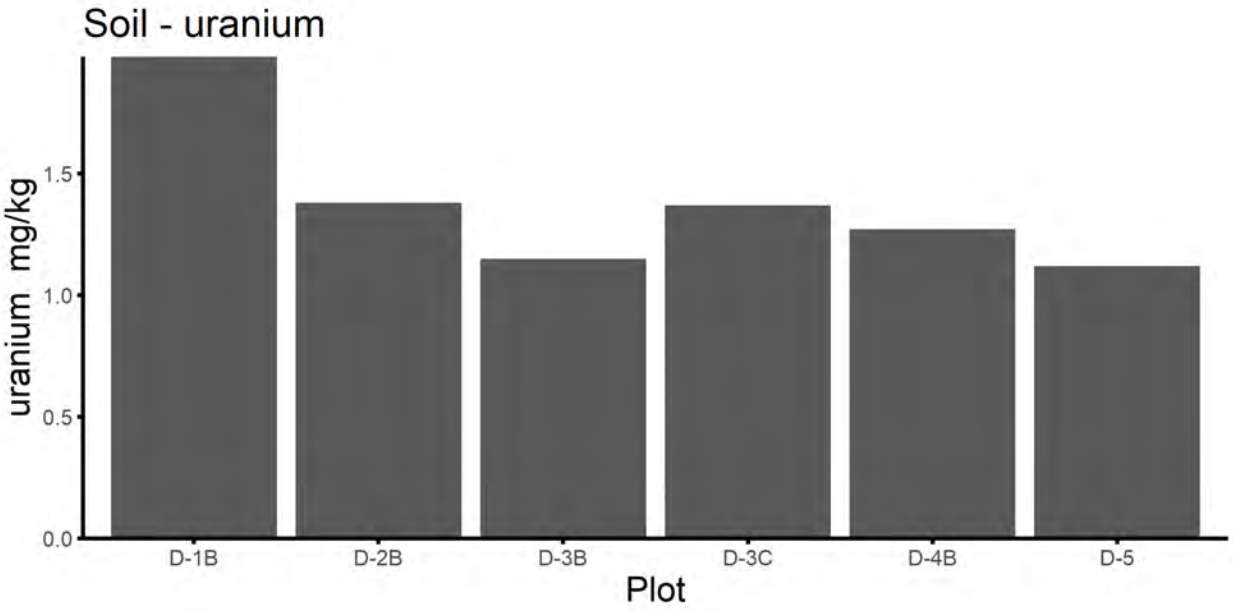

Soil - sulfur
sulfur mg/kg
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

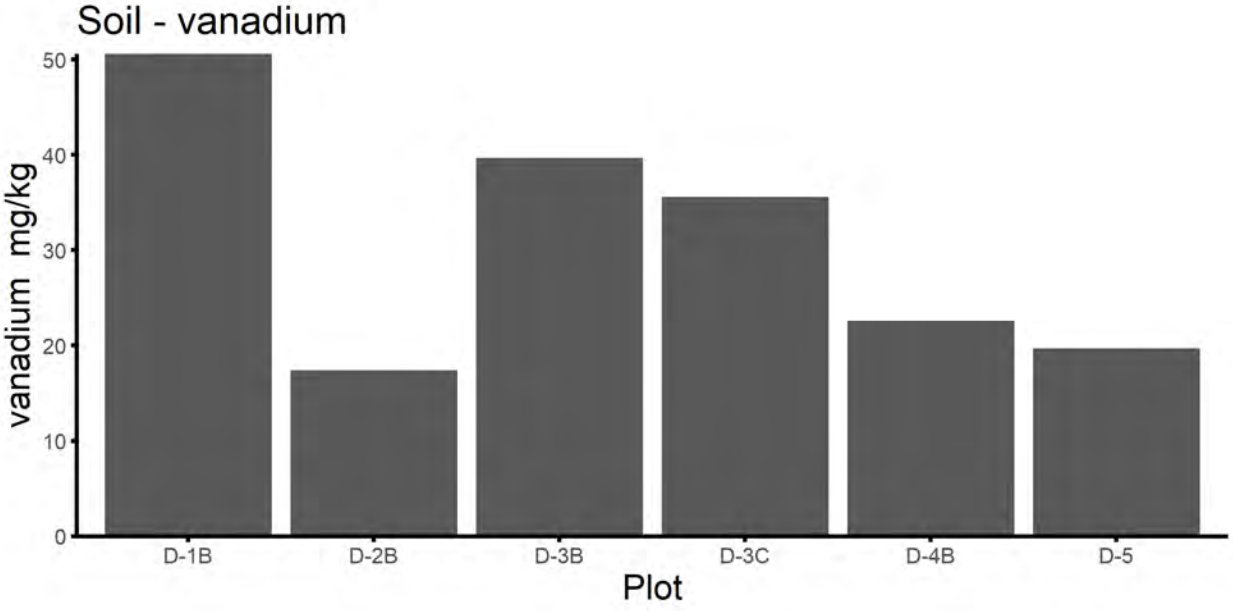

Soil - thallium
thallium mg/kg
0.15
0.10
0.05
0.00
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

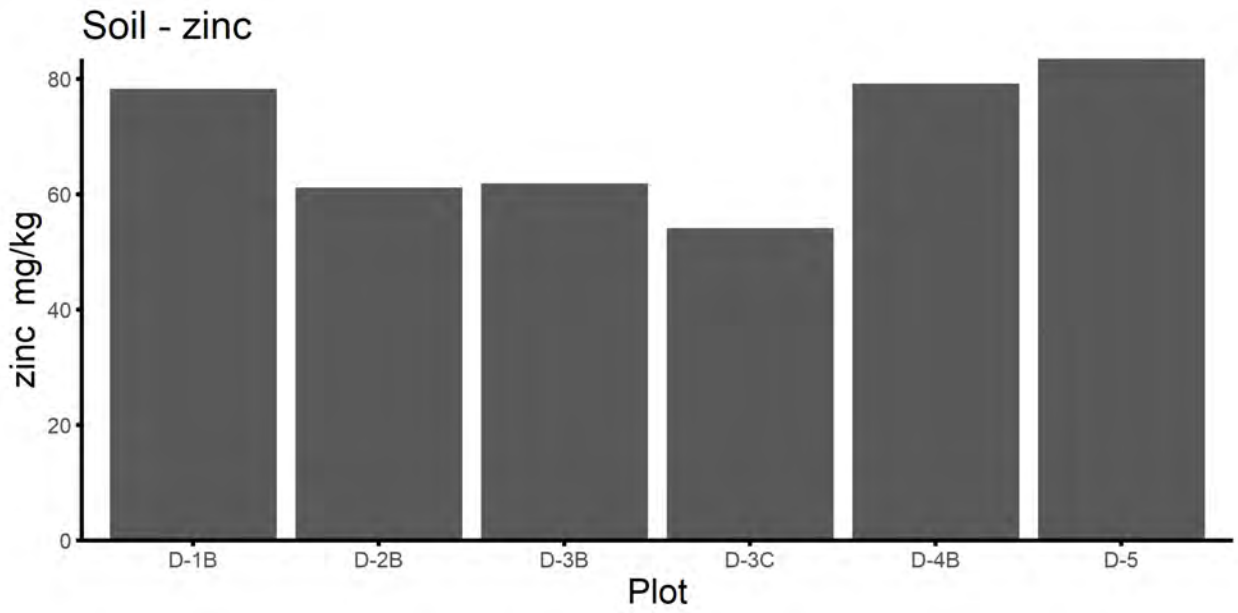

Soil - tin
tin mg/kg
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

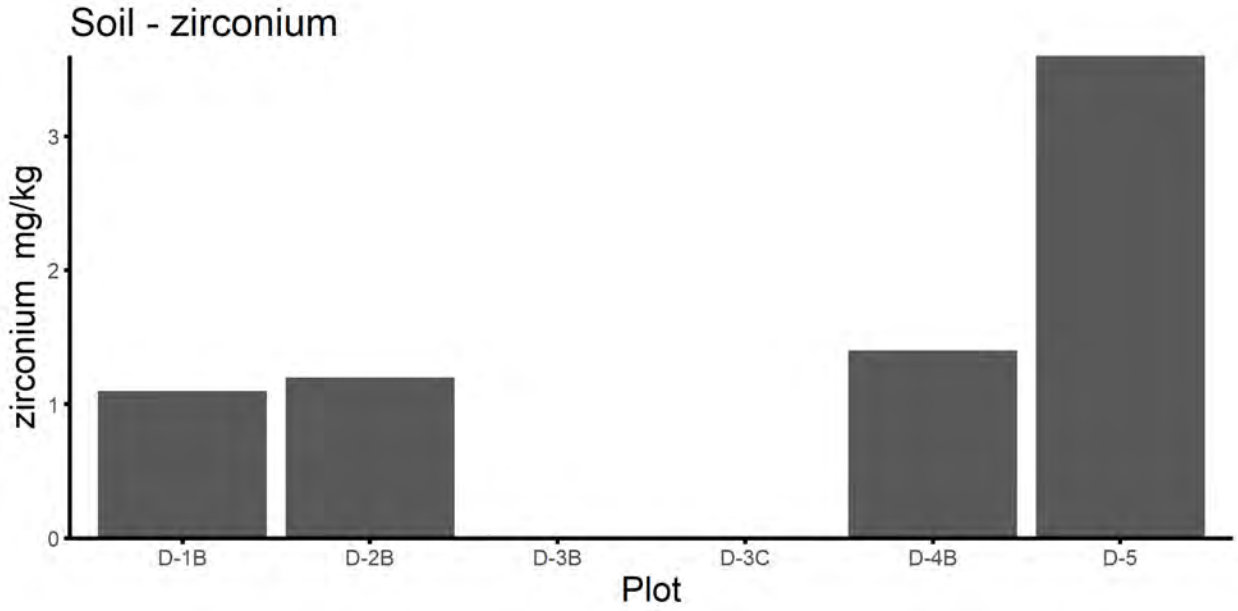

Soil - titanium
titanium mg/kg
500
400
300
200
100
0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot


Soil - tungsten
tungsten mg/kg
8
6
4
2
0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot


Soil - uranium
uranium mg/kg
0.0
0.5
1.0
1.5
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot


Soil - vanadium
vanadium mg/kg
0
10
20
30
40
50
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot


Soil - zinc
zinc mg/kg
80
60
40
20
0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot


Soil - zirconium
zirconium mg/kg
3
2
1
0
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

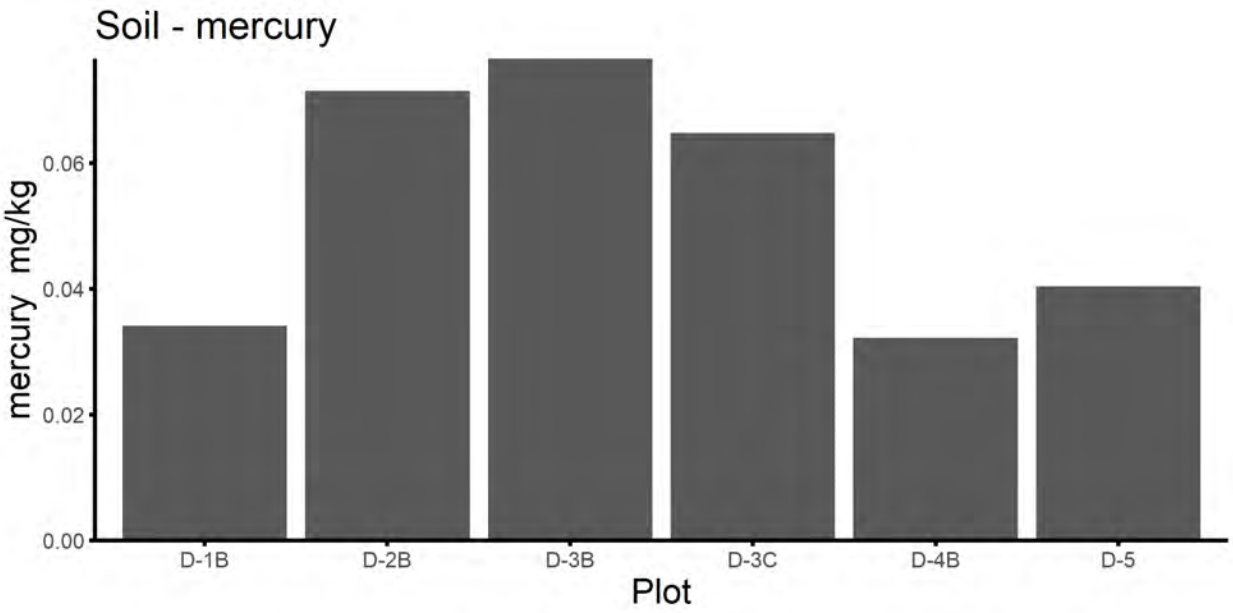

Soil - mercury
mercury mg/kg
0.06
0.04
0.02
0.00
D-1B
D-2B
D-3B
D-3C
D-4B
D-5
Plot

Table C-1 RPD % and PQL for Duplicate Soil Sampling

Parameter	Lowest Detection Limit	Units	D3-B Soil	DUP-1	RPD %	PQL
pH (1:2 soil:water)	0.1	pH units	4.56	4.48	1.769912	NA
clay (<0.002mm)	1	%	7	6.8	2.898551	NA
sand (2.0mm - 0.05mm)	1	%	27	21.6	NA	NA
silt (0.05mm - 0.002mm)	1	%	65.9	71.6	8.290909	NA
texture class			Silt loam	Silt loam	NA	NA
nitrate + nitrite, available (as N)	1.5	mg/kg	<1.5	<2.5	NA	NA
nitrite, available (as N)	0.6	mg/kg	<0.60	<1.00	NA	NA
nitrogen, total	0.02	%	0.391	0.586	39.91812	0.1
phosphate, available (as P)	2	mg/kg	2.9	5.2	56.79012	10
aluminum	50	mg/kg	13700	13100	4.477612	NA
antimony	0.1	mg/kg	2.38	5.92	85.3012	0.5
arsenic	0.1	mg/kg	48.2	55.3	NA	NA
barium	0.5	mg/kg	196	230	15.96244	NA
beryllium	0.1	mg/kg	0.53	0.65	20.33898	0.5
bismuth	0.2	mg/kg	0.67	0.76	12.58741	NA
boron	5	mg/kg	<5.0	<5.0	NA	NA
cadmium	0.02	mg/kg	0.514	0.858	NA	NA
calcium	50	mg/kg	1230	1060	14.84716	NA
chromium	0.5	mg/kg	32.3	28.9	11.11111	NA
cobalt	0.1	mg/kg	8.06	7.57	NA	NA
copper	0.5	mg/kg	28.4	37.9	28.65762	2.5
iron	50	mg/kg	23900	22800	4.710921	NA
lead	0.5	mg/kg	20.7	28.9	33.06452	2.5
lithium	2	mg/kg	13.6	8.6	45.04505	10
magnesium	20	mg/kg	4550	3160	36.05707	100
manganese	1	mg/kg	199	173	NA	NA
molybdenum	0.1	mg/kg	0.85	0.93	NA	NA
nickel	0.5	mg/kg	31.3	28.6	NA	NA
phosphorus	50	mg/kg	804	1170	37.08207	250
potassium	100	mg/kg	1270	1100	NA	NA
selenium	0.2	mg/kg	0.3	0.33	NA	NA
silver	0.1	mg/kg	0.27	0.41	NA	NA
sodium	50	mg/kg	100	107	6.763285	NA
strontium	0.5	mg/kg	14.1	14.6	NA	NA
sulfur	1000	mg/kg	<1000	<1000	NA	NA
thallium	0.05	mg/kg	0.178	0.161	10.0295	NA
tin	2	mg/kg	<2.0	<2.0	NA	NA
titanium	1	mg/kg	186	99.4	60.68676	5
tungsten	0.5	mg/kg	<0.50	<0.50	NA	NA
uranium	0.05	mg/kg	1.15	1.37	17.46032	NA
vanadium	0.2	mg/kg	39.7	35.6	10.88977	NA
zinc	2	mg/kg	61.9	54.1	13.44828	NA
zirconium	1	mg/kg	<1.0	<1.0	NA	NA
mercury	0.005	mg/kg	0.0766	0.0648	16.69024	NA

ND = Not detected
NA = Not applicable

Values in red have an RPD > 20% but PQL < 5 times the DL
Values in shaded cells have an RPD >20% and a PQL > 5 times the DL

TABLE C-2			COMPARISONS OF SOIL SAMPLES COLLECTED 2.5 METERS FROM THE NORTH, SOUTH & EAST PLOTS								
Site			**D-1B**			**D-2B**			**D-3**		
Location of sample; 2.5 m from			**South Plot**	**East Plot**	**North Plot**	**South Plot**	**East Plot**	**North Plot**	**South Plot**	**East Plot**	**North Plot**
Year Sampled			**2022**	**2020**	**2018**	**2022**	**2020**	**2018**	**2022**	**2020**	**2018**
Physical Tests (Matrix: Soil/Solid)											
pH (1:2 soil:water)	0.10	pH units	5.64	5.28	4.62	5.75	5.07	8.23	4.56	4.59	4.85
Particle Size (Matrix: Soil/Solid)											
sand (2.0mm - 0.05mm)	1	%	30.6	21.92	50.0	33.4	53.62	41.2	27.0	44.35	38.4
silt (0.05mm - 0.002mm)	1	%	61.4	68.51	45.7	59.20	41.13	54.7	65.9	48.91	57.4
clay (<0.002mm)	1	%	8	9.57	4.3	7.3	5.24	4.1	7.0	6.74	4.2
texture class			Silt loam	Silt Loam	Sandy loam	Silt loam	Sandy Loam	Silt loam	Silt loam	Loam /Sandy Loam	Silt loam
Anions and Nutrients (Matrix: Soil/Solid)											
nitrogen, total	0.020	%	0.069	0.091	0.710	0.422	0.086	0.025	0.391	0.188	0.066
Plant Available Nutrients (Matrix: Soil/Solid)											
nitrate + nitrite, available (as N)	1.0	mg/kg	<1.0	<1.0	<3.0	<1.0	<1.0	<2.0	<1.5	<1.0	<2.0
phosphate, available (as P)	2.0	mg/kg	2.9	2.5	<3.0	<2.0	2.5	<2.0	2.9	2.7	<2.0
potassium, available	20	mg/kg		31	<1.2		104	<0.80		134	<0.40
nitrite, available (as N)	0.40	mg/kg	<0.40	<0.40	<2.0	<0.40	<0.40	<2.0	<0.60	<0.40	2.0
Metals (Matrix: Soil/Solid)											
aluminum	50	mg/kg	16100	17200	15200	7580	9970	8340	13700	14000	15500
antimony	0.10	mg/kg	2.04	9.57	2.00	3.52	3.01	2.32	2.38	5.13	6.21
arsenic	0.10	mg/kg	18.3	20.4	15.1	85.1	95.7	32.8	48.2	83.5	115
barium	0.50	mg/kg	215	180	134	278.00	156	348	196	153	205
beryllium	0.10	mg/kg	0.66	0.57	0.47	0.36	0.38	0.31	0.53	0.41	0.55
bismuth	0.20	mg/kg	<0.20	<0.20	<0.20	0.46	0.31	0.24	0.67	0.66	0.64
boron	5.0	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
cadmium	0.020	mg/kg	0.148	0.185	0.123	0.70	0.214	0.380	0.514	0.33	0.258
calcium	50	mg/kg	2160	1930	1300	5590	1610	11600	1230	1440	1930
chromium	0.50	mg/kg	40.6	32.2	26.2	13.90	19.1	18.8	32.3	52.7	42.2
cobalt	0.10	mg/kg	10.1	8.18	5.94	9.49	8.25	8.81	8.06	9.89	11.0
copper	0.50	mg/kg	29.3	27.5	18.0	21.80	19.7	27.9	28.4	28.2	28.9
iron	50	mg/kg	24800	25800	21200	20700	20500	22000	23900	26100	28800
lead	0.50	mg/kg	18.8	45.2	19.8	18.30	17.6	12.6	20.7	21.5	40.6
lithium	2.0	mg/kg	18.7	18.6	13.4	10.8	14.4	10.2	13.6	15.7	19.7
magnesium	20	mg/kg	5080	5120	3880	3150.00	3560	5760	4550	5440	6050
manganese	1.0	mg/kg	320	190	195	465	302	425	199	305	346
mercury	0.0050	mg/kg	0.0341	0.0403	0.0543	0.07	0.0373	0.0329	0.0766	0.0287	0.0239
molybdenum	0.10	mg/kg	2.14	1.41	1.19	0.78	0.85	1.01	0.85	1.92	0.83
nickel	0.50	mg/kg	32.6	25.6	17.7	20.20	20.3	24.3	31.3	46.4	35.3
phosphorus	50	mg/kg	547	517	531	529	407	808	804	402	483
potassium	100	mg/kg	910	980	850	1080.00	1130	840	1270	1500	1840
selenium	0.20	mg/kg	0.42	0.45	0.37	0.22	0.23	0.32	0.30	0.24	0.25
silver	0.10	mg/kg	<0.10	0.11	0.11	0.34	0.19	0.15	0.27	0.13	<0.10
sodium	50	mg/kg	145	71	86	95	64	119	100	74	91
strontium	0.50	mg/kg	17.7	14.5	13.2	45.50	14.2	35.0	14.1	13.2	17.0
sulfur	1000	mg/kg	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000
thallium	0.050	mg/kg	0.18	0.203	0.220	0.11	0.141	0.088	0.178	0.18	0.234
tin	2.0	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
titanium	1.0	mg/kg	521	472	514	231.00	405	425	186	385	727
tungsten	0.50	mg/kg	5.16	9.09	4.35	8.45	10.2	1.73	<0.50	<0.50	<0.50
uranium	0.050	mg/kg	1.98	1.34	1.75	1.38	0.966	0.600	1.150	0.877	1.12
vanadium	0.20	mg/kg	50.6	53.1	55.1	17.4	29.3	33.8	39.7	41.6	47.3
zinc	2.0	mg/kg	78.3	111	56.6	61.20	52.3	66.8	61.9	77.6	73.5
zirconium	1.0	mg/kg	1.1	<1.0	<1.0	1.2	1.3	3.2	<1.0	<1.0	<1.0

D-4B			D-5		Max	Min		
South Plot 2022	East Plot 2020	North Plot 2018	South Plot 2022	East Plot 2020				
7.67	5.71	6.00	7.27	6.6	8.23	4.56		
68.2	45.87	20.2	67.6	84.69	84.69	20.2		
28.2	45.7	58.9	30.6	14.36	68.51	14.36		
3.6	8.43	20.9	1.8	0.95	20.9	0.95		
Sandy Loam	Loam	Silt loam	Sandy Loam	Loamy Sand				
0.061	0.165	1.12	0.07	0.049	1.12	0.025		
<1.0	<1.0	<5.0	<1.0	<1.0				
2.4	<2.0	<5.0	<2.0	<2.0	2.9	2.4		
	62	<2.0		34	134	31		
<0.40	<0.40	<4.0	<0.40	<0.40	2	2		
							Maximum Tolerance Level	
							Cattle	Rodents
8890	11000	5200	6160	5580	17200	5200	1000	200
7.71	7.41	3.44	10.60	16.4	16.4	2	NA	70-150
40	33.4	5.17	127.00	92.7	127	5.17	30	30
101	139	327	124	71.7	348	71.7	NA	250
0.28	0.28	0.30	0.31	0.23	0.66	0.23	NA	NA
0.31	0.33	<0.20	0.43	0.36	0.67	0.24	NA	NA
<5.0	<5.0	<5.0	<5.0	<5.0			150	150
0.206	0.34	0.418	0.404	0.302	0.702	0.123	10	10
2150	4220	38600	2570	1460	38600	1230	NA	NA
22.1	121	6.18	16.00	13.5	121	6.18	100	100
8.7	10.8	3.86	11.40	10.4	11.4	3.86	25	25
21.5	22.1	25.9	29.3	23.9	29.3	18	40	500
23600	27200	5920	24000	21300	28800	5920	500	500
30.8	29.5	8.43	32.90	32.9	45.2	8.43	100	10
13.8	14.5	<2.0	10.8	10.4	19.7	10.2	25	25
3590	4370	2330	3130	2900	6050	2330	NA	NA
240	499	510	517	470	517	190	2000	2000
0.0322	0.0663	0.146	0.040	0.0229	0.146	0.0229	NA	0.2
0.56	7.51	0.66	0.72	0.59	7.51	0.56	5	7
21.6	68.5	12.8	25.7	22.6	68.5	12.8	100	50
288	453	1080	491	334	1080	288	NA	NA
490	650	220	780	750	1840	220	NA	NA
0.27	0.31	0.86	0.28	<0.20	0.86	0.22	5	5
<0.10	0.22	0.58	0.17	0.22	0.58	0.11	NA	NA
75	<50	107	91	<50	145	64	NA	NA
13.6	23	156	19	15.5	156	13.2	NA	NA
<1000	<1000	1600	<1000	<1000	1600	1600	NA	NA
0.065	0.088	0.054	0.100	0.094	0.234	0.054	NA	NA
<2.0	<2.0	<2.0	<2.0	<2.0			NA	NA
183	129	109	251	150	727	109	100	100
<0.50	0.53	<0.50	8.93	2.86	10.2	0.53	NA	NA
1.27	0.955	0.998	1.120	0.926	1.98	0.6	NA	100
22.6	29.3	8.55	19.70	13.9	55.1	8.55	50	NA
79.2	75	20.3	83.5	84.1	111	20.3	500	500
1.4	1.5	3.2	3.6	3	3.6	1.1	NA	NA

Appendix D – Laboratory Certificate of Analysis and Report

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2200751**	Page	: 1 of 6
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Whitehorse - Environmental
Contact	: Bill Bowden	Account Manager	: Emmanuel Mariano
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 867 668 6689
Project	: Eagle Gold	Date Samples Received	: 22-Jul-2022 10:55
PO	: ----	Date Analysis Commenced	: 26-Jul-2022
C-O-C number	: ----	Issue Date	: 02-Aug-2022 17:03
Sampler	: David Krug		
Site	: Dublin Gulch Soil Samples Samples		
Quote number	: Q68199		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Colby Bingham	Quality Systems Coordinator	Inorganics, Saskatoon, Saskatchewan
Colby Bingham	Quality Systems Coordinator	Metals, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Jwan Abdalla	Laboratory Analyst	Inorganics, Saskatoon, Saskatchewan
Jwan Abdalla	Laboratory Analyst	Metals, Saskatoon, Saskatchewan
Nancy Cruse	Laboratory _ Supervisor	Inorganics, Saskatoon, Saskatchewan

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
mg/kg	milligrams per kilogram
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Sample Comments

Sample	Client Id	*Comment*
WR2200751-002	D-2B	Sample(s) XXX: Limited sample was available for PSA (100g minimum is standard). Measurement Uncertainty for PSA results may be higher than usual.
WR2200751-003	D-3B	Sample(s) XXX: Limited sample was available for PSA (100g minimum is standard). Measurement Uncertainty for PSA results may be higher than usual.
WR2200751-004	D-3C	Sample(s) XXX: Limited sample was available for PSA (100g minimum is standard). Measurement Uncertainty for PSA results may be higher than usual.
WR2200751-005	D-4B	Sample(s) XXX: Limited sample was available for PSA (100g minimum is standard). Measurement Uncertainty for PSA results may be higher than usual.
WR2200751-006	D-5	Sample(s) XXX: Limited sample was available for PSA (100g minimum is standard). Measurement Uncertainty for PSA results may be higher than usual.

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D-1B	D-2B	D-3B	D-3C	D-4B
					Client sampling date / time	21-Jul-2022	20-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200751-001	WR2200751-002	WR2200751-003	WR2200751-004	WR2200751-005
						Result	Result	Result	Result	Result
Physical Tests										
pH (1:2 soil:water)	----	E108	0.10	pH units		5.64	5.75	4.56	4.48	7.67
Particle Size										
texture class	----	E180A	-	-		Silt loam	Silt loam	Silt loam	Silt loam	Sandy loam
silt (0.05mm - 0.002mm)	----	E180A	1.0	%		61.4	59.2	65.9	71.6	28.2
sand (2.0mm - 0.05mm)	----	E180A	1.0	%		30.6	33.4	27.0	21.6	68.2
clay (<0.002mm)	----	E180A	1.0	%		8.0	7.3	7.0	6.8	3.6
Anions and Nutrients										
nitrogen, total	7727-37-9	E366	0.020	%		0.069	0.422	0.391	0.586	0.061
Plant Available Nutrients										
nitrate + nitrite, available (as N)	----	E269.N+N	1.0	mg/kg		<1.0	<1.0	<1.5 DLM	<2.5 DLM	<1.0
nitrite, available (as N)	14797-65-0	E269.NO2	0.40	mg/kg		<0.40	<0.40	<0.60 DLM	<1.00 DLM	<0.40
phosphate, available (as P)	14265-44-2	E384	2.0	mg/kg		2.9	<2.0	2.9	5.2	2.4
Metals										
aluminum	7429-90-5	E440	50	mg/kg		16100	7580	13700	13100	8890
antimony	7440-36-0	E440	0.10	mg/kg		2.04	3.52	2.38	5.92	7.71
arsenic	7440-38-2	E440	0.10	mg/kg		18.3	85.1	48.2	55.3	40.2
barium	7440-39-3	E440	0.50	mg/kg		215	278	196	230	101
beryllium	7440-41-7	E440	0.10	mg/kg		0.66	0.36	0.53	0.65	0.28
bismuth	7440-69-9	E440	0.20	mg/kg		<0.20	0.46	0.67	0.76	0.31
boron	7440-42-8	E440	5.0	mg/kg		<5.0	<5.0	<5.0	<5.0	<5.0
cadmium	7440-43-9	E440	0.020	mg/kg		0.148	0.702	0.514	0.858	0.206
calcium	7440-70-2	E440	50	mg/kg		2160	5590	1230	1060	2150
chromium	7440-47-3	E440	0.50	mg/kg		40.6	13.9	32.3	28.9	22.1
cobalt	7440-48-4	E440	0.10	mg/kg		10.1	9.49	8.06	7.57	8.67
copper	7440-50-8	E440	0.50	mg/kg		29.3	21.8	28.4	37.9	21.5
iron	7439-89-6	E440	50	mg/kg		24800	20700	23900	22800	23600
lead	7439-92-1	E440	0.50	mg/kg		18.8	18.3	20.7	28.9	30.8
lithium	7439-93-2	E440	2.0	mg/kg		18.7	10.8	13.6	8.6	13.8
magnesium	7439-95-4	E440	20	mg/kg		5080	3150	4550	3160	3590
manganese	7439-96-5	E440	1.0	mg/kg		320	465	199	173	240
mercury	7439-97-6	E510	0.0050	mg/kg		0.0341	0.0715	0.0766	0.0648	0.0322

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D-1B	D-2B	D-3B	D-3C	D-4B
					Client sampling date / time	21-Jul-2022	20-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200751-001	WR2200751-002	WR2200751-003	WR2200751-004	WR2200751-005
						Result	Result	Result	Result	Result
Metals										
molybdenum	7439-98-7	E440	0.10	mg/kg		2.14	0.78	0.85	0.93	0.56
nickel	7440-02-0	E440	0.50	mg/kg		32.6	20.2	31.3	28.6	21.6
phosphorus	7723-14-0	E440	50	mg/kg		547	529	804	1170	288
potassium	7440-09-7	E440	100	mg/kg		910	1080	1270	1100	490
selenium	7782-49-2	E440	0.20	mg/kg		0.42	0.22	0.30	0.33	0.27
silver	7440-22-4	E440	0.10	mg/kg		<0.10	0.34	0.27	0.41	<0.10
sodium	7440-23-5	E440	50	mg/kg		145	95	100	107	75
strontium	7440-24-6	E440	0.50	mg/kg		17.7	45.5	14.1	14.6	13.6
sulfur	7704-34-9	E440	1000	mg/kg		<1000	<1000	<1000	<1000	<1000
thallium	7440-28-0	E440	0.050	mg/kg		0.180	0.112	0.178	0.161	0.065
tin	7440-31-5	E440	2.0	mg/kg		<2.0	<2.0	<2.0	<2.0	<2.0
titanium	7440-32-6	E440	1.0	mg/kg		521	231	186	99.4	183
tungsten	7440-33-7	E440	0.50	mg/kg		5.16	8.45	<0.50	<0.50	<0.50
uranium	7440-61-1	E440	0.050	mg/kg		1.98	1.38	1.15	1.37	1.27
vanadium	7440-62-2	E440	0.20	mg/kg		50.6	17.4	39.7	35.6	22.6
zinc	7440-66-6	E440	2.0	mg/kg		78.3	61.2	61.9	54.1	79.2
zirconium	7440-67-7	E440	1.0	mg/kg		1.1	1.2	<1.0	<1.0	1.4

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D-5	----	----	----	----
					Client sampling date / time	21-Jul-2022	----	----	----	----
						WR2200751-006	--------	--------	--------	--------
						Result	----	----	----	----
Physical Tests										
pH (1:2 soil:water)	----	E108	0.10	pH units		7.27	----	----	----	----
Particle Size										
texture class	----	E180A	-	-		Sandy loam	----	----	----	----
silt (0.05mm - 0.002mm)	----	E180A	1.0	%		30.6	----	----	----	----
sand (2.0mm - 0.05mm)	----	E180A	1.0	%		67.6	----	----	----	----
clay (<0.002mm)	----	E180A	1.0	%		1.8	----	----	----	----
Anions and Nutrients										
nitrogen, total	7727-37-9	E366	0.020	%		0.068	----	----	----	----
Plant Available Nutrients										
nitrate + nitrite, available (as N)	----	E269.N+N	1.0	mg/kg		<1.0	----	----	----	----
nitrite, available (as N)	14797-65-0	E269.NO2	0.40	mg/kg		<0.40	----	----	----	----
phosphate, available (as P)	14265-44-2	E384	2.0	mg/kg		<2.0	----	----	----	----
Metals										
aluminum	7429-90-5	E440	50	mg/kg		6160	----	----	----	----
antimony	7440-36-0	E440	0.10	mg/kg		10.6	----	----	----	----
arsenic	7440-38-2	E440	0.10	mg/kg		127	----	----	----	----
barium	7440-39-3	E440	0.50	mg/kg		124	----	----	----	----
beryllium	7440-41-7	E440	0.10	mg/kg		0.31	----	----	----	----
bismuth	7440-69-9	E440	0.20	mg/kg		0.43	----	----	----	----
boron	7440-42-8	E440	5.0	mg/kg		<5.0	----	----	----	----
cadmium	7440-43-9	E440	0.020	mg/kg		0.404	----	----	----	----
calcium	7440-70-2	E440	50	mg/kg		2570	----	----	----	----
chromium	7440-47-3	E440	0.50	mg/kg		16.0	----	----	----	----
cobalt	7440-48-4	E440	0.10	mg/kg		11.4	----	----	----	----
copper	7440-50-8	E440	0.50	mg/kg		29.3	----	----	----	----
iron	7439-89-6	E440	50	mg/kg		24000	----	----	----	----
lead	7439-92-1	E440	0.50	mg/kg		32.9	----	----	----	----
lithium	7439-93-2	E440	2.0	mg/kg		10.8	----	----	----	----
magnesium	7439-95-4	E440	20	mg/kg		3130	----	----	----	----
manganese	7439-96-5	E440	1.0	mg/kg		517	----	----	----	----
mercury	7439-97-6	E510	0.0050	mg/kg		0.0404	----	----	----	----
molybdenum	7439-98-7	E440	0.10	mg/kg		0.72	----	----	----	----

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D-5	----	----	----	----
					Client sampling date / time	21-Jul-2022	----	----	----	----
						WR2200751-006	--------	--------	--------	--------
						Result	----	----	----	----
Metals										
nickel	7440-02-0	E440	0.50	mg/kg		25.7	----	----	----	----
phosphorus	7723-14-0	E440	50	mg/kg		491	----	----	----	----
potassium	7440-09-7	E440	100	mg/kg		780	----	----	----	----
selenium	7782-49-2	E440	0.20	mg/kg		0.28	----	----	----	----
silver	7440-22-4	E440	0.10	mg/kg		0.17	----	----	----	----
sodium	7440-23-5	E440	50	mg/kg		91	----	----	----	----
strontium	7440-24-6	E440	0.50	mg/kg		19.2	----	----	----	----
sulfur	7704-34-9	E440	1000	mg/kg		<1000	----	----	----	----
thallium	7440-28-0	E440	0.050	mg/kg		0.100	----	----	----	----
tin	7440-31-5	E440	2.0	mg/kg		<2.0	----	----	----	----
titanium	7440-32-6	E440	1.0	mg/kg		251	----	----	----	----
tungsten	7440-33-7	E440	0.50	mg/kg		8.93	----	----	----	----
uranium	7440-61-1	E440	0.050	mg/kg		1.12	----	----	----	----
vanadium	7440-62-2	E440	0.20	mg/kg		19.7	----	----	----	----
zinc	7440-66-6	E440	2.0	mg/kg		83.5	----	----	----	----
zirconium	7440-67-7	E440	1.0	mg/kg		3.6	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Environmental

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # _____

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Environmental Division
Whitehorse
Work Order Reference
WR2200751

Telephone : +1 867 668 6689

Report To		Report Format / Distribution				Service Requested (Rush for routine analysis subject
Company:	Victoria Gold (Yukon) Corp	☑ Standard	☐ Other			◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Hugh Coyle	☑ PDF	☑ Excel	☑ Digital	☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS
Address:	1000 – 1050 West Pender Street	Email 1:	bbowden@vgcx.com			○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS
	Vancouver, BC V6E 3S7	Email 2:	david@coregeo.ca			○ Same Day or Weekend Emergency - Contact ALS to Confirm
Phone:	604-696-6600 Fax:	Email 3:	hcoyle@vgcx.com			Analysis Request
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information				Please indicate below Filtered, Preserved or bc
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	Eagle Gold			
Company:		PO / AFE:				
Contact:		LSD:	Victoria Gold Corp.			
Address:						
Phone:	Fax:	Quote #:	Dublin Gulch Soil Samples Samples			
Lab Work Order # (lab use only)		ALS Contact:	Heather Mackenzie	Sampler:	David Krug	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	PH	Particle Size	Total Nitrogen	Nitrate+Nitrite, available	Potassium, available	Nitrite, available	Phosphate, available	Metals + Hg					Number of Cont
	D-1B	21-Jul-22		Soil	X	X	X	X	X	X	X	X					1
	D-2B	20-Jul-22		Soil	X	X	X	X	X	X	X	X					1
	D-3B	21-Jul-22		Soil	X	X	X	X	X	X	X	X					1
	D-3C	21-Jul-22		Soil	X	X	X	X	X	X	X	X					1
	D-4B	21-Jul-22		Soil	X	X	X	X	X	X	X	X					1
	D-5	21-Jul-22		Soil	X	X	X	X	X	X	X	X					1

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

DO **NOT** RINSE THE TISSUE SAMPLES. WE WANT THE ANALYSIS TO INCLUDE THE DUST ON THE LEAVES ETC AS WELL AS INCLUDING THE UPTAKE OF METALS IN THE PLANTS.

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analysis

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab us		
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:
David Krug	22-Jul-22			July 22/22	10:55	0/0°C			

ALS Environmental

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # _____

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Environmental Division
Whitehorse
Work Order Reference
WR2200751

Telephone : +1 867 668 6689

Report To		**Report Format / Distribution**		**Service Requested** (Rush for routine analysis subject
Company:	Victoria Gold (Yukon) Corp	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Hugh Coyle	☑ PDF ☑ Excel ☑ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS
Address:	1000 – 1050 West Pender Street	Email 1:	bbowden@vgcx.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS
	Vancouver, BC V6E 3S7	Email 2:	david@coregeo.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm
Phone:	604-696-6600 Fax:	Email 3:	hcoyle@vgcx.com	**Analysis Request**
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**		Please indicate below Filtered, Preserved or bc
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	Eagle Gold	
Company:		PO / AFE:		
Contact:		LSD:	Victoria Gold Corp.	
Address:				
Phone:	Fax:	Quote #:	Dublin Gulch Soil Samples Samples	
Lab Work Order # (lab use only)		**ALS Contact:**	Heather Mackenzie	**Sampler:** David Krug

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	PH	Particle Size	Total Nitrogen	Nitrate+Nitrite, available	Potassium, available	Nitrite, available	Phosphate, available	Metals + Hg					Number of Cont
	D-1B	21-Jul-22		Soil	X	X	X	X	X	X	X	X					1
	D-2B	20-Jul-22		Soil	X	X	X	X	X	X	X	X					1
	D-3B	21-Jul-22		Soil	X	X	X	X	X	X	X	X					1
	D-3C	21-Jul-22		Soil	X	X	X	X	X	X	X	X					1
	D-4B	21-Jul-22		Soil	X	X	X	X	X	X	X	X					1
	D-5	21-Jul-22		Soil	X	X	X	X	X	X	X	X					1

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

DO **NOT** RINSE THE TISSUE SAMPLES. WE WANT THE ANALYSIS TO INCLUDE THE DUST ON THE LEAVES ETC AS WELL AS INCLUDING THE UPTAKE OF METALS IN THE PLANTS.

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analysis

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab us		
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:
David Krug	22-Jul-22		(V)	July 22/22	10:55	0/0 °C			

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2200752**	Page	: 1 of 47
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Whitehorse - Environmental
Contact	: Bill Bowden	Account Manager	: Emmanuel Mariano
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 867 668 6689
Project	: Eagle Gold	Date Samples Received	: 22-Jul-2022 10:55
PO	: 26251	Date Analysis Commenced	: 23-Aug-2022
C-O-C number	: ----	Issue Date	: 06-Sep-2022 16:45
Sampler	: David Krug		
Site	: Victoria Gold Corp.		
Quote number	: Q68199		
No. of samples received	: 75		
No. of samples analysed	: 75		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Hamideh Moradi	Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Salimah Khimani	Lab Assistant	Metals, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
%	percent
mg/kg	milligrams per kilogram
mg/kg wwt	milligrams per kilogram wet weight

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D1-B, Centre, Salix leaves	D1-B, Centre Salix Twigs	D1-B, Centre, Dwarf birch leaves	D1-B, East, Salix leaves	D1-B, East Salix twigs
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-001	WR2200752-002	WR2200752-003	WR2200752-004	WR2200752-005
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		63.7	63.9	69.0	64.9	57.5
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		17.4	13.1	13.0	33.9	23.6
aluminum	7429-90-5	E440A	0.40	mg/kg wwt		6.33	4.72	4.04	11.9	10.0
antimony	7440-36-0	E440	0.010	mg/kg		<0.010	<0.010	0.013	0.013	0.022
antimony	7440-36-0	E440A	0.0020	mg/kg wwt		0.0030	0.0032	0.0040	0.0046	0.0092
arsenic	7440-38-2	E440	0.020	mg/kg		0.098	0.089	0.172	0.184	0.323
arsenic	7440-38-2	E440A	0.0040	mg/kg wwt		0.0356	0.0320	0.0535	0.0645	0.137
barium	7440-39-3	E440	0.050	mg/kg		22.8	37.5	41.8	51.9	78.2
barium	7440-39-3	E440A	0.010	mg/kg wwt		8.29	13.5	13.0	18.2	33.2
beryllium	7440-41-7	E440	0.010	mg/kg		0.011	<0.010	<0.010	0.021	<0.010
beryllium	7440-41-7	E440A	0.0020	mg/kg wwt		0.0041	<0.0020	<0.0020	0.0075	0.0025
bismuth	7440-69-9	E440	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	0.017
bismuth	7440-69-9	E440A	0.0020	mg/kg wwt		<0.0020	<0.0020	<0.0020	0.0025	0.0072
boron	7440-42-8	E440	1.0	mg/kg		2.8	4.9	8.5	2.9	6.3
boron	7440-42-8	E440A	0.20	mg/kg wwt		1.00	1.77	2.64	1.00	2.68
cadmium	7440-43-9	E440	0.0050	mg/kg		2.94	3.33	0.399	4.94	5.44
cadmium	7440-43-9	E440A	0.0010	mg/kg wwt		1.07	1.20	0.124	1.73	2.31
calcium	7440-70-2	E440	20	mg/kg		4540	2810	4500	7540	5280
calcium	7440-70-2	E440A	4.0	mg/kg wwt		1650	1020	1400	2640	2240
cesium	7440-46-2	E440	0.0050	mg/kg		0.124	0.103	0.0435	0.227	0.137
cesium	7440-46-2	E440A	0.0010	mg/kg wwt		0.0449	0.0371	0.0135	0.0796	0.0583
chromium	7440-47-3	E440	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
chromium	7440-47-3	E440A	0.010	mg/kg wwt		<0.010	0.018	<0.010	0.012	0.019
cobalt	7440-48-4	E440	0.020	mg/kg		3.48	0.776	0.330	4.93	1.40
cobalt	7440-48-4	E440A	0.0040	mg/kg wwt		1.26	0.280	0.102	1.73	0.594
copper	7440-50-8	E440	0.10	mg/kg		3.18	3.58	4.65	3.50	4.75
copper	7440-50-8	E440A	0.020	mg/kg wwt		1.15	1.29	1.44	1.23	2.02
iron	7439-89-6	E440	3.0	mg/kg		55.7	25.7	65.0	58.4	44.5
iron	7439-89-6	E440A	0.60	mg/kg wwt		20.2	9.29	20.2	20.5	18.9

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D1-B, Centre, Salix leaves	D1-B, Centre Salix Twigs	D1-B, Centre, Dwarf birch leaves	D1-B, East, Salix leaves	D1-B, East Salix twigs
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-001	WR2200752-002	WR2200752-003	WR2200752-004	WR2200752-005
						Result	Result	Result	Result	Result
Metals										
lead	7439-92-1	E440	0.020	mg/kg		0.047	0.086	0.053	0.172	0.430
lead	7439-92-1	E440A	0.0040	mg/kg wwt		0.0170	0.0312	0.0164	0.0602	0.183
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
lithium	7439-93-2	E440A	0.10	mg/kg wwt		<0.10	<0.10	<0.10	<0.10	<0.10
magnesium	7439-95-4	E440	2.0	mg/kg		1580	850	2340	2910	1170
magnesium	7439-95-4	E440A	0.40	mg/kg wwt		575	307	725	1020	497
manganese	7439-96-5	E440	0.050	mg/kg		940	370	2520	1170	414
manganese	7439-96-5	E440A	0.010	mg/kg wwt		341	134	783	412	176
mercury	7439-97-6	E510	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	0.0053	<0.0050
mercury	7439-97-6	E510A	0.0010	mg/kg wwt		0.0014	<0.0010	0.0012	0.0019	<0.0010
molybdenum	7439-98-7	E440	0.020	mg/kg		0.074	0.043	0.021	0.111	0.079
molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt		0.0267	0.0156	0.0065	0.0391	0.0334
nickel	7440-02-0	E440	0.20	mg/kg		4.32	3.03	2.11	6.17	4.01
nickel	7440-02-0	E440A	0.040	mg/kg wwt		1.57	1.09	0.655	2.16	1.70
phosphorus	7723-14-0	E440	10	mg/kg		3240	1640	3350	2500	1500
phosphorus	7723-14-0	E440A	2.0	mg/kg wwt		1180	590	1040	876	639
potassium	7440-09-7	E440	20	mg/kg		15400	7720	6890	8960	4710
potassium	7440-09-7	E440A	4.0	mg/kg wwt		5590	2790	2140	3140	2000
rubidium	7440-17-7	E440	0.050	mg/kg		36.8	30.5	19.6	25.8	19.8
rubidium	7440-17-7	E440A	0.010	mg/kg wwt		13.4	11.0	6.09	9.03	8.41
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
selenium	7782-49-2	E440A	0.010	mg/kg wwt		<0.010	<0.010	<0.010	0.012	<0.010
silver	7440-22-4	E440.Ag	0.0050	mg/kg		0.0056	0.0171	<0.0050	<0.0050	0.0102
silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt		0.0020	0.0062	0.0014	0.0014	0.0044
sodium	7440-23-5	E440	20	mg/kg		<20	<20	<20	<20	<20
sodium	7440-23-5	E440A	4.0	mg/kg wwt		<4.0	4.1	<4.0	<4.0	<4.0
strontium	7440-24-6	E440	0.050	mg/kg		25.0	21.8	12.5	51.8	38.2
strontium	7440-24-6	E440A	0.010	mg/kg wwt		9.07	7.88	3.87	18.2	16.2
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
tellurium	13494-80-9	E440A	0.0040	mg/kg wwt		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
thallium	7440-28-0	E440	0.0020	mg/kg		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: D1-B, Centre, Salix leaves	D1-B, Centre Salix Twigs	D1-B, Centre, Dwarf birch leaves	D1-B, East, Salix leaves	D1-B, East Salix twigs
Client sampling date / time					21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
					WR2200752-001	WR2200752-002	WR2200752-003	WR2200752-004	WR2200752-005
					Result	Result	Result	Result	Result
Metals									
thallium	7440-28-0	E440A	0.00040	mg/kg wwt	<0.00040	<0.00040	<0.00040	<0.00040	0.00064
tin	7440-31-5	E440	0.10	mg/kg	<0.10	0.36	<0.10	<0.10	0.22
tin	7440-31-5	E440A	0.020	mg/kg wwt	0.021	0.130	<0.020	<0.020	0.092
titanium	7440-32-6	E440.Ti	0.25	mg/kg	0.58	1.04	0.66	0.78	1.20
titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt	0.211	0.377	0.206	0.272	0.508
uranium	7440-61-1	E440	0.0020	mg/kg	<0.0020	<0.0020	<0.0020	<0.0020	0.0034
uranium	7440-61-1	E440A	0.00040	mg/kg wwt	<0.00040	<0.00040	<0.00040	0.00055	0.00144
vanadium	7440-62-2	E440	0.10	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
vanadium	7440-62-2	E440A	0.020	mg/kg wwt	<0.020	<0.020	<0.020	<0.020	<0.020
zinc	7440-66-6	E440	0.50	mg/kg	113	110	293	103	143
zinc	7440-66-6	E440A	0.10	mg/kg wwt	41.0	39.9	90.8	36.2	60.7
zirconium	7440-67-7	E440	0.20	mg/kg	<0.20	<0.20	<0.20	<0.20	<0.20
zirconium	7440-67-7	E440A	0.040	mg/kg wwt	<0.040	0.070	<0.040	<0.040	<0.040

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D1-B, East, Dwarf birch leaves	D1-B, South, Salix leaves	D1-B, South, Salix twigs	D1-B, South, dwarf birch leaves	D1-B, West, Salix leaves
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-006	WR2200752-007	WR2200752-008	WR2200752-009	WR2200752-010
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		65.6	64.2	55.1	65.3	63.4
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		8.2	25.4	27.7	11.1	24.8
aluminum	7429-90-5	E440A	0.40	mg/kg wwt		2.84	9.09	12.4	3.84	9.06
antimony	7440-36-0	E440	0.010	mg/kg		<0.010	0.012	0.020	<0.010	<0.010
antimony	7440-36-0	E440A	0.0020	mg/kg wwt		0.0032	0.0042	0.0088	0.0034	0.0023
arsenic	7440-38-2	E440	0.020	mg/kg		0.077	0.163	0.312	0.103	0.101
arsenic	7440-38-2	E440A	0.0040	mg/kg wwt		0.0265	0.0584	0.140	0.0359	0.0370
barium	7440-39-3	E440	0.050	mg/kg		38.0	26.6	71.7	17.0	16.9
barium	7440-39-3	E440A	0.010	mg/kg wwt		13.1	9.50	32.2	5.91	6.19
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	0.012	<0.010	<0.010	0.016
beryllium	7440-41-7	E440A	0.0020	mg/kg wwt		<0.0020	0.0044	0.0034	<0.0020	0.0060
bismuth	7440-69-9	E440	0.010	mg/kg		<0.010	<0.010	0.015	<0.010	<0.010
bismuth	7440-69-9	E440A	0.0020	mg/kg wwt		<0.0020	0.0028	0.0066	0.0022	<0.0020
boron	7440-42-8	E440	1.0	mg/kg		5.4	4.0	8.4	5.5	3.8
boron	7440-42-8	E440A	0.20	mg/kg wwt		1.86	1.42	3.75	1.92	1.41
cadmium	7440-43-9	E440	0.0050	mg/kg		0.295	2.93	5.62	0.205	1.05
cadmium	7440-43-9	E440A	0.0010	mg/kg wwt		0.102	1.05	2.52	0.0711	0.384
calcium	7440-70-2	E440	20	mg/kg		3540	5290	4260	3610	4390
calcium	7440-70-2	E440A	4.0	mg/kg wwt		1220	1890	1910	1250	1600
cesium	7440-46-2	E440	0.0050	mg/kg		0.0916	0.0639	0.0390	0.0291	0.116
cesium	7440-46-2	E440A	0.0010	mg/kg wwt		0.0315	0.0229	0.0175	0.0101	0.0424
chromium	7440-47-3	E440	0.050	mg/kg		<0.050	<0.050	0.091	0.061	<0.050
chromium	7440-47-3	E440A	0.010	mg/kg wwt		0.015	0.017	0.041	0.021	<0.010
cobalt	7440-48-4	E440	0.020	mg/kg		0.576	5.84	1.25	0.507	2.53
cobalt	7440-48-4	E440A	0.0040	mg/kg wwt		0.198	2.09	0.560	0.176	0.924
copper	7440-50-8	E440	0.10	mg/kg		5.56	3.20	3.28	4.90	3.99
copper	7440-50-8	E440A	0.020	mg/kg wwt		1.91	1.14	1.47	1.70	1.46
iron	7439-89-6	E440	3.0	mg/kg		63.1	59.4	46.7	60.9	54.3
iron	7439-89-6	E440A	0.60	mg/kg wwt		21.7	21.2	20.9	21.2	19.8
lead	7439-92-1	E440	0.020	mg/kg		0.044	0.089	0.371	0.043	0.033

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D1-B, East, Dwarf birch leaves	D1-B, South, Salix leaves	D1-B, South, Salix twigs	D1-B, South, dwarf birch leaves	D1-B, West, Salix leaves
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-006	WR2200752-007	WR2200752-008	WR2200752-009	WR2200752-010
						Result	Result	Result	Result	Result
Metals										
lead	7439-92-1	E440A	0.0040	mg/kg wwt		0.0152	0.0318	0.166	0.0149	0.0122
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
lithium	7439-93-2	E440A	0.10	mg/kg wwt		<0.10	<0.10	<0.10	<0.10	<0.10
magnesium	7439-95-4	E440	2.0	mg/kg		1860	1520	612	2150	1500
magnesium	7439-95-4	E440A	0.40	mg/kg wwt		642	544	274	746	548
manganese	7439-96-5	E440	0.050	mg/kg		1870	1220	566	2250	596
manganese	7439-96-5	E440A	0.010	mg/kg wwt		645	437	254	783	218
mercury	7439-97-6	E510	0.0050	mg/kg		<0.0050	0.0052	<0.0050	0.0051	0.0051
mercury	7439-97-6	E510A	0.0010	mg/kg wwt		0.0015	0.0019	0.0016	0.0018	0.0018
molybdenum	7439-98-7	E440	0.020	mg/kg		<0.020	0.058	0.023	<0.020	0.122
molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt		0.0058	0.0208	0.0104	0.0055	0.0445
nickel	7440-02-0	E440	0.20	mg/kg		4.00	4.56	2.36	4.61	5.27
nickel	7440-02-0	E440A	0.040	mg/kg wwt		1.38	1.63	1.06	1.60	1.92
phosphorus	7723-14-0	E440	10	mg/kg		3420	2250	1000	2840	2620
phosphorus	7723-14-0	E440A	2.0	mg/kg wwt		1180	805	450	987	957
potassium	7440-09-7	E440	20	mg/kg		7360	10500	3860	6590	16100
potassium	7440-09-7	E440A	4.0	mg/kg wwt		2530	3760	1730	2290	5900
rubidium	7440-17-7	E440	0.050	mg/kg		19.4	18.2	10.1	10.4	37.4
rubidium	7440-17-7	E440A	0.010	mg/kg wwt		6.66	6.50	4.54	3.63	13.7
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
selenium	7782-49-2	E440A	0.010	mg/kg wwt		<0.010	<0.010	<0.010	<0.010	<0.010
silver	7440-22-4	E440.Ag	0.0050	mg/kg		0.0066	<0.0050	<0.0050	<0.0050	<0.0050
silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt		0.0023	<0.0010	0.0016	0.0013	0.0012
sodium	7440-23-5	E440	20	mg/kg		<20	<20	<20	<20	<20
sodium	7440-23-5	E440A	4.0	mg/kg wwt		<4.0	<4.0	<4.0	<4.0	<4.0
strontium	7440-24-6	E440	0.050	mg/kg		9.33	34.3	37.2	9.17	29.0
strontium	7440-24-6	E440A	0.010	mg/kg wwt		3.21	12.3	16.7	3.18	10.6
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
tellurium	13494-80-9	E440A	0.0040	mg/kg wwt		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
thallium	7440-28-0	E440	0.0020	mg/kg		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
thallium	7440-28-0	E440A	0.00040	mg/kg wwt		<0.00040	<0.00040	<0.00040	<0.00040	<0.00040

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D1-B, East, Dwarf birch leaves	D1-B, South, Salix leaves	D1-B, South, Salix twigs	D1-B, South, dwarf birch leaves	D1-B, West, Salix leaves
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-006	WR2200752-007	WR2200752-008	WR2200752-009	WR2200752-010
						Result	Result	Result	Result	Result
Metals										
tin	7440-31-5	E440	0.10	mg/kg		<0.10	<0.10	0.25	<0.10	<0.10
tin	7440-31-5	E440A	0.020	mg/kg wwt		<0.020	0.024	0.113	<0.020	0.026
titanium	7440-32-6	E440.Ti	0.25	mg/kg		0.41	0.75	1.25	0.55	0.65
titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt		0.142	0.268	0.560	0.190	0.239
uranium	7440-61-1	E440	0.0020	mg/kg		<0.0020	<0.0020	0.0040	<0.0020	<0.0020
uranium	7440-61-1	E440A	0.00040	mg/kg wwt		<0.00040	0.00063	0.00178	0.00048	0.00048
vanadium	7440-62-2	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
vanadium	7440-62-2	E440A	0.020	mg/kg wwt		<0.020	<0.020	0.021	<0.020	<0.020
zinc	7440-66-6	E440	0.50	mg/kg		123	91.4	161	116	48.9
zinc	7440-66-6	E440A	0.10	mg/kg wwt		42.4	32.7	72.2	40.4	17.9
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20
zirconium	7440-67-7	E440A	0.040	mg/kg wwt		<0.040	<0.040	0.041	<0.040	<0.040

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D1-B, West, Salix twigs	D1-B, West, dwarf birch leaves	D1-B, North, Salix leaves	D1-B, North, Salix twigs	D1-B, North dwarf birch leaves
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-011	WR2200752-012	WR2200752-013	WR2200752-014	WR2200752-015
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		63.0	64.0	61.0	66.4	65.4
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		9.4	9.0	26.4	8.2	9.2
aluminum	7429-90-5	E440A	0.40	mg/kg wwt		3.46	3.24	10.3	2.75	3.19
antimony	7440-36-0	E440	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
antimony	7440-36-0	E440A	0.0020	mg/kg wwt		<0.0020	0.0024	0.0023	<0.0020	0.0022
arsenic	7440-38-2	E440	0.020	mg/kg		0.072	0.087	0.115	0.079	0.069
arsenic	7440-38-2	E440A	0.0040	mg/kg wwt		0.0268	0.0313	0.0448	0.0266	0.0240
barium	7440-39-3	E440	0.050	mg/kg		47.1	41.4	14.6	55.3	51.7
barium	7440-39-3	E440A	0.010	mg/kg wwt		17.4	14.9	5.70	18.6	17.9
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	<0.010	0.018	<0.010	<0.010
beryllium	7440-41-7	E440A	0.0020	mg/kg wwt		<0.0020	<0.0020	0.0070	<0.0020	<0.0020
bismuth	7440-69-9	E440	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	0.014
bismuth	7440-69-9	E440A	0.0020	mg/kg wwt		0.0023	<0.0020	<0.0020	<0.0020	0.0050
boron	7440-42-8	E440	1.0	mg/kg		5.2	6.4	3.2	6.0	4.8
boron	7440-42-8	E440A	0.20	mg/kg wwt		1.92	2.30	1.23	2.02	1.68
cadmium	7440-43-9	E440	0.0050	mg/kg		1.49	0.277	1.04	1.55	0.172
cadmium	7440-43-9	E440A	0.0010	mg/kg wwt		0.552	0.0996	0.408	0.520	0.0596
calcium	7440-70-2	E440	20	mg/kg		3420	5310	3410	2970	4140
calcium	7440-70-2	E440A	4.0	mg/kg wwt		1260	1910	1330	998	1430
cesium	7440-46-2	E440	0.0050	mg/kg		0.0553	0.0246	0.233	0.210	0.0389
cesium	7440-46-2	E440A	0.0010	mg/kg wwt		0.0204	0.0089	0.0908	0.0704	0.0134
chromium	7440-47-3	E440	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
chromium	7440-47-3	E440A	0.010	mg/kg wwt		0.014	<0.010	0.014	<0.010	<0.010
cobalt	7440-48-4	E440	0.020	mg/kg		0.642	0.538	3.96	1.41	0.595
cobalt	7440-48-4	E440A	0.0040	mg/kg wwt		0.237	0.194	1.55	0.474	0.206
copper	7440-50-8	E440	0.10	mg/kg		3.51	5.27	4.74	4.23	5.74
copper	7440-50-8	E440A	0.020	mg/kg wwt		1.30	1.90	1.85	1.42	1.98
iron	7439-89-6	E440	3.0	mg/kg		25.0	59.5	59.4	22.6	52.5
iron	7439-89-6	E440A	0.60	mg/kg wwt		9.26	21.4	23.2	7.59	18.2
lead	7439-92-1	E440	0.020	mg/kg		0.042	0.042	0.055	0.136	0.038

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D1-B, West, Salix twigs	D1-B, West, dwarf birch leaves	D1-B, North, Salix leaves	D1-B, North, Salix twigs	D1-B, North dwarf birch leaves
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-011	WR2200752-012	WR2200752-013	WR2200752-014	WR2200752-015
						Result	Result	Result	Result	Result
Metals										
lead	7439-92-1	E440A	0.0040	mg/kg wwt		0.0156	0.0151	0.0216	0.0456	0.0131
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
lithium	7439-93-2	E440A	0.10	mg/kg wwt		<0.10	<0.10	<0.10	<0.10	<0.10
magnesium	7439-95-4	E440	2.0	mg/kg		853	2060	1360	936	1790
magnesium	7439-95-4	E440A	0.40	mg/kg wwt		315	743	530	314	620
manganese	7439-96-5	E440	0.050	mg/kg		257	2670	830	434	2510
manganese	7439-96-5	E440A	0.010	mg/kg wwt		95.2	961	324	146	868
mercury	7439-97-6	E510	0.0050	mg/kg		<0.0050	<0.0050	<0.0050	<0.0050	0.0054
mercury	7439-97-6	E510A	0.0010	mg/kg wwt		<0.0010	0.0016	0.0018	<0.0010	0.0019
molybdenum	7439-98-7	E440	0.020	mg/kg		0.048	<0.020	0.099	0.045	<0.020
molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt		0.0177	0.0058	0.0388	0.0150	0.0057
nickel	7440-02-0	E440	0.20	mg/kg		1.78	4.18	7.32	2.50	4.08
nickel	7440-02-0	E440A	0.040	mg/kg wwt		0.660	1.50	2.86	0.841	1.41
phosphorus	7723-14-0	E440	10	mg/kg		1580	3020	2170	1460	2630
phosphorus	7723-14-0	E440A	2.0	mg/kg wwt		584	1090	848	489	910
potassium	7440-09-7	E440	20	mg/kg		6440	6420	11800	7440	6590
potassium	7440-09-7	E440A	4.0	mg/kg wwt		2380	2310	4610	2500	2280
rubidium	7440-17-7	E440	0.050	mg/kg		19.4	9.06	26.8	28.7	13.4
rubidium	7440-17-7	E440A	0.010	mg/kg wwt		7.17	3.26	10.5	9.65	4.64
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
selenium	7782-49-2	E440A	0.010	mg/kg wwt		<0.010	<0.010	<0.010	<0.010	<0.010
silver	7440-22-4	E440.Ag	0.0050	mg/kg		<0.0050	0.0057	<0.0050	<0.0050	<0.0050
silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt		0.0016	0.0021	0.0011	0.0013	0.0011
sodium	7440-23-5	E440	20	mg/kg		<20	<20	<20	<20	<20
sodium	7440-23-5	E440A	4.0	mg/kg wwt		<4.0	<4.0	<4.0	<4.0	<4.0
strontium	7440-24-6	E440	0.050	mg/kg		30.8	11.6	21.2	25.2	13.9
strontium	7440-24-6	E440A	0.010	mg/kg wwt		11.4	4.16	8.28	8.47	4.81
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
tellurium	13494-80-9	E440A	0.0040	mg/kg wwt		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
thallium	7440-28-0	E440	0.0020	mg/kg		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
thallium	7440-28-0	E440A	0.00040	mg/kg wwt		<0.00040	<0.00040	<0.00040	<0.00040	<0.00040

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D1-B, West, Salix twigs	D1-B, West, dwarf birch leaves	D1-B, North, Salix leaves	D1-B, North, Salix twigs	D1-B, North dwarf birch leaves
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-011	WR2200752-012	WR2200752-013	WR2200752-014	WR2200752-015
						Result	Result	Result	Result	Result
Metals										
tin	7440-31-5	E440	0.10	mg/kg		0.35	<0.10	0.41	0.74	0.13
tin	7440-31-5	E440A	0.020	mg/kg wwt		0.131	0.034	0.162	0.248	0.046
titanium	7440-32-6	E440.Ti	0.25	mg/kg		0.47	0.47	0.54	0.36	0.39
titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt		0.174	0.169	0.212	0.122	0.135
uranium	7440-61-1	E440	0.0020	mg/kg		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
uranium	7440-61-1	E440A	0.00040	mg/kg wwt		<0.00040	0.00041	0.00044	<0.00040	0.00048
vanadium	7440-62-2	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
vanadium	7440-62-2	E440A	0.020	mg/kg wwt		<0.020	<0.020	<0.020	<0.020	<0.020
zinc	7440-66-6	E440	0.50	mg/kg		65.9	187	67.7	88.4	111
zinc	7440-66-6	E440A	0.10	mg/kg wwt		24.3	67.2	26.4	29.7	38.5
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20
zirconium	7440-67-7	E440A	0.040	mg/kg wwt		0.044	<0.040	<0.040	<0.040	<0.040

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: D1-B, Composite, fescue	D2-B, Centre, Salix leaves	D2-B, Centre, Salix twigs	D2-B, Centre, equisetum	D2-B, South, Salix leaves
				Client sampling date / time	21-Jul-2022	20-Jul-2022	20-Jul-2022	20-Jul-2022	20-Jul-2022
					WR2200752-016	WR2200752-017	WR2200752-018	WR2200752-019	WR2200752-020
					Result	Result	Result	Result	Result
Physical Tests									
moisture	----	E144	0.50	%	69.9	66.6	54.1	76.2	62.1
Metals									
aluminum	7429-90-5	E440	2.0	mg/kg	5.2	53.8	55.5	20.8	49.0
aluminum	7429-90-5	E440A	0.40	mg/kg wwt	1.57	18.0	25.4	4.96	18.6
antimony	7440-36-0	E440	0.010	mg/kg	<0.010	0.076	0.070	0.018	0.087
antimony	7440-36-0	E440A	0.0020	mg/kg wwt	<0.0020	0.0256	0.0324	0.0043	0.0330
arsenic	7440-38-2	E440	0.020	mg/kg	0.069	1.21	1.40	1.11	1.49
arsenic	7440-38-2	E440A	0.0040	mg/kg wwt	0.0207	0.403	0.642	0.265	0.564
barium	7440-39-3	E440	0.050	mg/kg	36.8	58.4	83.4	89.3	23.2
barium	7440-39-3	E440A	0.010	mg/kg wwt	11.1	19.5	38.2	21.2	8.81
beryllium	7440-41-7	E440	0.010	mg/kg	<0.010	<0.010	<0.010	<0.010	<0.010
beryllium	7440-41-7	E440A	0.0020	mg/kg wwt	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
bismuth	7440-69-9	E440	0.010	mg/kg	<0.010	0.027	0.034	<0.010	0.052
bismuth	7440-69-9	E440A	0.0020	mg/kg wwt	<0.0020	0.0090	0.0158	<0.0020	0.0198
boron	7440-42-8	E440	1.0	mg/kg	1.7	3.5	9.7	12.5	3.9
boron	7440-42-8	E440A	0.20	mg/kg wwt	0.51	1.17	4.44	2.98	1.50
cadmium	7440-43-9	E440	0.0050	mg/kg	0.125	1.54	2.02	0.183	3.38
cadmium	7440-43-9	E440A	0.0010	mg/kg wwt	0.0376	0.515	0.929	0.0435	1.28
calcium	7440-70-2	E440	20	mg/kg	1670	8260	4760	15900	6310
calcium	7440-70-2	E440A	4.0	mg/kg wwt	503	2760	2190	3780	2390
cesium	7440-46-2	E440	0.0050	mg/kg	0.116	0.0434	0.0294	0.0731	0.0362
cesium	7440-46-2	E440A	0.0010	mg/kg wwt	0.0351	0.0145	0.0135	0.0174	0.0137
chromium	7440-47-3	E440	0.050	mg/kg	<0.050	0.117	0.117	0.061	0.123
chromium	7440-47-3	E440A	0.010	mg/kg wwt	<0.010	0.039	0.054	0.014	0.046
cobalt	7440-48-4	E440	0.020	mg/kg	0.107	1.30	0.457	0.348	1.44
cobalt	7440-48-4	E440A	0.0040	mg/kg wwt	0.0323	0.435	0.210	0.0829	0.547
copper	7440-50-8	E440	0.10	mg/kg	2.85	3.66	4.95	4.69	3.44
copper	7440-50-8	E440A	0.020	mg/kg wwt	0.859	1.22	2.27	1.12	1.30
iron	7439-89-6	E440	3.0	mg/kg	34.5	125	116	57.5	145
iron	7439-89-6	E440A	0.60	mg/kg wwt	10.4	41.8	53.2	13.7	55.1
lead	7439-92-1	E440	0.020	mg/kg	0.082	0.238	0.258	0.082	0.306

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D1-B, Composite, fescue	D2-B, Centre, Salix leaves	D2-B, Centre, Salix twigs	D2-B, Centre, equisetum	D2-B, South, Salix leaves
					Client sampling date / time	21-Jul-2022	20-Jul-2022	20-Jul-2022	20-Jul-2022	20-Jul-2022
						WR2200752-016	WR2200752-017	WR2200752-018	WR2200752-019	WR2200752-020
						Result	Result	Result	Result	Result
Metals										
lead	7439-92-1	E440A	0.0040	mg/kg wwt		0.0248	0.0794	0.119	0.0196	0.116
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
lithium	7439-93-2	E440A	0.10	mg/kg wwt		<0.10	<0.10	<0.10	<0.10	<0.10
magnesium	7439-95-4	E440	2.0	mg/kg		869	3030	1200	6950	2220
magnesium	7439-95-4	E440A	0.40	mg/kg wwt		262	1010	551	1650	841
manganese	7439-96-5	E440	0.050	mg/kg		675	377	361	174	673
manganese	7439-96-5	E440A	0.010	mg/kg wwt		203	126	166	41.4	255
mercury	7439-97-6	E510	0.0050	mg/kg		<0.0050	0.0054	<0.0050	0.0052	0.0052
mercury	7439-97-6	E510A	0.0010	mg/kg wwt		0.0012	0.0018	0.0014	0.0012	0.0020
molybdenum	7439-98-7	E440	0.020	mg/kg		0.095	0.152	0.047	0.475	0.131
molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt		0.0286	0.0509	0.0216	0.113	0.0498
nickel	7440-02-0	E440	0.20	mg/kg		1.27	2.45	1.38	0.54	3.13
nickel	7440-02-0	E440A	0.040	mg/kg wwt		0.382	0.818	0.633	0.127	1.19
phosphorus	7723-14-0	E440	10	mg/kg		1980	1900	973	1420	1700
phosphorus	7723-14-0	E440A	2.0	mg/kg wwt		596	636	446	336	645
potassium	7440-09-7	E440	20	mg/kg		17700	14000	6560	31600	10600
potassium	7440-09-7	E440A	4.0	mg/kg wwt		5330	4670	3010	7520	4010
rubidium	7440-17-7	E440	0.050	mg/kg		53.2	7.27	4.22	18.1	8.98
rubidium	7440-17-7	E440A	0.010	mg/kg wwt		16.0	2.43	1.93	4.31	3.40
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	<0.050	<0.050	0.055	<0.050
selenium	7782-49-2	E440A	0.010	mg/kg wwt		<0.010	<0.010	<0.010	0.013	<0.010
silver	7440-22-4	E440.Ag	0.0050	mg/kg		<0.0050	<0.0050	0.0073	0.0286	0.0078
silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt		<0.0010	<0.0010	0.0033	0.0068	0.0029
sodium	7440-23-5	E440	20	mg/kg		<20	<20	<20	<20	<20
sodium	7440-23-5	E440A	4.0	mg/kg wwt		<4.0	<4.0	<4.0	4.1	4.2
strontium	7440-24-6	E440	0.050	mg/kg		8.47	43.5	30.9	66.6	30.5
strontium	7440-24-6	E440A	0.010	mg/kg wwt		2.55	14.5	14.2	15.8	11.6
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
tellurium	13494-80-9	E440A	0.0040	mg/kg wwt		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
thallium	7440-28-0	E440	0.0020	mg/kg		<0.0020	0.0072	0.0092	<0.0020	0.0020
thallium	7440-28-0	E440A	0.00040	mg/kg wwt		<0.00040	0.00240	0.00421	<0.00040	0.00077

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D1-B, Composite, fescue	D2-B, Centre, Salix leaves	D2-B, Centre, Salix twigs	D2-B, Centre, equisetum	D2-B, South, Salix leaves
					Client sampling date / time	21-Jul-2022	20-Jul-2022	20-Jul-2022	20-Jul-2022	20-Jul-2022
						WR2200752-016	WR2200752-017	WR2200752-018	WR2200752-019	WR2200752-020
						Result	Result	Result	Result	Result
Metals										
tin	7440-31-5	E440	0.10	mg/kg		0.87	0.11	0.37	0.67	0.11
tin	7440-31-5	E440A	0.020	mg/kg wwt		0.262	0.037	0.169	0.159	0.040
titanium	7440-32-6	E440.Ti	0.25	mg/kg		0.25	2.83	2.92	0.93	2.66
titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt		0.076	0.946	1.34	0.222	1.01
uranium	7440-61-1	E440	0.0020	mg/kg		<0.0020	0.0106	0.0099	0.0032	0.0148
uranium	7440-61-1	E440A	0.00040	mg/kg wwt		<0.00040	0.00354	0.00456	0.00076	0.00560
vanadium	7440-62-2	E440	0.10	mg/kg		<0.10	<0.10	0.10	<0.10	<0.10
vanadium	7440-62-2	E440A	0.020	mg/kg wwt		<0.020	0.032	0.046	<0.020	0.037
zinc	7440-66-6	E440	0.50	mg/kg		26.6	66.9	105	39.2	80.2
zinc	7440-66-6	E440A	0.10	mg/kg wwt		8.02	22.3	48.0	9.32	30.4
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20
zirconium	7440-67-7	E440A	0.040	mg/kg wwt		<0.040	<0.040	0.083	<0.040	<0.040

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D2-B, South, Salix twigs	D2-B, South, dwarf birch	D2-B, West, Salix leaves	D2-B, West, Salix twigs	D2-B, West, equisetum
					Client sampling date / time	20-Jul-2022	20-Jul-2022	20-Jul-2022	20-Jul-2022	20-Jul-2022
						WR2200752-021	WR2200752-022	WR2200752-023	WR2200752-024	WR2200752-025
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		51.9	62.8	64.5	54.2	74.5
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		23.1	32.1	58.2	59.9	19.6
aluminum	7429-90-5	E440A	0.40	mg/kg wwt		11.1	12.0	20.6	27.4	5.00
antimony	7440-36-0	E440	0.010	mg/kg		0.031	0.053	0.084	0.099	0.020
antimony	7440-36-0	E440A	0.0020	mg/kg wwt		0.0149	0.0198	0.0296	0.0452	0.0050
arsenic	7440-38-2	E440	0.020	mg/kg		0.512	1.01	1.66	1.62	0.638
arsenic	7440-38-2	E440A	0.0040	mg/kg wwt		0.246	0.377	0.590	0.742	0.163
barium	7440-39-3	E440	0.050	mg/kg		52.2	66.6	31.3	96.3	89.5
barium	7440-39-3	E440A	0.010	mg/kg wwt		25.1	24.8	11.1	44.0	22.8
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
beryllium	7440-41-7	E440A	0.0020	mg/kg wwt		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
bismuth	7440-69-9	E440	0.010	mg/kg		0.013	0.021	0.029	0.050	0.011
bismuth	7440-69-9	E440A	0.0020	mg/kg wwt		0.0063	0.0077	0.0102	0.0231	0.0029
boron	7440-42-8	E440	1.0	mg/kg		7.1	14.1	1.2	3.8	9.2
boron	7440-42-8	E440A	0.20	mg/kg wwt		3.41	5.26	0.44	1.76	2.36
cadmium	7440-43-9	E440	0.0050	mg/kg		5.55	0.106	1.25	2.87	1.08
cadmium	7440-43-9	E440A	0.0010	mg/kg wwt		2.67	0.0395	0.444	1.31	0.275
calcium	7440-70-2	E440	20	mg/kg		3850	6370	5400	6120	21300
calcium	7440-70-2	E440A	4.0	mg/kg wwt		1850	2370	1910	2800	5440
cesium	7440-46-2	E440	0.0050	mg/kg		0.0145	0.0278	0.0294	0.0291	0.106
cesium	7440-46-2	E440A	0.0010	mg/kg wwt		0.0070	0.0104	0.0104	0.0133	0.0269
chromium	7440-47-3	E440	0.050	mg/kg		0.058	0.085	0.272	0.130	0.052
chromium	7440-47-3	E440A	0.010	mg/kg wwt		0.028	0.032	0.096	0.060	0.013
cobalt	7440-48-4	E440	0.020	mg/kg		0.419	0.285	0.436	0.344	0.201
cobalt	7440-48-4	E440A	0.0040	mg/kg wwt		0.201	0.106	0.155	0.158	0.0514
copper	7440-50-8	E440	0.10	mg/kg		2.78	4.19	4.77	4.41	5.67
copper	7440-50-8	E440A	0.020	mg/kg wwt		1.34	1.56	1.69	2.02	1.45
iron	7439-89-6	E440	3.0	mg/kg		52.1	157	163	128	56.4
iron	7439-89-6	E440A	0.60	mg/kg wwt		25.0	58.4	57.8	58.5	14.4
lead	7439-92-1	E440	0.020	mg/kg		0.119	0.164	0.302	0.313	0.091
lead	7439-92-1	E440A	0.0040	mg/kg wwt		0.0573	0.0611	0.107	0.143	0.0231

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D2-B, South, Salix twigs	D2-B, South, dwarf birch	D2-B, West, Salix leaves	D2-B, West, Salix twigs	D2-B, West, equisetum
					Client sampling date / time	20-Jul-2022	20-Jul-2022	20-Jul-2022	20-Jul-2022	20-Jul-2022
						WR2200752-021	WR2200752-022	WR2200752-023	WR2200752-024	WR2200752-025
						Result	Result	Result	Result	Result
Metals										
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
lithium	7439-93-2	E440A	0.10	mg/kg wwt		<0.10	<0.10	<0.10	<0.10	<0.10
magnesium	7439-95-4	E440	2.0	mg/kg		644	3420	3600	1520	6850
magnesium	7439-95-4	E440A	0.40	mg/kg wwt		310	1270	1280	698	1750
manganese	7439-96-5	E440	0.050	mg/kg		250	866	227	127	209
manganese	7439-96-5	E440A	0.010	mg/kg wwt		120	322	80.7	58.2	53.2
mercury	7439-97-6	E510	0.0050	mg/kg		<0.0050	0.0062	<0.0050	<0.0050	0.0089
mercury	7439-97-6	E510A	0.0010	mg/kg wwt		<0.0011	0.0023	0.0017	<0.0013	0.0023
molybdenum	7439-98-7	E440	0.020	mg/kg		0.047	0.035	0.243	0.108	0.784
molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt		0.0227	0.0129	0.0863	0.0492	0.200
nickel	7440-02-0	E440	0.20	mg/kg		0.81	9.71	3.94	3.14	0.89
nickel	7440-02-0	E440A	0.040	mg/kg wwt		0.390	3.62	1.40	1.44	0.228
phosphorus	7723-14-0	E440	10	mg/kg		738	2120	2230	1420	1630
phosphorus	7723-14-0	E440A	2.0	mg/kg wwt		355	788	793	648	415
potassium	7440-09-7	E440	20	mg/kg		3370	5800	10400	6150	34100
potassium	7440-09-7	E440A	4.0	mg/kg wwt		1620	2160	3710	2820	8700
rubidium	7440-17-7	E440	0.050	mg/kg		4.57	3.82	4.82	3.80	26.6
rubidium	7440-17-7	E440A	0.010	mg/kg wwt		2.20	1.42	1.71	1.74	6.79
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	0.091
selenium	7782-49-2	E440A	0.010	mg/kg wwt		<0.010	0.010	0.012	0.011	0.023
silver	7440-22-4	E440.Ag	0.0050	mg/kg		0.0170	<0.0050	<0.0050	<0.0050	0.0416
silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt		0.0082	0.0016	0.0011	0.0016	0.0106
sodium	7440-23-5	E440	20	mg/kg		<20	<20	<20	<20	23
sodium	7440-23-5	E440A	4.0	mg/kg wwt		8.5	<4.0	<4.0	<4.0	6.0
strontium	7440-24-6	E440	0.050	mg/kg		23.8	22.7	29.1	30.3	75.6
strontium	7440-24-6	E440A	0.010	mg/kg wwt		11.5	8.43	10.3	13.9	19.3
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
tellurium	13494-80-9	E440A	0.0040	mg/kg wwt		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
thallium	7440-28-0	E440	0.0020	mg/kg		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
thallium	7440-28-0	E440A	0.00040	mg/kg wwt		<0.00040	<0.00040	<0.00040	0.00060	0.00046
tin	7440-31-5	E440	0.10	mg/kg		0.71	0.26	0.14	0.14	0.28
tin	7440-31-5	E440A	0.020	mg/kg wwt		0.343	0.098	0.050	0.066	0.072

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D2-B, South, Salix twigs	D2-B, South, dwarf birch	D2-B, West, Salix leaves	D2-B, West, Salix twigs	D2-B, West, equisetum
					Client sampling date / time	20-Jul-2022	20-Jul-2022	20-Jul-2022	20-Jul-2022	20-Jul-2022
						WR2200752-021	WR2200752-022	WR2200752-023	WR2200752-024	WR2200752-025
						Result	Result	Result	Result	Result
Metals										
titanium	7440-32-6	E440.Ti	0.25	mg/kg		1.22	1.76	3.18	3.26	1.05
titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt		0.590	0.656	1.13	1.49	0.268
uranium	7440-61-1	E440	0.0020	mg/kg		0.0040	0.0077	0.0116	0.0111	0.0043
uranium	7440-61-1	E440A	0.00040	mg/kg wwt		0.00192	0.00286	0.00411	0.00507	0.00109
vanadium	7440-62-2	E440	0.10	mg/kg		<0.10	<0.10	0.12	0.11	<0.10
vanadium	7440-62-2	E440A	0.020	mg/kg wwt		<0.020	0.022	0.041	0.051	<0.020
zinc	7440-66-6	E440	0.50	mg/kg		150	106	45.9	90.4	39.4
zinc	7440-66-6	E440A	0.10	mg/kg wwt		72.2	39.5	16.3	41.4	10.0
zirconium	7440-67-7	E440	0.20	mg/kg		<0.40 DLM	<0.20	<0.20	<0.20	<0.20
zirconium	7440-67-7	E440A	0.040	mg/kg wwt		<0.080 DLM	<0.040	<0.040	<0.040	<0.040

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D2-B, East, paper birch leaves	D2-B, East, paper birch twigs	D2-B, North, Salix leaves	D2-B, North, Salix twigs	D2-B, North, equisetum
					Client sampling date / time	20-Jul-2022	20-Jul-2022	20-Jul-2022	20-Jul-2022	20-Jul-2022
						WR2200752-026	WR2200752-027	WR2200752-028	WR2200752-029	WR2200752-030
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		67.1	45.4	72.9	71.7	72.2
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		55.0	87.9	40.7	12.2	14.0
aluminum	7429-90-5	E440A	0.40	mg/kg wwt		18.1	48.0	11.0	3.45	3.90
antimony	7440-36-0	E440	0.010	mg/kg		0.088	0.152	0.064	0.016	0.016
antimony	7440-36-0	E440A	0.0020	mg/kg wwt		0.0289	0.0829	0.0174	0.0047	0.0044
arsenic	7440-38-2	E440	0.020	mg/kg		1.59	1.92	1.21	0.234	0.307
arsenic	7440-38-2	E440A	0.0040	mg/kg wwt		0.521	1.05	0.328	0.0662	0.0853
barium	7440-39-3	E440	0.050	mg/kg		128	168	32.3	35.2	56.9
barium	7440-39-3	E440A	0.010	mg/kg wwt		42.0	91.8	8.76	9.97	15.8
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
beryllium	7440-41-7	E440A	0.0020	mg/kg wwt		<0.0020	0.0042	<0.0020	<0.0020	<0.0020
bismuth	7440-69-9	E440	0.010	mg/kg		0.032	0.092	0.025	<0.010	<0.010
bismuth	7440-69-9	E440A	0.0020	mg/kg wwt		0.0104	0.0502	0.0068	<0.0020	<0.0020
boron	7440-42-8	E440	1.0	mg/kg		3.3	5.6	6.5	9.2	17.1
boron	7440-42-8	E440A	0.20	mg/kg wwt		1.08	3.05	1.75	2.60	4.76
cadmium	7440-43-9	E440	0.0050	mg/kg		0.588	0.897	3.39	2.19	1.30
cadmium	7440-43-9	E440A	0.0010	mg/kg wwt		0.193	0.490	0.918	0.620	0.360
calcium	7440-70-2	E440	20	mg/kg		5990	3840	16800	6520	24000
calcium	7440-70-2	E440A	4.0	mg/kg wwt		1970	2100	4550	1840	6680
cesium	7440-46-2	E440	0.0050	mg/kg		0.0236	0.0347	0.0272	0.0072	0.0822
cesium	7440-46-2	E440A	0.0010	mg/kg wwt		0.0078	0.0190	0.0074	0.0020	0.0228
chromium	7440-47-3	E440	0.050	mg/kg		0.195	0.186	0.172	0.064	0.112
chromium	7440-47-3	E440A	0.010	mg/kg wwt		0.064	0.102	0.047	0.018	0.031
cobalt	7440-48-4	E440	0.020	mg/kg		0.410	0.453	0.168	0.036	0.029
cobalt	7440-48-4	E440A	0.0040	mg/kg wwt		0.135	0.248	0.0454	0.0101	0.0081
copper	7440-50-8	E440	0.10	mg/kg		4.11	4.92	3.60	2.76	4.64
copper	7440-50-8	E440A	0.020	mg/kg wwt		1.35	2.69	0.976	0.781	1.29
iron	7439-89-6	E440	3.0	mg/kg		152	201	125	26.6	51.9
iron	7439-89-6	E440A	0.60	mg/kg wwt		50.1	110	33.9	7.53	14.4
lead	7439-92-1	E440	0.020	mg/kg		0.405	1.04	0.204	0.044	0.057

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D2-B, East, paper birch leaves	D2-B, East, paper birch twigs	D2-B, North, Salix leaves	D2-B, North, Salix twigs	D2-B, North, equisetum
					Client sampling date / time	20-Jul-2022	20-Jul-2022	20-Jul-2022	20-Jul-2022	20-Jul-2022
						WR2200752-026	WR2200752-027	WR2200752-028	WR2200752-029	WR2200752-030
						Result	Result	Result	Result	Result
Metals										
lead	7439-92-1	E440A	0.0040	mg/kg wwt		0.133	0.566	0.0553	0.0126	0.0158
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	0.62	<0.50	<0.50
lithium	7439-93-2	E440A	0.10	mg/kg wwt		<0.10	<0.10	0.17	<0.10	<0.10
magnesium	7439-95-4	E440	2.0	mg/kg		2190	521	4960	952	7000
magnesium	7439-95-4	E440A	0.40	mg/kg wwt		718	284	1340	270	1950
manganese	7439-96-5	E440	0.050	mg/kg		1030	309	33.8	8.51	21.9
manganese	7439-96-5	E440A	0.010	mg/kg wwt		340	169	9.16	2.41	6.09
mercury	7439-97-6	E510	0.0050	mg/kg		0.0061	0.0058	<0.0050	<0.0050	<0.0050
mercury	7439-97-6	E510A	0.0010	mg/kg wwt		0.0020	0.0032	0.0011	<0.0010	0.0010
molybdenum	7439-98-7	E440	0.020	mg/kg		0.052	0.033	0.469	0.043	0.833
molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt		0.0172	0.0183	0.127	0.0121	0.231
nickel	7440-02-0	E440	0.20	mg/kg		2.22	2.63	7.24	1.59	0.58
nickel	7440-02-0	E440A	0.040	mg/kg wwt		0.729	1.44	1.96	0.451	0.162
phosphorus	7723-14-0	E440	10	mg/kg		2320	690	4660	1350	2400
phosphorus	7723-14-0	E440A	2.0	mg/kg wwt		763	377	1260	383	666
potassium	7440-09-7	E440	20	mg/kg		11300	2140	25100	7550	32900
potassium	7440-09-7	E440A	4.0	mg/kg wwt		3720	1170	6800	2140	9160
rubidium	7440-17-7	E440	0.050	mg/kg		4.10	1.54	10.7	4.13	30.4
rubidium	7440-17-7	E440A	0.010	mg/kg wwt		1.35	0.843	2.90	1.17	8.45
selenium	7782-49-2	E440	0.050	mg/kg		0.107	0.061	20.9	4.16	26.5
selenium	7782-49-2	E440A	0.010	mg/kg wwt		0.035	0.033	5.66	1.18	7.36
silver	7440-22-4	E440.Ag	0.0050	mg/kg		0.0106	0.0150	0.0081	0.0069	0.0974
silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt		0.0035	0.0082	0.0022	0.0019	0.0271
sodium	7440-23-5	E440	20	mg/kg		<20	<20	30	34	<20
sodium	7440-23-5	E440A	4.0	mg/kg wwt		<4.0	4.6	8.2	9.6	5.3
strontium	7440-24-6	E440	0.050	mg/kg		28.4	24.5	39.7	19.5	66.4
strontium	7440-24-6	E440A	0.010	mg/kg wwt		9.34	13.4	10.7	5.53	18.5
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
tellurium	13494-80-9	E440A	0.0040	mg/kg wwt		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
thallium	7440-28-0	E440	0.0020	mg/kg		0.0025	0.0032	<0.0020	<0.0020	<0.0020
thallium	7440-28-0	E440A	0.00040	mg/kg wwt		0.00084	0.00177	<0.00040	<0.00040	<0.00040

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D2-B, East, paper birch leaves	D2-B, East, paper birch twigs	D2-B, North, Salix leaves	D2-B, North, Salix twigs	D2-B, North, equisetum
					Client sampling date / time	20-Jul-2022	20-Jul-2022	20-Jul-2022	20-Jul-2022	20-Jul-2022
						WR2200752-026	WR2200752-027	WR2200752-028	WR2200752-029	WR2200752-030
						Result	Result	Result	Result	Result
Metals										
tin	7440-31-5	E440	0.10	mg/kg		<0.10	0.73	0.22	0.98	0.79
tin	7440-31-5	E440A	0.020	mg/kg wwt		0.024	0.398	0.059	0.278	0.219
titanium	7440-32-6	E440.Ti	0.25	mg/kg		2.85	4.21	2.32	0.70	0.85
titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt		0.937	2.30	0.630	0.197	0.236
uranium	7440-61-1	E440	0.0020	mg/kg		0.0142	0.0241	0.0094	0.0025	0.0060
uranium	7440-61-1	E440A	0.00040	mg/kg wwt		0.00466	0.0132	0.00256	0.00071	0.00167
vanadium	7440-62-2	E440	0.10	mg/kg		0.11	0.16	<0.10	<0.10	<0.10
vanadium	7440-62-2	E440A	0.020	mg/kg wwt		0.035	0.090	0.024	<0.020	<0.020
zinc	7440-66-6	E440	0.50	mg/kg		97.2	124	92.0	72.5	23.8
zinc	7440-66-6	E440A	0.10	mg/kg wwt		31.9	67.8	24.9	20.5	6.60
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.60 DLM	<0.20	<0.20	<0.20
zirconium	7440-67-7	E440A	0.040	mg/kg wwt		<0.040	<0.120 DLM	<0.040	<0.040	<0.040

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D3-B, Centre, Salix leaves	D3-B, Centre, Salix twigs	D3-B, Centre, dwarf birch leaves	D3-B, South, dwarf birch leaves	D3-B, South Salix Leaves
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-031	WR2200752-032	WR2200752-033	WR2200752-034	WR2200752-035
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		69.4	62.9	68.1	66.3	64.5
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		137	92.9	70.7	79.0	117
aluminum	7429-90-5	E440A	0.40	mg/kg wwt		41.9	34.4	22.5	26.6	41.6
antimony	7440-36-0	E440	0.010	mg/kg		0.109	0.097	0.077	0.074	0.118
antimony	7440-36-0	E440A	0.0020	mg/kg wwt		0.0333	0.0361	0.0247	0.0251	0.0420
arsenic	7440-38-2	E440	0.020	mg/kg		1.67	1.30	1.02	1.01	1.50
arsenic	7440-38-2	E440A	0.0040	mg/kg wwt		0.511	0.482	0.324	0.341	0.531
barium	7440-39-3	E440	0.050	mg/kg		102	151	24.3	37.2	86.3
barium	7440-39-3	E440A	0.010	mg/kg wwt		31.3	56.0	7.74	12.5	30.6
beryllium	7440-41-7	E440	0.010	mg/kg		0.020	<0.010	<0.010	<0.010	0.013
beryllium	7440-41-7	E440A	0.0020	mg/kg wwt		0.0061	0.0027	0.0027	<0.0020	0.0045
bismuth	7440-69-9	E440	0.010	mg/kg		0.064	0.033	0.037	0.041	0.069
bismuth	7440-69-9	E440A	0.0020	mg/kg wwt		0.0195	0.0124	0.0117	0.0138	0.0246
boron	7440-42-8	E440	1.0	mg/kg		2.0	3.0	3.6	6.1	2.3
boron	7440-42-8	E440A	0.20	mg/kg wwt		0.61	1.10	1.13	2.04	0.83
cadmium	7440-43-9	E440	0.0050	mg/kg		0.825	0.968	0.174	0.252	1.24
cadmium	7440-43-9	E440A	0.0010	mg/kg wwt		0.252	0.359	0.0554	0.0850	0.441
calcium	7440-70-2	E440	20	mg/kg		6490	2960	4160	4910	6490
calcium	7440-70-2	E440A	4.0	mg/kg wwt		1980	1100	1320	1650	2300
cesium	7440-46-2	E440	0.0050	mg/kg		0.0854	0.0621	0.0758	0.0679	0.108
cesium	7440-46-2	E440A	0.0010	mg/kg wwt		0.0261	0.0230	0.0242	0.0229	0.0383
chromium	7440-47-3	E440	0.050	mg/kg		0.226	0.184	0.163	0.170	0.226
chromium	7440-47-3	E440A	0.010	mg/kg wwt		0.069	0.068	0.052	0.057	0.080
cobalt	7440-48-4	E440	0.020	mg/kg		4.24	1.24	0.774	0.420	4.72
cobalt	7440-48-4	E440A	0.0040	mg/kg wwt		1.30	0.459	0.247	0.142	1.68
copper	7440-50-8	E440	0.10	mg/kg		3.22	3.18	6.14	5.08	2.60
copper	7440-50-8	E440A	0.020	mg/kg wwt		0.985	1.18	1.96	1.71	0.923
iron	7439-89-6	E440	3.0	mg/kg		238	146	154	154	217
iron	7439-89-6	E440A	0.60	mg/kg wwt		72.6	54.0	49.0	51.9	77.1
lead	7439-92-1	E440	0.020	mg/kg		0.379	0.303	0.274	0.274	0.494

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D3-B, Centre, Salix leaves	D3-B, Centre, Salix twigs	D3-B, Centre, dwarf birch leaves	D3-B, South, dwarf birch leaves	D3-B, South Salix Leaves
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-031	WR2200752-032	WR2200752-033	WR2200752-034	WR2200752-035
						Result	Result	Result	Result	Result
Metals										
lead	7439-92-1	E440A	0.0040	mg/kg wwt		0.116	0.112	0.0872	0.0924	0.175
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
lithium	7439-93-2	E440A	0.10	mg/kg wwt		<0.10	<0.10	<0.10	<0.10	<0.10
magnesium	7439-95-4	E440	2.0	mg/kg		3340	1170	2190	2280	2870
magnesium	7439-95-4	E440A	0.40	mg/kg wwt		1020	434	698	768	1020
manganese	7439-96-5	E440	0.050	mg/kg		313	139	2370	2110	416
manganese	7439-96-5	E440A	0.010	mg/kg wwt		95.6	51.6	756	711	147
mercury	7439-97-6	E510	0.0050	mg/kg		0.0050	<0.0050	0.0062	0.0056	0.0053
mercury	7439-97-6	E510A	0.0010	mg/kg wwt		0.0015	<0.0014	0.0020	0.0019	0.0019
molybdenum	7439-98-7	E440	0.020	mg/kg		0.129	0.045	0.047	0.048	0.159
molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt		0.0396	0.0166	0.0150	0.0161	0.0566
nickel	7440-02-0	E440	0.20	mg/kg		8.91	5.91	4.74	4.64	7.96
nickel	7440-02-0	E440A	0.040	mg/kg wwt		2.72	2.19	1.51	1.56	2.82
phosphorus	7723-14-0	E440	10	mg/kg		4580	1560	4060	3890	4040
phosphorus	7723-14-0	E440A	2.0	mg/kg wwt		1400	578	1290	1310	1430
potassium	7440-09-7	E440	20	mg/kg		12600	6520	9810	7670	9750
potassium	7440-09-7	E440A	4.0	mg/kg wwt		3840	2420	3130	2580	3460
rubidium	7440-17-7	E440	0.050	mg/kg		17.5	13.6	17.1	14.3	12.2
rubidium	7440-17-7	E440A	0.010	mg/kg wwt		5.34	5.04	5.44	4.82	4.34
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	0.158
selenium	7782-49-2	E440A	0.010	mg/kg wwt		<0.010	<0.010	<0.010	<0.010	0.056
silver	7440-22-4	E440.Ag	0.0050	mg/kg		0.0068	0.0154	0.0062	0.0064	0.0087
silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt		0.0021	0.0057	0.0020	0.0022	0.0031
sodium	7440-23-5	E440	20	mg/kg		<20	<20	<20	<20	<20
sodium	7440-23-5	E440A	4.0	mg/kg wwt		<4.0	<4.0	<4.0	<4.0	<4.0
strontium	7440-24-6	E440	0.050	mg/kg		69.1	34.2	9.51	11.8	63.3
strontium	7440-24-6	E440A	0.010	mg/kg wwt		21.1	12.7	3.03	4.00	22.4
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
tellurium	13494-80-9	E440A	0.0040	mg/kg wwt		<0.0040	<0.0040	<0.0040	<0.0040	0.0042
thallium	7440-28-0	E440	0.0020	mg/kg		0.0022	0.0022	<0.0020	<0.0020	<0.0020
thallium	7440-28-0	E440A	0.00040	mg/kg wwt		0.00066	0.00083	<0.00040	<0.00040	0.00066

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D3-B, Centre, Salix leaves	D3-B, Centre, Salix twigs	D3-B, Centre, dwarf birch leaves	D3-B, South, dwarf birch leaves	D3-B, South Salix Leaves
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-031	WR2200752-032	WR2200752-033	WR2200752-034	WR2200752-035
						Result	Result	Result	Result	Result
Metals										
tin	7440-31-5	E440	0.10	mg/kg		0.16	0.27	0.15	0.16	0.19
tin	7440-31-5	E440A	0.020	mg/kg wwt		0.048	0.099	0.048	0.054	0.069
titanium	7440-32-6	E440.Ti	0.25	mg/kg		6.53	5.62	4.20	4.50	6.45
titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt		2.00	2.08	1.34	1.52	2.29
uranium	7440-61-1	E440	0.0020	mg/kg		0.0171	0.0132	0.0133	0.0150	0.0251
uranium	7440-61-1	E440A	0.00040	mg/kg wwt		0.00524	0.00488	0.00424	0.00507	0.00892
vanadium	7440-62-2	E440	0.10	mg/kg		0.20	0.16	0.12	0.13	0.20
vanadium	7440-62-2	E440A	0.020	mg/kg wwt		0.060	0.061	0.040	0.044	0.072
zinc	7440-66-6	E440	0.50	mg/kg		34.5	65.4	188	175	61.3
zinc	7440-66-6	E440A	0.10	mg/kg wwt		10.5	24.2	60.0	58.8	21.8
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20
zirconium	7440-67-7	E440A	0.040	mg/kg wwt		<0.040	<0.040	<0.040	<0.040	<0.040

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D3-B, South Salix Twigs	D3-B, East, dwarf birch leaves	D3-B, East, Salix leaves	D3-B, East Salic twigs	D3-B, West, Salix leaves
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-036	WR2200752-037	WR2200752-038	WR2200752-039	WR2200752-040
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		58.3	62.5	63.8	61.4	63.0
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		187	69.2	75.6	209	72.4
aluminum	7429-90-5	E440A	0.40	mg/kg wwt		78.1	26.0	27.3	80.7	26.8
antimony	7440-36-0	E440	0.010	mg/kg		0.184	0.060	0.070	0.250	0.075
antimony	7440-36-0	E440A	0.0020	mg/kg wwt		0.0769	0.0224	0.0254	0.0966	0.0279
arsenic	7440-38-2	E440	0.020	mg/kg		3.10	0.890	1.02	3.62	1.12
arsenic	7440-38-2	E440A	0.0040	mg/kg wwt		1.29	0.334	0.368	1.40	0.416
barium	7440-39-3	E440	0.050	mg/kg		193	43.0	127	159	53.9
barium	7440-39-3	E440A	0.010	mg/kg wwt		80.6	16.1	45.8	61.3	20.0
beryllium	7440-41-7	E440	0.010	mg/kg		0.014	<0.010	<0.010	0.013	0.015
beryllium	7440-41-7	E440A	0.0020	mg/kg wwt		0.0060	<0.0020	0.0030	0.0049	0.0055
bismuth	7440-69-9	E440	0.010	mg/kg		0.102	0.034	0.048	0.120	0.054
bismuth	7440-69-9	E440A	0.0020	mg/kg wwt		0.0425	0.0129	0.0173	0.0465	0.0201
boron	7440-42-8	E440	1.0	mg/kg		4.9	8.0	1.8	3.8	2.4
boron	7440-42-8	E440A	0.20	mg/kg wwt		2.06	2.99	0.65	1.46	0.90
cadmium	7440-43-9	E440	0.0050	mg/kg		2.04	0.137	1.05	1.06	1.21
cadmium	7440-43-9	E440A	0.0010	mg/kg wwt		0.852	0.0514	0.379	0.408	0.447
calcium	7440-70-2	E440	20	mg/kg		5200	3730	8820	4940	5190
calcium	7440-70-2	E440A	4.0	mg/kg wwt		2170	1400	3190	1910	1920
cesium	7440-46-2	E440	0.0050	mg/kg		0.114	0.0536	0.0698	0.118	0.0800
cesium	7440-46-2	E440A	0.0010	mg/kg wwt		0.0477	0.0201	0.0252	0.0454	0.0296
chromium	7440-47-3	E440	0.050	mg/kg		0.370	0.156	0.136	0.449	0.147
chromium	7440-47-3	E440A	0.010	mg/kg wwt		0.154	0.059	0.049	0.173	0.054
cobalt	7440-48-4	E440	0.020	mg/kg		2.06	0.614	0.994	0.467	6.03
cobalt	7440-48-4	E440A	0.0040	mg/kg wwt		0.859	0.230	0.359	0.180	2.23
copper	7440-50-8	E440	0.10	mg/kg		3.40	4.32	2.32	3.26	3.31
copper	7440-50-8	E440A	0.020	mg/kg wwt		1.42	1.62	0.840	1.26	1.22
iron	7439-89-6	E440	3.0	mg/kg		316	132	157	344	196
iron	7439-89-6	E440A	0.60	mg/kg wwt		132	49.6	56.7	133	72.6
lead	7439-92-1	E440	0.020	mg/kg		0.726	0.241	0.225	0.869	0.252

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D3-B, South Salix Twigs	D3-B, East, dwarf birch leaves	D3-B, East, Salix leaves	D3-B, East Salic twigs	D3-B, West, Salix leaves
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-036	WR2200752-037	WR2200752-038	WR2200752-039	WR2200752-040
						Result	Result	Result	Result	Result
Metals										
lead	7439-92-1	E440A	0.0040	mg/kg wwt		0.303	0.0904	0.0814	0.336	0.0934
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
lithium	7439-93-2	E440A	0.10	mg/kg wwt		0.13	<0.10	<0.10	0.12	<0.10
magnesium	7439-95-4	E440	2.0	mg/kg		1100	1740	3150	1380	1790
magnesium	7439-95-4	E440A	0.40	mg/kg wwt		457	652	1140	533	664
manganese	7439-96-5	E440	0.050	mg/kg		175	1970	142	105	661
manganese	7439-96-5	E440A	0.010	mg/kg wwt		73.2	740	51.6	40.7	245
mercury	7439-97-6	E510	0.0050	mg/kg		<0.0050	0.0060	<0.0050	<0.0050	<0.0050
mercury	7439-97-6	E510A	0.0010	mg/kg wwt		<0.0016	0.0022	0.0014	<0.0014	0.0016
molybdenum	7439-98-7	E440	0.020	mg/kg		0.074	0.039	0.082	0.076	0.136
molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt		0.0310	0.0148	0.0297	0.0295	0.0502
nickel	7440-02-0	E440	0.20	mg/kg		7.23	4.44	7.46	8.15	10.6
nickel	7440-02-0	E440A	0.040	mg/kg wwt		3.02	1.66	2.70	3.15	3.93
phosphorus	7723-14-0	E440	10	mg/kg		1220	2810	3200	1620	2910
phosphorus	7723-14-0	E440A	2.0	mg/kg wwt		510	1060	1160	626	1080
potassium	7440-09-7	E440	20	mg/kg		3160	6420	9460	7220	11400
potassium	7440-09-7	E440A	4.0	mg/kg wwt		1320	2410	3420	2790	4230
rubidium	7440-17-7	E440	0.050	mg/kg		6.02	10.1	14.4	14.3	25.4
rubidium	7440-17-7	E440A	0.010	mg/kg wwt		2.51	3.80	5.22	5.54	9.42
selenium	7782-49-2	E440	0.050	mg/kg		0.083	<0.050	0.176	0.116	<0.050
selenium	7782-49-2	E440A	0.010	mg/kg wwt		0.034	<0.010	0.063	0.045	<0.010
silver	7440-22-4	E440.Ag	0.0050	mg/kg		0.0207	<0.0050	<0.0050	0.0119	0.0066
silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt		0.0086	0.0018	0.0014	0.0046	0.0024
sodium	7440-23-5	E440	20	mg/kg		<20	<20	<20	<20	<20
sodium	7440-23-5	E440A	4.0	mg/kg wwt		7.3	<4.0	<4.0	<4.0	<4.0
strontium	7440-24-6	E440	0.050	mg/kg		47.7	10.7	94.2	52.2	51.0
strontium	7440-24-6	E440A	0.010	mg/kg wwt		19.9	4.03	34.1	20.1	18.9
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
tellurium	13494-80-9	E440A	0.0040	mg/kg wwt		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
thallium	7440-28-0	E440	0.0020	mg/kg		0.0046	<0.0020	<0.0020	0.0055	<0.0020
thallium	7440-28-0	E440A	0.00040	mg/kg wwt		0.00192	<0.00040	0.00056	0.00212	<0.00040

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D3-B, South Salix Twigs	D3-B, East, dwarf birch leaves	D3-B, East, Salix leaves	D3-B, East Salic twigs	D3-B, West, Salix leaves
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-036	WR2200752-037	WR2200752-038	WR2200752-039	WR2200752-040
						Result	Result	Result	Result	Result
Metals										
tin	7440-31-5	E440	0.10	mg/kg		1.01	0.12	<0.10	0.50	<0.10
tin	7440-31-5	E440A	0.020	mg/kg wwt		0.420	0.045	0.036	0.193	<0.020
titanium	7440-32-6	E440.Ti	0.25	mg/kg		10.2	3.98	4.20	12.3	3.25
titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt		4.28	1.49	1.52	4.74	1.20
uranium	7440-61-1	E440	0.0020	mg/kg		0.0321	0.0118	0.0110	0.0319	0.0132
uranium	7440-61-1	E440A	0.00040	mg/kg wwt		0.0134	0.00442	0.00398	0.0123	0.00490
vanadium	7440-62-2	E440	0.10	mg/kg		0.35	0.12	0.12	0.39	0.12
vanadium	7440-62-2	E440A	0.020	mg/kg wwt		0.148	0.044	0.043	0.151	0.046
zinc	7440-66-6	E440	0.50	mg/kg		126	168	43.6	93.9	79.8
zinc	7440-66-6	E440A	0.10	mg/kg wwt		52.4	63.0	15.8	36.2	29.6
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.40 DLM	<0.20
zirconium	7440-67-7	E440A	0.040	mg/kg wwt		0.047	<0.040	<0.040	<0.080 DLM	<0.040

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D3-B, West, Salix twigs,	D3-B, West, dwarf birch leaves	D3-B, North, Salix leaves	D3-B, North dwarf birch leaves	D4-B, Centre, dwarf birch leaves
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-041	WR2200752-042	WR2200752-043	WR2200752-044	WR2200752-045
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		61.2	68.1	63.8	67.7	58.2
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		76.3	117	78.6	77.5	49.6
aluminum	7429-90-5	E440A	0.40	mg/kg wwt		29.6	37.4	28.4	25.0	20.7
antimony	7440-36-0	E440	0.010	mg/kg		0.065	0.099	0.069	0.082	0.087
antimony	7440-36-0	E440A	0.0020	mg/kg wwt		0.0252	0.0315	0.0249	0.0266	0.0364
arsenic	7440-38-2	E440	0.020	mg/kg		1.08	1.56	1.01	1.08	1.71
arsenic	7440-38-2	E440A	0.0040	mg/kg wwt		0.422	0.497	0.366	0.349	0.715
barium	7440-39-3	E440	0.050	mg/kg		102	56.6	67.3	42.6	50.4
barium	7440-39-3	E440A	0.010	mg/kg wwt		39.6	18.1	24.4	13.7	21.0
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	<0.010	0.014	<0.010	<0.010
beryllium	7440-41-7	E440A	0.0020	mg/kg wwt		0.0023	0.0023	0.0053	<0.0020	<0.0020
bismuth	7440-69-9	E440	0.010	mg/kg		0.051	0.060	0.058	0.058	0.046
bismuth	7440-69-9	E440A	0.0020	mg/kg wwt		0.0200	0.0191	0.0210	0.0188	0.0192
boron	7440-42-8	E440	1.0	mg/kg		4.1	8.3	4.3	3.1	6.4
boron	7440-42-8	E440A	0.20	mg/kg wwt		1.59	2.66	1.56	1.00	2.66
cadmium	7440-43-9	E440	0.0050	mg/kg		1.37	0.270	1.74	0.149	0.0966
cadmium	7440-43-9	E440A	0.0010	mg/kg wwt		0.531	0.0863	0.632	0.0482	0.0404
calcium	7440-70-2	E440	20	mg/kg		3020	5830	5770	4530	5270
calcium	7440-70-2	E440A	4.0	mg/kg wwt		1170	1860	2090	1460	2200
cesium	7440-46-2	E440	0.0050	mg/kg		0.0756	0.0966	0.0862	0.0915	0.0317
cesium	7440-46-2	E440A	0.0010	mg/kg wwt		0.0293	0.0308	0.0312	0.0296	0.0132
chromium	7440-47-3	E440	0.050	mg/kg		0.172	0.251	0.142	0.171	0.118
chromium	7440-47-3	E440A	0.010	mg/kg wwt		0.067	0.080	0.051	0.055	0.049
cobalt	7440-48-4	E440	0.020	mg/kg		1.41	0.740	10.6	0.839	0.141
cobalt	7440-48-4	E440A	0.0040	mg/kg wwt		0.546	0.236	3.83	0.271	0.0588
copper	7440-50-8	E440	0.10	mg/kg		3.99	4.72	3.48	5.39	3.01
copper	7440-50-8	E440A	0.020	mg/kg wwt		1.55	1.50	1.26	1.74	1.26
iron	7439-89-6	E440	3.0	mg/kg		136	216	145	171	142
iron	7439-89-6	E440A	0.60	mg/kg wwt		52.7	68.9	52.5	55.3	59.1
lead	7439-92-1	E440	0.020	mg/kg		0.241	0.340	0.225	0.271	0.255

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D3-B, West, Salix twigs,	D3-B, West, dwarf birch leaves	D3-B, North, Salix leaves	D3-B, North dwarf birch leaves	D4-B, Centre, dwarf birch leaves
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-041	WR2200752-042	WR2200752-043	WR2200752-044	WR2200752-045
						Result	Result	Result	Result	Result
Metals										
lead	7439-92-1	E440A	0.0040	mg/kg wwt		0.0936	0.108	0.0815	0.0875	0.106
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
lithium	7439-93-2	E440A	0.10	mg/kg wwt		<0.10	<0.10	<0.10	<0.10	<0.10
magnesium	7439-95-4	E440	2.0	mg/kg		982	2110	1870	2080	2650
magnesium	7439-95-4	E440A	0.40	mg/kg wwt		381	675	678	670	1100
manganese	7439-96-5	E440	0.050	mg/kg		253	2320	817	1380	388
manganese	7439-96-5	E440A	0.010	mg/kg wwt		98.3	740	296	446	162
mercury	7439-97-6	E510	0.0050	mg/kg		<0.0050	0.0053	0.0050	<0.0050	<0.0050
mercury	7439-97-6	E510A	0.0010	mg/kg wwt		0.0011	0.0017	0.0018	0.0015	0.0017
molybdenum	7439-98-7	E440	0.020	mg/kg		0.066	0.112	0.181	0.044	0.171
molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt		0.0255	0.0356	0.0655	0.0143	0.0714
nickel	7440-02-0	E440	0.20	mg/kg		7.39	6.08	10.6	5.94	0.94
nickel	7440-02-0	E440A	0.040	mg/kg wwt		2.87	1.94	3.83	1.92	0.391
phosphorus	7723-14-0	E440	10	mg/kg		1460	3840	5420	3290	1500
phosphorus	7723-14-0	E440A	2.0	mg/kg wwt		567	1230	1960	1060	627
potassium	7440-09-7	E440	20	mg/kg		6400	8610	14200	7000	5880
potassium	7440-09-7	E440A	4.0	mg/kg wwt		2490	2750	5130	2260	2460
rubidium	7440-17-7	E440	0.050	mg/kg		20.3	16.6	25.4	19.0	4.70
rubidium	7440-17-7	E440A	0.010	mg/kg wwt		7.90	5.32	9.21	6.15	1.96
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	<0.050	0.099	<0.050	<0.050
selenium	7782-49-2	E440A	0.010	mg/kg wwt		<0.010	<0.010	0.036	<0.010	0.012
silver	7440-22-4	E440.Ag	0.0050	mg/kg		0.0094	0.0083	0.0066	0.0060	<0.0050
silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt		0.0036	0.0026	0.0024	0.0020	0.0018
sodium	7440-23-5	E440	20	mg/kg		<20	<20	<20	<20	<20
sodium	7440-23-5	E440A	4.0	mg/kg wwt		<4.0	<4.0	<4.0	<4.0	<4.0
strontium	7440-24-6	E440	0.050	mg/kg		36.8	19.0	58.2	16.2	15.5
strontium	7440-24-6	E440A	0.010	mg/kg wwt		14.3	6.07	21.1	5.23	6.49
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
tellurium	13494-80-9	E440A	0.0040	mg/kg wwt		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
thallium	7440-28-0	E440	0.0020	mg/kg		<0.0020	0.0021	<0.0020	<0.0020	<0.0020
thallium	7440-28-0	E440A	0.00040	mg/kg wwt		0.00041	0.00066	<0.00040	<0.00040	0.00042

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D3-B, West, Salix twigs,	D3-B, West, dwarf birch leaves	D3-B, North, Salix leaves	D3-B, North dwarf birch leaves	D4-B, Centre, dwarf birch leaves
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-041	WR2200752-042	WR2200752-043	WR2200752-044	WR2200752-045
						Result	Result	Result	Result	Result
Metals										
tin	7440-31-5	E440	0.10	mg/kg		0.36	<0.10	<0.10	0.11	0.18
tin	7440-31-5	E440A	0.020	mg/kg wwt		0.139	0.024	<0.020	0.036	0.074
titanium	7440-32-6	E440.Ti	0.25	mg/kg		5.02	7.12	3.76	4.56	2.96
titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt		1.95	2.27	1.36	1.47	1.24
uranium	7440-61-1	E440	0.0020	mg/kg		0.0129	0.0183	0.0118	0.0135	0.0155
uranium	7440-61-1	E440A	0.00040	mg/kg wwt		0.00500	0.00585	0.00427	0.00437	0.00648
vanadium	7440-62-2	E440	0.10	mg/kg		0.15	0.21	0.12	0.14	<0.10
vanadium	7440-62-2	E440A	0.020	mg/kg wwt		0.058	0.066	0.042	0.045	0.039
zinc	7440-66-6	E440	0.50	mg/kg		84.4	169	46.6	130	112
zinc	7440-66-6	E440A	0.10	mg/kg wwt		32.8	54.1	16.9	41.9	47.0
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20
zirconium	7440-67-7	E440A	0.040	mg/kg wwt		<0.040	<0.040	<0.040	<0.040	<0.040

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D4-B, Centre, labrador tea leaves	D4-B, West, dwarf birch leaves	D4-B, West labrador tea leaves	D4-B, North, Salix leaves	D4-B, North, Salix twigs
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-046	WR2200752-047	WR2200752-048	WR2200752-049	WR2200752-050
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		54.6	59.9	53.7	61.3	51.6
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		95.9	52.3	65.4	52.5	137
aluminum	7429-90-5	E440A	0.40	mg/kg wwt		43.5	21.0	30.3	20.3	66.2
antimony	7440-36-0	E440	0.010	mg/kg		0.155	0.078	0.107	0.067	0.246
antimony	7440-36-0	E440A	0.0020	mg/kg wwt		0.0705	0.0314	0.0494	0.0260	0.119
arsenic	7440-38-2	E440	0.020	mg/kg		4.22	2.17	2.45	1.39	3.50
arsenic	7440-38-2	E440A	0.0040	mg/kg wwt		1.92	0.870	1.14	0.537	1.70
barium	7440-39-3	E440	0.050	mg/kg		84.8	47.4	67.1	18.6	25.4
barium	7440-39-3	E440A	0.010	mg/kg wwt		38.5	19.0	31.1	7.20	12.3
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
beryllium	7440-41-7	E440A	0.0020	mg/kg wwt		0.0023	<0.0020	<0.0020	<0.0020	0.0040
bismuth	7440-69-9	E440	0.010	mg/kg		0.117	0.049	0.077	0.040	0.177
bismuth	7440-69-9	E440A	0.0020	mg/kg wwt		0.0533	0.0197	0.0357	0.0153	0.0858
boron	7440-42-8	E440	1.0	mg/kg		12.2	5.4	2.8	12.6	11.0
boron	7440-42-8	E440A	0.20	mg/kg wwt		5.55	2.18	1.28	4.88	5.31
cadmium	7440-43-9	E440	0.0050	mg/kg		0.0079	0.154	0.0058	1.17	1.29
cadmium	7440-43-9	E440A	0.0010	mg/kg wwt		0.0036	0.0617	0.0027	0.454	0.623
calcium	7440-70-2	E440	20	mg/kg		4180	5760	4850	10200	7080
calcium	7440-70-2	E440A	4.0	mg/kg wwt		1900	2310	2240	3950	3420
cesium	7440-46-2	E440	0.0050	mg/kg		0.0633	0.0300	0.0573	0.0585	0.0766
cesium	7440-46-2	E440A	0.0010	mg/kg wwt		0.0288	0.0120	0.0265	0.0226	0.0371
chromium	7440-47-3	E440	0.050	mg/kg		0.187	0.123	0.128	0.126	0.312
chromium	7440-47-3	E440A	0.010	mg/kg wwt		0.085	0.049	0.059	0.048	0.151
cobalt	7440-48-4	E440	0.020	mg/kg		0.079	0.192	0.052	0.277	0.182
cobalt	7440-48-4	E440A	0.0040	mg/kg wwt		0.0358	0.0769	0.0241	0.107	0.0883
copper	7440-50-8	E440	0.10	mg/kg		4.29	3.27	3.70	3.63	5.37
copper	7440-50-8	E440A	0.020	mg/kg wwt		1.95	1.31	1.71	1.40	2.60
iron	7439-89-6	E440	3.0	mg/kg		195	148	136	132	269
iron	7439-89-6	E440A	0.60	mg/kg wwt		88.6	59.5	62.9	51.2	130
lead	7439-92-1	E440	0.020	mg/kg		0.400	0.248	0.297	0.181	0.753

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D4-B, Centre, labrador tea leaves	D4-B, West, dwarf birch leaves	D4-B, West labrador tea leaves	D4-B, North, Salix leaves	D4-B, North, Salix twigs
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-046	WR2200752-047	WR2200752-048	WR2200752-049	WR2200752-050
						Result	Result	Result	Result	Result
Metals										
lead	7439-92-1	E440A	0.0040	mg/kg wwt		0.182	0.0996	0.137	0.0700	0.364
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
lithium	7439-93-2	E440A	0.10	mg/kg wwt		<0.10	<0.10	<0.10	<0.10	0.10
magnesium	7439-95-4	E440	2.0	mg/kg		1190	2350	1300	3940	1080
magnesium	7439-95-4	E440A	0.40	mg/kg wwt		540	944	604	1520	525
manganese	7439-96-5	E440	0.050	mg/kg		368	616	498	231	244
manganese	7439-96-5	E440A	0.010	mg/kg wwt		167	247	230	89.4	118
mercury	7439-97-6	E510	0.0050	mg/kg		0.0065	0.0064	0.0055	0.0052	<0.0050
mercury	7439-97-6	E510A	0.0010	mg/kg wwt		0.0029	0.0026	0.0026	0.0020	0.0022
molybdenum	7439-98-7	E440	0.020	mg/kg		0.029	0.108	0.032	0.151	0.084
molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt		0.0133	0.0435	0.0148	0.0586	0.0405
nickel	7440-02-0	E440	0.20	mg/kg		0.43	3.34	0.35	1.17	0.87
nickel	7440-02-0	E440A	0.040	mg/kg wwt		0.195	1.34	0.161	0.452	0.421
phosphorus	7723-14-0	E440	10	mg/kg		1330	1890	1520	1440	870
phosphorus	7723-14-0	E440A	2.0	mg/kg wwt		603	759	705	558	421
potassium	7440-09-7	E440	20	mg/kg		6040	6630	5090	12400	4640
potassium	7440-09-7	E440A	4.0	mg/kg wwt		2740	2660	2350	4790	2240
rubidium	7440-17-7	E440	0.050	mg/kg		11.7	4.55	10.3	12.2	7.17
rubidium	7440-17-7	E440A	0.010	mg/kg wwt		5.31	1.83	4.77	4.73	3.47
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	0.067	<0.050	<0.050	<0.050
selenium	7782-49-2	E440A	0.010	mg/kg wwt		<0.010	0.027	<0.010	0.019	0.013
silver	7440-22-4	E440.Ag	0.0050	mg/kg		0.0066	<0.0050	<0.0050	<0.0050	0.0113
silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt		0.0030	0.0018	0.0015	0.0011	0.0055
sodium	7440-23-5	E440	20	mg/kg		<20	<20	<20	<20	<20
sodium	7440-23-5	E440A	4.0	mg/kg wwt		<4.0	<4.0	<4.0	<4.0	5.7
strontium	7440-24-6	E440	0.050	mg/kg		8.30	17.5	9.32	34.8	25.2
strontium	7440-24-6	E440A	0.010	mg/kg wwt		3.77	7.01	4.31	13.5	12.2
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
tellurium	13494-80-9	E440A	0.0040	mg/kg wwt		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
thallium	7440-28-0	E440	0.0020	mg/kg		0.0120	<0.0020	0.0156	<0.0020	0.0035
thallium	7440-28-0	E440A	0.00040	mg/kg wwt		0.00546	0.00078	0.00720	0.00052	0.00171

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D4-B, Centre, labrador tea leaves	D4-B, West, dwarf birch leaves	D4-B, West labrador tea leaves	D4-B, North, Salix leaves	D4-B, North, Salix twigs
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-046	WR2200752-047	WR2200752-048	WR2200752-049	WR2200752-050
						Result	Result	Result	Result	Result
Metals										
tin	7440-31-5	E440	0.10	mg/kg		<0.10	0.12	<0.10	0.13	0.63
tin	7440-31-5	E440A	0.020	mg/kg wwt		<0.020	0.048	0.032	0.051	0.307
titanium	7440-32-6	E440.Ti	0.25	mg/kg		5.00	3.02	3.25	2.80	7.52
titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt		2.27	1.21	1.50	1.08	3.64
uranium	7440-61-1	E440	0.0020	mg/kg		0.0494	0.0140	0.0155	0.0111	0.0364
uranium	7440-61-1	E440A	0.00040	mg/kg wwt		0.0224	0.00560	0.00717	0.00428	0.0176
vanadium	7440-62-2	E440	0.10	mg/kg		0.17	0.10	0.11	<0.10	0.25
vanadium	7440-62-2	E440A	0.020	mg/kg wwt		0.078	0.040	0.050	0.038	0.120
zinc	7440-66-6	E440	0.50	mg/kg		25.0	108	24.3	118	162
zinc	7440-66-6	E440A	0.10	mg/kg wwt		11.3	43.4	11.2	45.7	78.7
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	0.24
zirconium	7440-67-7	E440A	0.040	mg/kg wwt		<0.040	<0.040	<0.040	<0.040	0.118

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D4-B, North, equisetum	D4-B, South, Salix leaves	D4-B, South, Salix twigs	D4-B, East, Salix leaves	D4-B, East, dwarf birch leaves
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-051	WR2200752-052	WR2200752-053	WR2200752-054	WR2200752-055
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		71.8	59.2	63.2	62.4	58.7
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		10.5	33.4	114	28.8	40.4
aluminum	7429-90-5	E440A	0.40	mg/kg wwt		2.95	13.6	41.8	10.8	16.7
antimony	7440-36-0	E440	0.010	mg/kg		0.017	0.051	0.208	0.050	0.068
antimony	7440-36-0	E440A	0.0020	mg/kg wwt		0.0047	0.0209	0.0767	0.0190	0.0283
arsenic	7440-38-2	E440	0.020	mg/kg		1.06	0.986	3.58	0.901	1.70
arsenic	7440-38-2	E440A	0.0040	mg/kg wwt		0.300	0.402	1.32	0.339	0.704
barium	7440-39-3	E440	0.050	mg/kg		66.7	10.2	18.5	35.5	40.8
barium	7440-39-3	E440A	0.010	mg/kg wwt		18.8	4.17	6.82	13.4	16.8
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
beryllium	7440-41-7	E440A	0.0020	mg/kg wwt		<0.0020	<0.0020	0.0021	<0.0020	<0.0020
bismuth	7440-69-9	E440	0.010	mg/kg		<0.010	0.012	0.121	0.022	0.035
bismuth	7440-69-9	E440A	0.0020	mg/kg wwt		0.0022	0.0048	0.0445	0.0082	0.0146
boron	7440-42-8	E440	1.0	mg/kg		7.1	3.7	7.7	6.3	10.6
boron	7440-42-8	E440A	0.20	mg/kg wwt		2.00	1.51	2.83	2.36	4.39
cadmium	7440-43-9	E440	0.0050	mg/kg		0.435	0.394	0.473	0.265	0.0399
cadmium	7440-43-9	E440A	0.0010	mg/kg wwt		0.122	0.161	0.174	0.0998	0.0165
calcium	7440-70-2	E440	20	mg/kg		14400	7590	5170	21900	8020
calcium	7440-70-2	E440A	4.0	mg/kg wwt		4070	3100	1900	8240	3310
cesium	7440-46-2	E440	0.0050	mg/kg		0.316	0.0222	0.0531	0.0135	0.0195
cesium	7440-46-2	E440A	0.0010	mg/kg wwt		0.0888	0.0090	0.0195	0.0051	0.0080
chromium	7440-47-3	E440	0.050	mg/kg		<0.050	0.084	0.241	0.064	0.133
chromium	7440-47-3	E440A	0.010	mg/kg wwt		<0.010	0.034	0.089	0.024	0.055
cobalt	7440-48-4	E440	0.020	mg/kg		0.061	0.493	0.301	0.112	0.082
cobalt	7440-48-4	E440A	0.0040	mg/kg wwt		0.0171	0.201	0.111	0.0421	0.0341
copper	7440-50-8	E440	0.10	mg/kg		4.03	1.56	2.43	2.12	4.00
copper	7440-50-8	E440A	0.020	mg/kg wwt		1.13	0.635	0.894	0.798	1.65
iron	7439-89-6	E440	3.0	mg/kg		50.6	115	251	100	119
iron	7439-89-6	E440A	0.60	mg/kg wwt		14.2	46.7	92.3	37.6	49.2
lead	7439-92-1	E440	0.020	mg/kg		0.049	0.144	0.661	0.134	0.236

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D4-B, North, equisetum	D4-B, South, Salix leaves	D4-B, South, Salix twigs	D4-B, East, Salix leaves	D4-B, East, dwarf birch leaves
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-051	WR2200752-052	WR2200752-053	WR2200752-054	WR2200752-055
						Result	Result	Result	Result	Result
Metals										
lead	7439-92-1	E440A	0.0040	mg/kg wwt		0.0138	0.0587	0.244	0.0503	0.0977
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
lithium	7439-93-2	E440A	0.10	mg/kg wwt		<0.10	<0.10	<0.10	0.13	<0.10
magnesium	7439-95-4	E440	2.0	mg/kg		4300	2730	1380	5660	3210
magnesium	7439-95-4	E440A	0.40	mg/kg wwt		1210	1110	508	2130	1320
manganese	7439-96-5	E440	0.050	mg/kg		48.1	58.2	79.9	90.4	309
manganese	7439-96-5	E440A	0.010	mg/kg wwt		13.5	23.7	29.4	34.0	128
mercury	7439-97-6	E510	0.0050	mg/kg		0.0052	<0.0050	<0.0050	<0.0050	0.0061
mercury	7439-97-6	E510A	0.0010	mg/kg wwt		0.0015	<0.0012	<0.0012	0.0018	0.0025
molybdenum	7439-98-7	E440	0.020	mg/kg		0.140	0.209	0.076	0.535	0.145
molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt		0.0393	0.0850	0.0281	0.201	0.0600
nickel	7440-02-0	E440	0.20	mg/kg		0.87	0.24	0.55	<0.20	1.38
nickel	7440-02-0	E440A	0.040	mg/kg wwt		0.246	0.100	0.203	0.055	0.568
phosphorus	7723-14-0	E440	10	mg/kg		1560	1340	870	1150	1540
phosphorus	7723-14-0	E440A	2.0	mg/kg wwt		440	549	320	432	636
potassium	7440-09-7	E440	20	mg/kg		27900	11800	6500	11800	6180
potassium	7440-09-7	E440A	4.0	mg/kg wwt		7860	4820	2390	4450	2550
rubidium	7440-17-7	E440	0.050	mg/kg		56.0	4.90	3.69	2.64	1.79
rubidium	7440-17-7	E440A	0.010	mg/kg wwt		15.8	2.00	1.36	0.992	0.740
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	0.202	0.145	0.199	0.071
selenium	7782-49-2	E440A	0.010	mg/kg wwt		0.013	0.082	0.054	0.075	0.030
silver	7440-22-4	E440.Ag	0.0050	mg/kg		0.0231	<0.0050	0.0084	<0.0050	<0.0050
silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt		0.0065	<0.0010	0.0031	<0.0010	0.0020
sodium	7440-23-5	E440	20	mg/kg		<20	<20	<20	<20	<20
sodium	7440-23-5	E440A	4.0	mg/kg wwt		<4.0	<4.0	<4.0	<4.0	6.4
strontium	7440-24-6	E440	0.050	mg/kg		50.8	27.4	21.3	81.9	25.5
strontium	7440-24-6	E440A	0.010	mg/kg wwt		14.3	11.2	7.86	30.8	10.6
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
tellurium	13494-80-9	E440A	0.0040	mg/kg wwt		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
thallium	7440-28-0	E440	0.0020	mg/kg		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
thallium	7440-28-0	E440A	0.00040	mg/kg wwt		<0.00040	<0.00040	0.00057	<0.00040	<0.00040

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D4-B, North, equisetum	D4-B, South, Salix leaves	D4-B, South, Salix twigs	D4-B, East, Salix leaves	D4-B, East, dwarf birch leaves
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-051	WR2200752-052	WR2200752-053	WR2200752-054	WR2200752-055
						Result	Result	Result	Result	Result
Metals										
tin	7440-31-5	E440	0.10	mg/kg		0.10	<0.10	0.62	<0.10	0.10
tin	7440-31-5	E440A	0.020	mg/kg wwt		0.028	0.025	0.227	0.036	0.042
titanium	7440-32-6	E440.Ti	0.25	mg/kg		0.53	1.74	6.42	1.65	2.42
titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt		0.149	0.710	2.36	0.621	0.999
uranium	7440-61-1	E440	0.0020	mg/kg		0.0038	0.0088	0.0298	0.0158	0.0141
uranium	7440-61-1	E440A	0.00040	mg/kg wwt		0.00107	0.00358	0.0110	0.00595	0.00582
vanadium	7440-62-2	E440	0.10	mg/kg		<0.10	<0.10	0.21	<0.10	<0.10
vanadium	7440-62-2	E440A	0.020	mg/kg wwt		<0.020	0.028	0.077	0.023	0.033
zinc	7440-66-6	E440	0.50	mg/kg		44.8	54.2	123	137	171
zinc	7440-66-6	E440A	0.10	mg/kg wwt		12.6	22.1	45.3	51.6	70.6
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20
zirconium	7440-67-7	E440A	0.040	mg/kg wwt		<0.040	<0.040	0.047	<0.040	<0.040

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D4-B, East, labrador tea leaves	D5, Centre, Salix leaves	D5, Centre, equisetum	D5, East, poplar leaves	D5, East, poplar twigs
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-056	WR2200752-057	WR2200752-058	WR2200752-059	WR2200752-060
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		51.4	62.3	75.5	61.1	50.1
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		50.6	22.2	8.3	34.7	41.1
aluminum	7429-90-5	E440A	0.40	mg/kg wwt		24.6	8.36	2.03	13.5	20.5
antimony	7440-36-0	E440	0.010	mg/kg		0.099	0.032	<0.010	0.040	0.048
antimony	7440-36-0	E440A	0.0020	mg/kg wwt		0.0480	0.0119	<0.0020	0.0156	0.0240
arsenic	7440-38-2	E440	0.020	mg/kg		2.16	0.826	0.514	1.04	1.03
arsenic	7440-38-2	E440A	0.0040	mg/kg wwt		1.05	0.311	0.126	0.404	0.516
barium	7440-39-3	E440	0.050	mg/kg		67.9	9.07	35.6	29.7	54.3
barium	7440-39-3	E440A	0.010	mg/kg wwt		33.0	3.42	8.72	11.6	27.1
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
beryllium	7440-41-7	E440A	0.0020	mg/kg wwt		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
bismuth	7440-69-9	E440	0.010	mg/kg		0.067	0.036	<0.010	0.033	0.044
bismuth	7440-69-9	E440A	0.0020	mg/kg wwt		0.0324	0.0134	<0.0020	0.0129	0.0220
boron	7440-42-8	E440	1.0	mg/kg		9.4	7.3	12.9	9.2	13.5
boron	7440-42-8	E440A	0.20	mg/kg wwt		4.57	2.76	3.17	3.57	6.72
cadmium	7440-43-9	E440	0.0050	mg/kg		0.0066	1.96	0.472	0.722	0.843
cadmium	7440-43-9	E440A	0.0010	mg/kg wwt		0.0032	0.740	0.116	0.281	0.421
calcium	7440-70-2	E440	20	mg/kg		4920	10100	16900	9200	8090
calcium	7440-70-2	E440A	4.0	mg/kg wwt		2390	3810	4150	3580	4040
cesium	7440-46-2	E440	0.0050	mg/kg		0.0426	0.0220	0.487	0.0444	0.0243
cesium	7440-46-2	E440A	0.0010	mg/kg wwt		0.0207	0.0083	0.119	0.0173	0.0121
chromium	7440-47-3	E440	0.050	mg/kg		0.109	0.050	<0.050	0.077	0.080
chromium	7440-47-3	E440A	0.010	mg/kg wwt		0.053	0.019	<0.010	0.030	0.040
cobalt	7440-48-4	E440	0.020	mg/kg		0.047	0.616	0.470	0.744	0.129
cobalt	7440-48-4	E440A	0.0040	mg/kg wwt		0.0229	0.232	0.115	0.289	0.0645
copper	7440-50-8	E440	0.10	mg/kg		3.71	4.29	4.37	2.89	3.16
copper	7440-50-8	E440A	0.020	mg/kg wwt		1.80	1.62	1.07	1.12	1.58
iron	7439-89-6	E440	3.0	mg/kg		110	95.2	44.3	86.8	75.6
iron	7439-89-6	E440A	0.60	mg/kg wwt		53.6	35.8	10.8	33.8	37.7
lead	7439-92-1	E440	0.020	mg/kg		0.294	0.080	0.034	0.150	0.212

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: D4-B, East, labrador tea leaves	D5, Centre, Salix leaves	D5, Centre, equisetum	D5, East, poplar leaves	D5, East, poplar twigs
				Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
					WR2200752-056	WR2200752-057	WR2200752-058	WR2200752-059	WR2200752-060
					Result	Result	Result	Result	Result
Metals									
lead	7439-92-1	E440A	0.0040	mg/kg wwt	0.143	0.0301	0.0084	0.0584	0.106
lithium	7439-93-2	E440	0.50	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50
lithium	7439-93-2	E440A	0.10	mg/kg wwt	<0.10	<0.10	<0.10	<0.10	<0.10
magnesium	7439-95-4	E440	2.0	mg/kg	1160	3860	5330	3020	1530
magnesium	7439-95-4	E440A	0.40	mg/kg wwt	566	1460	1310	1180	764
manganese	7439-96-5	E440	0.050	mg/kg	579	286	57.2	73.1	30.5
manganese	7439-96-5	E440A	0.010	mg/kg wwt	282	108	14.0	28.4	15.2
mercury	7439-97-6	E510	0.0050	mg/kg	0.0070	<0.0050	0.0060	<0.0050	<0.0050
mercury	7439-97-6	E510A	0.0010	mg/kg wwt	0.0034	0.0018	0.0015	0.0017	<0.0014
molybdenum	7439-98-7	E440	0.020	mg/kg	0.023	0.281	0.184	0.059	<0.020
molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt	0.0112	0.106	0.0452	0.0229	0.0085
nickel	7440-02-0	E440	0.20	mg/kg	0.24	2.78	0.99	0.96	0.58
nickel	7440-02-0	E440A	0.040	mg/kg wwt	0.116	1.05	0.242	0.372	0.290
phosphorus	7723-14-0	E440	10	mg/kg	1120	2740	1200	1790	911
phosphorus	7723-14-0	E440A	2.0	mg/kg wwt	547	1030	294	696	455
potassium	7440-09-7	E440	20	mg/kg	4400	12000	45800	12800	5830
potassium	7440-09-7	E440A	4.0	mg/kg wwt	2140	4510	11200	4980	2910
rubidium	7440-17-7	E440	0.050	mg/kg	6.61	11.1	111	6.93	4.10
rubidium	7440-17-7	E440A	0.010	mg/kg wwt	3.22	4.18	27.2	2.70	2.04
selenium	7782-49-2	E440	0.050	mg/kg	<0.050	0.051	<0.050	0.119	<0.050
selenium	7782-49-2	E440A	0.010	mg/kg wwt	<0.010	0.019	<0.010	0.046	0.021
silver	7440-22-4	E440.Ag	0.0050	mg/kg	<0.0050	<0.0050	0.0201	<0.0050	0.0069
silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt	0.0013	<0.0010	0.0049	0.0015	0.0034
sodium	7440-23-5	E440	20	mg/kg	<20	<20	35	<20	<20
sodium	7440-23-5	E440A	4.0	mg/kg wwt	<4.0	<4.0	8.6	<4.0	4.1
strontium	7440-24-6	E440	0.050	mg/kg	8.90	38.5	74.6	48.1	52.4
strontium	7440-24-6	E440A	0.010	mg/kg wwt	4.33	14.5	18.3	18.7	26.2
tellurium	13494-80-9	E440	0.020	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020
tellurium	13494-80-9	E440A	0.0040	mg/kg wwt	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
thallium	7440-28-0	E440	0.0020	mg/kg	0.0098	0.0028	0.0057	<0.0020	<0.0020
thallium	7440-28-0	E440A	0.00040	mg/kg wwt	0.00476	0.00106	0.00141	<0.00040	<0.00040

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D4-B, East, labrador tea leaves	D5, Centre, Salix leaves	D5, Centre, equisetum	D5, East, poplar leaves	D5, East, poplar twigs
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-056	WR2200752-057	WR2200752-058	WR2200752-059	WR2200752-060
						Result	Result	Result	Result	Result
Metals										
tin	7440-31-5	E440	0.10	mg/kg		0.20	<0.10	0.10	<0.10	0.87
tin	7440-31-5	E440A	0.020	mg/kg wwt		0.099	0.022	0.025	<0.020	0.434
titanium	7440-32-6	E440.Ti	0.25	mg/kg		2.56	1.16	0.43	2.08	2.12
titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt		1.24	0.437	0.105	0.811	1.06
uranium	7440-61-1	E440	0.0020	mg/kg		0.0249	0.0074	<0.0020	0.0077	0.0117
uranium	7440-61-1	E440A	0.00040	mg/kg wwt		0.0121	0.00278	0.00040	0.00300	0.00584
vanadium	7440-62-2	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
vanadium	7440-62-2	E440A	0.020	mg/kg wwt		0.040	<0.020	<0.020	0.025	0.034
zinc	7440-66-6	E440	0.50	mg/kg		20.6	206	36.7	212	134
zinc	7440-66-6	E440A	0.10	mg/kg wwt		10.0	77.4	8.99	82.5	66.9
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.40 DLM
zirconium	7440-67-7	E440A	0.040	mg/kg wwt		<0.040	<0.040	<0.040	<0.040	<0.080 DLM

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D5, South, poplar leaves	D5, South, poplar twigs	D5, South, equisetum	D5, West, Salix leaves	D5, West, equisetum
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-061	WR2200752-062	WR2200752-063	WR2200752-064	WR2200752-065
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		68.4	61.7	74.8	60.1	75.4
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		32.6	22.6	11.0	34.3	7.8
aluminum	7429-90-5	E440A	0.40	mg/kg wwt		10.3	8.67	2.78	13.7	1.92
antimony	7440-36-0	E440	0.010	mg/kg		0.048	0.025	<0.010	0.044	<0.010
antimony	7440-36-0	E440A	0.0020	mg/kg wwt		0.0151	0.0096	0.0025	0.0178	0.0022
arsenic	7440-38-2	E440	0.020	mg/kg		0.938	0.648	0.849	1.04	1.17
arsenic	7440-38-2	E440A	0.0040	mg/kg wwt		0.297	0.248	0.214	0.415	0.288
barium	7440-39-3	E440	0.050	mg/kg		13.4	27.6	38.4	9.97	46.8
barium	7440-39-3	E440A	0.010	mg/kg wwt		4.26	10.6	9.67	3.98	11.5
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	<0.010
beryllium	7440-41-7	E440A	0.0020	mg/kg wwt		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
bismuth	7440-69-9	E440	0.010	mg/kg		0.034	0.013	<0.010	0.026	<0.010
bismuth	7440-69-9	E440A	0.0020	mg/kg wwt		0.0108	0.0049	<0.0020	0.0104	<0.0020
boron	7440-42-8	E440	1.0	mg/kg		12.2	15.8	14.8	10.8	11.2
boron	7440-42-8	E440A	0.20	mg/kg wwt		3.85	6.06	3.73	4.32	2.76
cadmium	7440-43-9	E440	0.0050	mg/kg		1.19	1.38	0.438	1.93	0.487
cadmium	7440-43-9	E440A	0.0010	mg/kg wwt		0.376	0.530	0.110	0.769	0.120
calcium	7440-70-2	E440	20	mg/kg		7510	6150	17200	7920	15000
calcium	7440-70-2	E440A	4.0	mg/kg wwt		2380	2360	4320	3160	3690
cesium	7440-46-2	E440	0.0050	mg/kg		0.0168	0.0116	0.373	0.0157	0.124
cesium	7440-46-2	E440A	0.0010	mg/kg wwt		0.0053	0.0044	0.0938	0.0063	0.0305
chromium	7440-47-3	E440	0.050	mg/kg		0.178	<0.050	0.069	0.250	<0.050
chromium	7440-47-3	E440A	0.010	mg/kg wwt		0.056	0.018	0.017	0.100	<0.010
cobalt	7440-48-4	E440	0.020	mg/kg		2.09	0.324	1.39	1.08	0.313
cobalt	7440-48-4	E440A	0.0040	mg/kg wwt		0.660	0.124	0.350	0.430	0.0771
copper	7440-50-8	E440	0.10	mg/kg		3.98	4.95	4.21	3.40	5.14
copper	7440-50-8	E440A	0.020	mg/kg wwt		1.26	1.89	1.06	1.36	1.27
iron	7439-89-6	E440	3.0	mg/kg		108	49.2	45.5	96.0	56.0
iron	7439-89-6	E440A	0.60	mg/kg wwt		34.3	18.8	11.5	38.3	13.8
lead	7439-92-1	E440	0.020	mg/kg		0.119	0.093	0.070	0.115	0.044
lead	7439-92-1	E440A	0.0040	mg/kg wwt		0.0378	0.0355	0.0176	0.0461	0.0109

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D5, South, poplar leaves	D5, South, poplar twigs	D5, South, equisetum	D5, West, Salix leaves	D5, West, equisetum
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-061	WR2200752-062	WR2200752-063	WR2200752-064	WR2200752-065
						Result	Result	Result	Result	Result
Metals										
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
lithium	7439-93-2	E440A	0.10	mg/kg wwt		<0.10	<0.10	<0.10	0.16	<0.10
magnesium	7439-95-4	E440	2.0	mg/kg		2390	1590	5300	2450	5260
magnesium	7439-95-4	E440A	0.40	mg/kg wwt		756	608	1330	977	1300
manganese	7439-96-5	E440	0.050	mg/kg		108	57.9	95.6	292	64.5
manganese	7439-96-5	E440A	0.010	mg/kg wwt		34.3	22.2	24.1	117	15.9
mercury	7439-97-6	E510	0.0050	mg/kg		0.0054	<0.0050	0.0054	0.0058	0.0061
mercury	7439-97-6	E510A	0.0010	mg/kg wwt		0.0017	<0.0012	0.0014	0.0023	0.0015
molybdenum	7439-98-7	E440	0.020	mg/kg		0.055	<0.020	0.200	0.300	0.181
molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt		0.0174	0.0055	0.0502	0.120	0.0446
nickel	7440-02-0	E440	0.20	mg/kg		2.54	1.69	1.71	2.73	0.83
nickel	7440-02-0	E440A	0.040	mg/kg wwt		0.802	0.646	0.431	1.09	0.205
phosphorus	7723-14-0	E440	10	mg/kg		2810	1330	1350	2540	1580
phosphorus	7723-14-0	E440A	2.0	mg/kg wwt		890	510	340	1020	389
potassium	7440-09-7	E440	20	mg/kg		26300	12200	46000	12700	33800
potassium	7440-09-7	E440A	4.0	mg/kg wwt		8320	4670	11600	5070	8340
rubidium	7440-17-7	E440	0.050	mg/kg		10.6	8.17	81.9	4.43	42.2
rubidium	7440-17-7	E440A	0.010	mg/kg wwt		3.36	3.13	20.6	1.77	10.4
selenium	7782-49-2	E440	0.050	mg/kg		0.053	<0.050	<0.050	0.070	<0.050
selenium	7782-49-2	E440A	0.010	mg/kg wwt		0.017	<0.010	<0.010	0.028	<0.010
silver	7440-22-4	E440.Ag	0.0050	mg/kg		<0.0050	0.0068	0.0234	<0.0050	0.0087
silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt		0.0014	0.0026	0.0059	<0.0010	0.0021
sodium	7440-23-5	E440	20	mg/kg		<20	<20	34	<20	29
sodium	7440-23-5	E440A	4.0	mg/kg wwt		<4.0	<4.0	8.6	4.7	7.2
strontium	7440-24-6	E440	0.050	mg/kg		27.7	33.9	81.2	31.7	67.5
strontium	7440-24-6	E440A	0.010	mg/kg wwt		8.76	13.0	20.4	12.6	16.6
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
tellurium	13494-80-9	E440A	0.0040	mg/kg wwt		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
thallium	7440-28-0	E440	0.0020	mg/kg		0.0083	0.0079	0.0055	<0.0020	0.0116
thallium	7440-28-0	E440A	0.00040	mg/kg wwt		0.00263	0.00304	0.00139	<0.00040	0.00286
tin	7440-31-5	E440	0.10	mg/kg		0.14	<0.10	<0.10	0.10	<0.10
tin	7440-31-5	E440A	0.020	mg/kg wwt		0.045	<0.020	<0.020	0.040	0.023

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D5, South, poplar leaves	D5, South, poplar twigs	D5, South, equisetum	D5, West, Salix leaves	D5, West, equisetum
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-061	WR2200752-062	WR2200752-063	WR2200752-064	WR2200752-065
						Result	Result	Result	Result	Result
Metals										
titanium	7440-32-6	E440.Ti	0.25	mg/kg		1.64	1.11	0.54	1.85	0.42
titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt		0.517	0.425	0.136	0.740	0.104
uranium	7440-61-1	E440	0.0020	mg/kg		0.0070	0.0041	0.0022	0.0092	<0.0020
uranium	7440-61-1	E440A	0.00040	mg/kg wwt		0.00220	0.00159	0.00055	0.00366	0.00041
vanadium	7440-62-2	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
vanadium	7440-62-2	E440A	0.020	mg/kg wwt		0.021	<0.020	<0.020	0.029	<0.020
zinc	7440-66-6	E440	0.50	mg/kg		231	146	42.0	98.3	27.3
zinc	7440-66-6	E440A	0.10	mg/kg wwt		73.0	55.8	10.6	39.3	6.74
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20
zirconium	7440-67-7	E440A	0.040	mg/kg wwt		<0.040	<0.040	<0.040	<0.040	<0.040

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D5, Noth, Salix leaves	D5, North, equisetum	D1-B Centre Salix Leaves 2	D1-B East Salix Leaves 2	D1-B South Salix Leaves 2
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-066	WR2200752-067	WR2200752-068	WR2200752-069	WR2200752-070
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		65.6	74.8	66.4	63.1	62.7
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		39.7	10.2	17.0	31.6	25.7
aluminum	7429-90-5	E440A	0.40	mg/kg wwt		13.6	2.56	5.72	11.6	9.59
antimony	7440-36-0	E440	0.010	mg/kg		0.048	0.013	<0.010	<0.010	0.015
antimony	7440-36-0	E440A	0.0020	mg/kg wwt		0.0165	0.0032	0.0024	0.0035	0.0058
arsenic	7440-38-2	E440	0.020	mg/kg		1.05	0.796	0.096	0.188	0.204
arsenic	7440-38-2	E440A	0.0040	mg/kg wwt		0.362	0.200	0.0322	0.0695	0.0761
barium	7440-39-3	E440	0.050	mg/kg		10.8	32.8	28.8	41.6	29.1
barium	7440-39-3	E440A	0.010	mg/kg wwt		3.73	8.27	9.69	15.3	10.8
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	<0.010	<0.010	0.022	0.012
beryllium	7440-41-7	E440A	0.0020	mg/kg wwt		<0.0020	<0.0020	0.0033	0.0080	0.0047
bismuth	7440-69-9	E440	0.010	mg/kg		0.030	<0.010	<0.010	0.010	0.011
bismuth	7440-69-9	E440A	0.0020	mg/kg wwt		0.0105	<0.0020	<0.0020	0.0037	0.0041
boron	7440-42-8	E440	1.0	mg/kg		17.6	10.8	2.8	2.9	4.4
boron	7440-42-8	E440A	0.20	mg/kg wwt		6.05	2.71	0.92	1.06	1.62
cadmium	7440-43-9	E440	0.0050	mg/kg		1.70	1.19	2.90	4.62	3.22
cadmium	7440-43-9	E440A	0.0010	mg/kg wwt		0.584	0.299	0.975	1.70	1.20
calcium	7440-70-2	E440	20	mg/kg		12600	18900	4550	7590	5320
calcium	7440-70-2	E440A	4.0	mg/kg wwt		4320	4750	1530	2800	1990
cesium	7440-46-2	E440	0.0050	mg/kg		0.0228	0.657	0.0867	0.244	0.0622
cesium	7440-46-2	E440A	0.0010	mg/kg wwt		0.0078	0.165	0.0291	0.0899	0.0232
chromium	7440-47-3	E440	0.050	mg/kg		0.094	0.321	<0.050	<0.050	<0.050
chromium	7440-47-3	E440A	0.010	mg/kg wwt		0.032	0.081	0.014	0.011	0.017
cobalt	7440-48-4	E440	0.020	mg/kg		0.411	0.299	3.74	5.10	5.72
cobalt	7440-48-4	E440A	0.0040	mg/kg wwt		0.141	0.0754	1.26	1.88	2.14
copper	7440-50-8	E440	0.10	mg/kg		4.15	4.66	3.06	3.36	3.22
copper	7440-50-8	E440A	0.020	mg/kg wwt		1.43	1.17	1.03	1.24	1.20
iron	7439-89-6	E440	3.0	mg/kg		119	52.1	59.1	59.4	62.3
iron	7439-89-6	E440A	0.60	mg/kg wwt		40.9	13.1	19.9	21.9	23.3
lead	7439-92-1	E440	0.020	mg/kg		0.148	0.041	0.053	0.113	0.121
lead	7439-92-1	E440A	0.0040	mg/kg wwt		0.0509	0.0104	0.0180	0.0417	0.0452

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D5, Noth, Salix leaves	D5, North, equisetum	D1-B Centre Salix Leaves 2	D1-B East Salix Leaves 2	D1-B South Salix Leaves 2
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-066	WR2200752-067	WR2200752-068	WR2200752-069	WR2200752-070
						Result	Result	Result	Result	Result
Metals										
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
lithium	7439-93-2	E440A	0.10	mg/kg wwt		<0.10	<0.10	<0.10	<0.10	<0.10
magnesium	7439-95-4	E440	2.0	mg/kg		4400	7420	1610	2960	1410
magnesium	7439-95-4	E440A	0.40	mg/kg wwt		1510	1870	541	1090	527
manganese	7439-96-5	E440	0.050	mg/kg		140	56.5	1080	1190	1190
manganese	7439-96-5	E440A	0.010	mg/kg wwt		48.3	14.2	362	439	444
mercury	7439-97-6	E510	0.0050	mg/kg		0.0066	0.0084	<0.0050	0.0058	0.0054
mercury	7439-97-6	E510A	0.0010	mg/kg wwt		0.0023	0.0021	0.0015	0.0022	0.0020
molybdenum	7439-98-7	E440	0.020	mg/kg		0.111	0.217	0.079	0.113	0.055
molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt		0.0382	0.0546	0.0266	0.0417	0.0204
nickel	7440-02-0	E440	0.20	mg/kg		3.00	1.05	3.65	6.26	4.69
nickel	7440-02-0	E440A	0.040	mg/kg wwt		1.03	0.266	1.23	2.31	1.75
phosphorus	7723-14-0	E440	10	mg/kg		4030	1670	3170	2430	2000
phosphorus	7723-14-0	E440A	2.0	mg/kg wwt		1380	421	1060	897	746
potassium	7440-09-7	E440	20	mg/kg		19800	42000	12800	8570	10000
potassium	7440-09-7	E440A	4.0	mg/kg wwt		6810	10600	4290	3160	3740
rubidium	7440-17-7	E440	0.050	mg/kg		14.6	141	26.0	25.6	18.2
rubidium	7440-17-7	E440A	0.010	mg/kg wwt		5.00	35.6	8.75	9.46	6.81
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
selenium	7782-49-2	E440A	0.010	mg/kg wwt		0.012	<0.010	<0.010	0.013	<0.010
silver	7440-22-4	E440.Ag	0.0050	mg/kg		<0.0050	0.0231	<0.0050	<0.0050	<0.0050
silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt		<0.0010	0.0058	<0.0010	0.0013	0.0010
sodium	7440-23-5	E440	20	mg/kg		<20	42	<20	<20	<20
sodium	7440-23-5	E440A	4.0	mg/kg wwt		<4.0	10.6	<4.0	<4.0	<4.0
strontium	7440-24-6	E440	0.050	mg/kg		45.9	87.1	27.6	47.1	34.2
strontium	7440-24-6	E440A	0.010	mg/kg wwt		15.8	21.9	9.28	17.4	12.8
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
tellurium	13494-80-9	E440A	0.0040	mg/kg wwt		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
thallium	7440-28-0	E440	0.0020	mg/kg		<0.0020	0.0073	<0.0020	<0.0020	<0.0020
thallium	7440-28-0	E440A	0.00040	mg/kg wwt		0.00053	0.00183	<0.00040	<0.00040	<0.00040
tin	7440-31-5	E440	0.10	mg/kg		<0.10	0.30	<0.10	0.23	<0.10
tin	7440-31-5	E440A	0.020	mg/kg wwt		0.021	0.075	0.026	0.084	<0.020

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D5, Noth, Salix leaves	D5, North, equisetum	D1-B Centre Salix Leaves 2	D1-B East Salix Leaves 2	D1-B South Salix Leaves 2
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-066	WR2200752-067	WR2200752-068	WR2200752-069	WR2200752-070
						Result	Result	Result	Result	Result
Metals										
titanium	7440-32-6	E440.Ti	0.25	mg/kg		2.07	0.61	0.58	0.70	0.84
titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt		0.711	0.153	0.196	0.260	0.312
uranium	7440-61-1	E440	0.0020	mg/kg		0.0105	0.0091	<0.0020	0.0026	0.0032
uranium	7440-61-1	E440A	0.00040	mg/kg wwt		0.00361	0.00230	<0.00040	0.00095	0.00118
vanadium	7440-62-2	E440	0.10	mg/kg		<0.10	<0.10	<0.10	<0.10	<0.10
vanadium	7440-62-2	E440A	0.020	mg/kg wwt		0.026	<0.020	<0.020	<0.020	<0.020
zinc	7440-66-6	E440	0.50	mg/kg		208	41.6	119	86.7	96.6
zinc	7440-66-6	E440A	0.10	mg/kg wwt		71.3	10.5	39.9	32.0	36.0
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.20	<0.20
zirconium	7440-67-7	E440A	0.040	mg/kg wwt		<0.040	<0.040	<0.040	<0.040	<0.040

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D4-B Centre Labrador Tea Leaves-2	D4-B North Salix Leaves-2	D5 Centre Equisetum-2	D5 South Poplar Leaves-2	D-3B North Salix Twigs
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-071	WR2200752-072	WR2200752-073	WR2200752-074	WR2200752-075
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.50	%		54.3	64.3	77.0	69.7	50.6
Metals										
aluminum	7429-90-5	E440	2.0	mg/kg		122	65.2	22.9	25.9	164
aluminum	7429-90-5	E440A	0.40	mg/kg wwt		55.5	23.3	5.27	7.83	80.9
antimony	7440-36-0	E440	0.010	mg/kg		0.178	0.080	0.030	0.031	0.186
antimony	7440-36-0	E440A	0.0020	mg/kg wwt		0.0814	0.0286	0.0070	0.0093	0.0920
arsenic	7440-38-2	E440	0.020	mg/kg		5.28	1.76	0.884	0.726	2.92
arsenic	7440-38-2	E440A	0.0040	mg/kg wwt		2.42	0.628	0.204	0.220	1.44
barium	7440-39-3	E440	0.050	mg/kg		75.8	16.2	43.8	11.3	181
barium	7440-39-3	E440A	0.010	mg/kg wwt		34.6	5.78	10.1	3.42	89.4
beryllium	7440-41-7	E440	0.010	mg/kg		<0.010	<0.010	<0.010	<0.010	0.013
beryllium	7440-41-7	E440A	0.0020	mg/kg wwt		0.0026	<0.0020	<0.0020	<0.0020	0.0066
bismuth	7440-69-9	E440	0.010	mg/kg		0.120	0.046	0.020	0.022	0.089
bismuth	7440-69-9	E440A	0.0020	mg/kg wwt		0.0549	0.0165	0.0046	0.0067	0.0442
boron	7440-42-8	E440	1.0	mg/kg		12.1	12.8	12.6	13.0	10.9
boron	7440-42-8	E440A	0.20	mg/kg wwt		5.53	4.58	2.89	3.93	5.37
cadmium	7440-43-9	E440	0.0050	mg/kg		0.0079	1.31	0.598	0.974	3.25
cadmium	7440-43-9	E440A	0.0010	mg/kg wwt		0.0036	0.468	0.138	0.295	1.60
calcium	7440-70-2	E440	20	mg/kg		4720	10400	16400	7280	4500
calcium	7440-70-2	E440A	4.0	mg/kg wwt		2160	3710	3780	2200	2220
cesium	7440-46-2	E440	0.0050	mg/kg		0.0822	0.0608	0.360	0.0182	0.102
cesium	7440-46-2	E440A	0.0010	mg/kg wwt		0.0376	0.0217	0.0828	0.0055	0.0502
chromium	7440-47-3	E440	0.050	mg/kg		0.248	0.169	0.086	0.133	0.356
chromium	7440-47-3	E440A	0.010	mg/kg wwt		0.113	0.060	0.020	0.040	0.176
cobalt	7440-48-4	E440	0.020	mg/kg		0.111	0.289	0.371	2.13	3.20
cobalt	7440-48-4	E440A	0.0040	mg/kg wwt		0.0505	0.103	0.0855	0.646	1.58
copper	7440-50-8	E440	0.10	mg/kg		5.35	3.91	4.90	4.25	4.37
copper	7440-50-8	E440A	0.020	mg/kg wwt		2.44	1.40	1.13	1.29	2.16
iron	7439-89-6	E440	3.0	mg/kg		235	168	71.2	93.9	258
iron	7439-89-6	E440A	0.60	mg/kg wwt		108	59.8	16.4	28.4	127
lead	7439-92-1	E440	0.020	mg/kg		0.459	0.223	0.133	0.084	0.860

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D4-B Centre Labrador Tea Leaves-2	D4-B North Salix Leaves-2	D5 Centre Equisetum-2	D5 South Poplar Leaves-2	D-3B North Salix Twigs
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-071	WR2200752-072	WR2200752-073	WR2200752-074	WR2200752-075
						Result	Result	Result	Result	Result
Metals										
lead	7439-92-1	E440A	0.0040	mg/kg wwt		0.210	0.0795	0.0305	0.0256	0.425
lithium	7439-93-2	E440	0.50	mg/kg		<0.50	<0.50	<0.50	<0.50	<0.50
lithium	7439-93-2	E440A	0.10	mg/kg wwt		<0.10	<0.10	<0.10	<0.10	0.11
magnesium	7439-95-4	E440	2.0	mg/kg		1390	4030	4810	2330	818
magnesium	7439-95-4	E440A	0.40	mg/kg wwt		636	1440	1110	705	404
manganese	7439-96-5	E440	0.050	mg/kg		568	256	45.7	146	384
manganese	7439-96-5	E440A	0.010	mg/kg wwt		259	91.5	10.5	44.3	190
mercury	7439-97-6	E510	0.0050	mg/kg		0.0087	<0.0050	0.0070	<0.0050	<0.0050
mercury	7439-97-6	E510A	0.0010	mg/kg wwt		0.0040	0.0017	0.0016	0.0012	0.0020
molybdenum	7439-98-7	E440	0.020	mg/kg		0.083	0.173	0.184	0.047	0.081
molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt		0.0378	0.0618	0.0424	0.0142	0.0398
nickel	7440-02-0	E440	0.20	mg/kg		0.43	1.14	1.15	3.48	4.39
nickel	7440-02-0	E440A	0.040	mg/kg wwt		0.197	0.408	0.265	1.05	2.17
phosphorus	7723-14-0	E440	10	mg/kg		1220	1270	1230	3220	1090
phosphorus	7723-14-0	E440A	2.0	mg/kg wwt		560	452	283	974	536
potassium	7440-09-7	E440	20	mg/kg		5620	12500	46300	31200	4350
potassium	7440-09-7	E440A	4.0	mg/kg wwt		2570	4460	10700	9460	2150
rubidium	7440-17-7	E440	0.050	mg/kg		11.1	13.3	101	15.0	12.0
rubidium	7440-17-7	E440A	0.010	mg/kg wwt		5.06	4.74	23.4	4.55	5.93
selenium	7782-49-2	E440	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	0.065
selenium	7782-49-2	E440A	0.010	mg/kg wwt		<0.010	0.012	<0.010	0.011	0.032
silver	7440-22-4	E440.Ag	0.0050	mg/kg		0.0075	<0.0050	0.0193	<0.0050	0.0104
silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt		0.0034	0.0014	0.0044	0.0013	0.0051
sodium	7440-23-5	E440	20	mg/kg		<20	<20	42	<20	<20
sodium	7440-23-5	E440A	4.0	mg/kg wwt		4.2	<4.0	9.7	<4.0	4.7
strontium	7440-24-6	E440	0.050	mg/kg		7.57	32.3	77.5	26.0	53.4
strontium	7440-24-6	E440A	0.010	mg/kg wwt		3.46	11.5	17.8	7.88	26.4
tellurium	13494-80-9	E440	0.020	mg/kg		<0.020	<0.020	<0.020	<0.020	<0.020
tellurium	13494-80-9	E440A	0.0040	mg/kg wwt		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
thallium	7440-28-0	E440	0.0020	mg/kg		0.0155	<0.0020	0.0046	0.0114	0.0035
thallium	7440-28-0	E440A	0.00040	mg/kg wwt		0.00708	0.00047	0.00105	0.00344	0.00171

Analytical Results

Sub-Matrix: **Tissue**
(Matrix: **Biota**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	D4-B Centre Labrador Tea Leaves-2	D4-B North Salix Leaves-2	D5 Centre Equisetum-2	D5 South Poplar Leaves-2	D-3B North Salix Twigs
					Client sampling date / time	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022	21-Jul-2022
						WR2200752-071	WR2200752-072	WR2200752-073	WR2200752-074	WR2200752-075
						Result	Result	Result	Result	Result
Metals										
tin	7440-31-5	E440	0.10	mg/kg		0.17	0.23	0.88	0.43	0.46
tin	7440-31-5	E440A	0.020	mg/kg wwt		0.077	0.082	0.202	0.129	0.228
titanium	7440-32-6	E440.Ti	0.25	mg/kg		5.86	3.32	1.24	1.18	7.06
titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt		2.68	1.18	0.287	0.356	3.49
uranium	7440-61-1	E440	0.0020	mg/kg		0.0233	0.0101	0.0077	0.0051	0.0268
uranium	7440-61-1	E440A	0.00040	mg/kg wwt		0.0106	0.00362	0.00177	0.00155	0.0133
vanadium	7440-62-2	E440	0.10	mg/kg		0.20	0.12	<0.10	<0.10	0.28
vanadium	7440-62-2	E440A	0.020	mg/kg wwt		0.092	0.042	<0.020	<0.020	0.141
zinc	7440-66-6	E440	0.50	mg/kg		24.8	121	54.4	254	125
zinc	7440-66-6	E440A	0.10	mg/kg wwt		11.3	43.0	12.5	77.0	62.0
zirconium	7440-67-7	E440	0.20	mg/kg		<0.20	<0.20	<0.20	<0.40 DLM	<0.20
zirconium	7440-67-7	E440A	0.040	mg/kg wwt		<0.040	<0.040	<0.040	<0.080 DLM	<0.040

Please refer to the General Comments section for an explanation of any qualifiers detected.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WR2200752**	Page	: 1 of 82
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Whitehorse - Environmental
Contact	: Bill Bowden	Account Manager	: Emmanuel Mariano
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse, Yukon Canada Y1A 2V3
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 867 668 6689
Project	: Eagle Gold	Date Samples Received	: 22-Jul-2022 10:55
PO	: 26251	Issue Date	: 06-Sep-2022 16:44
C-O-C number	: ----		
Sampler	: David Krug		
Site	: Victoria Gold Corp.		
Quote number	: Q68199		
No. of samples received	: 75		
No. of samples analysed	: 75		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- Reference Material (RM) Sample outliers occur - please see the following pages for full details.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Biota**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Duplicate (DUP) RPDs								
Metals	WR2200752-052	D4-B, South, Salix leaves	bismuth	7440-69-9	E440A	0.0058 % DUP-H	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).
Metals	Anonymous	Anonymous	chromium	7440-47-3	E440A	53.4 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.

Result Qualifiers

Qualifier	Description
DUP-H	*Duplicate results outside ALS DQO, due to sample heterogeneity.*

Reference Material (RM) Sample								
Metals	QC-MRG8-622764003	----	lead	7439-92-1	E440	131 % MES	70.0-130%	Recovery greater than upper control limit
Metals	QC-MRG8-624391003	----	lead	7439-92-1	E440	135 % MES	70.0-130%	Recovery greater than upper control limit
Metals	QC-MRG8-622764003	----	lead	7439-92-1	E440A	131 % MES	70.0-130%	Recovery greater than upper control limit
Metals	QC-MRG8-624391003	----	lead	7439-92-1	E440A	135 % MES	70.0-130%	Recovery greater than upper control limit

Result Qualifiers

Qualifier	Description
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B Centre Salix Leaves 2	E510	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B, North dwarf birch leaves	E510	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B, West, dwarf birch leaves	E510	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D3-B, West, dwarf birch leaves	E510	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D4-B, East, dwarf birch leaves	E510	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D4-B, East, labrador tea leaves	E510	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D4-B, East, Salix leaves	E510	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D4-B, North, equisetum	E510	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D4-B, North, Salix leaves	E510	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D4-B, South, Salix leaves	E510	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D4-B, West labrador tea leaves	E510	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D4-B, West, dwarf birch leaves	E510	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D5, Centre, Salix leaves	E510	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D5, North, equisetum	E510	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D5, South, equisetum	E510	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D5, West, Salix leaves	E510	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D2-B, Centre, Salix leaves	E510	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	42 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D2-B, East, paper birch leaves	E510	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	42 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D2-B, South, Salix leaves	E510	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	42 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D2-B, West, equisetum	E510	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	42 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B East Salix Leaves 2	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B South Salix Leaves 2	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B, Centre Salix Twigs	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B, Centre, Dwarf birch leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B, Centre, Salix leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B, Composite, fescue	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B, East Salix twigs	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B, East, Dwarf birch leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B, East, Salix leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B, North, Salix leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B, North, Salix twigs	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B, South, dwarf birch leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B, South, Salix leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B, South, Salix twigs	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B, West, Salix leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D1-B, West, Salix twigs	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D-3B North Salix Twigs	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D3-B, Centre, dwarf birch leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D3-B, Centre, Salix leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D3-B, Centre, Salix twigs	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D3-B, East Salic twigs	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D3-B, East, dwarf birch leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D3-B, East, Salix leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D3-B, North dwarf birch leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D3-B, North, Salix leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D3-B, South Salix Leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D3-B, South Salix Twigs	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D3-B, South, dwarf birch leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D3-B, West, Salix leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D3-B, West, Salix twigs,	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D4-B Centre Labrador Tea Leaves-2	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D4-B North Salix Leaves-2	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D4-B, Centre, dwarf birch leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D4-B, North, Salix twigs	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D4-B, South, Salix twigs	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D5 Centre Equisetum-2	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D5 South Poplar Leaves-2	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D5, Centre, equisetum	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D5, East, poplar leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D5, East, poplar twigs	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D5, Noth, Salix leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D5, South, poplar leaves	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D5, South, poplar twigs	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D5, West, equisetum	E510	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D2-B, Centre, equisetum	E510	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D2-B, Centre, Salix twigs	E510	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D2-B, East, paper birch twigs	E510	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D2-B, North, equisetum	E510	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D2-B, North, Salix leaves	E510	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D2-B, North, Salix twigs	E510	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D2-B, South, dwarf birch	E510	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D2-B, South, Salix twigs	E510	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D2-B, West, Salix leaves	E510	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D2-B, West, Salix twigs	E510	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (DRY units, Routine)										
LDPE bag D4-B, Centre, labrador tea leaves	E510	21-Jul-2022	02-Sep-2022	----	----		03-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B Centre Salix Leaves 2	E510A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B, North dwarf birch leaves	E510A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B, West, dwarf birch leaves	E510A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D3-B, West, dwarf birch leaves	E510A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D4-B, East, dwarf birch leaves	E510A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D4-B, East, labrador tea leaves	E510A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D4-B, East, Salix leaves	E510A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D4-B, North, equisetum	E510A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D4-B, North, Salix leaves	E510A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D4-B, South, Salix leaves	E510A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D4-B, West labrador tea leaves	E510A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D4-B, West, dwarf birch leaves	E510A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D5, Centre, Salix leaves	E510A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D5, North, equisetum	E510A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D5, South, equisetum	E510A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D5, West, Salix leaves	E510A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	41 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D2-B, Centre, Salix leaves	E510A	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	42 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D2-B, East, paper birch leaves	E510A	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	42 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D2-B, South, Salix leaves	E510A	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	42 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D2-B, West, equisetum	E510A	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	365 days	42 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B East Salix Leaves 2	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B South Salix Leaves 2	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B, Centre Salix Twigs	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B, Centre, Dwarf birch leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B, Centre, Salix leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B, Composite, fescue	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B, East Salix twigs	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B, East, Dwarf birch leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B, East, Salix leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B, North, Salix leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B, North, Salix twigs	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B, South, dwarf birch leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B, South, Salix leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B, South, Salix twigs	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B, West, Salix leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D1-B, West, Salix twigs	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D-3B North Salix Twigs	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D3-B, Centre, dwarf birch leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D3-B, Centre, Salix leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D3-B, Centre, Salix twigs	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D3-B, East Salic twigs	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D3-B, East, dwarf birch leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D3-B, East, Salix leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D3-B, North dwarf birch leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D3-B, North, Salix leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D3-B, South Salix Leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D3-B, South Salix Twigs	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D3-B, South, dwarf birch leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D3-B, West, Salix leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D3-B, West, Salix twigs,	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D4-B Centre Labrador Tea Leaves-2	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D4-B North Salix Leaves-2	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D4-B, Centre, dwarf birch leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D4-B, North, Salix twigs	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D4-B, South, Salix twigs	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D5 Centre Equisetum-2	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D5 South Poplar Leaves-2	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D5, Centre, equisetum	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D5, East, poplar leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D5, East, poplar twigs	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D5, Noth, Salix leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D5, South, poplar leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D5, South, poplar twigs	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D5, West, equisetum	E510A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	43 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D2-B, Centre, equisetum	E510A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D2-B, Centre, Salix twigs	E510A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D2-B, East, paper birch twigs	E510A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D2-B, North, equisetum	E510A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D2-B, North, Salix leaves	E510A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D2-B, North, Salix twigs	E510A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D2-B, South, dwarf birch	E510A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D2-B, South, Salix twigs	E510A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D2-B, West, Salix leaves	E510A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D2-B, West, Salix twigs	E510A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	365 days	44 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Routine)										
LDPE bag D4-B, Centre, labrador tea leaves	E510A	21-Jul-2022	02-Sep-2022	----	----		03-Sep-2022	365 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B Centre Salix Leaves 2	E440	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, North dwarf birch leaves	E440	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, West, dwarf birch leaves	E440	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, West, dwarf birch leaves	E440	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, East, dwarf birch leaves	E440	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, East, labrador tea leaves	E440	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, East, Salix leaves	E440	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, North, equisetum	E440	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, North, Salix leaves	E440	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, South, Salix leaves	E440	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, West labrador tea leaves	E440	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, West, dwarf birch leaves	E440	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, Centre, Salix leaves	E440	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, North, equisetum	E440	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, South, equisetum	E440	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, West, Salix leaves	E440	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, Centre, Salix leaves	E440	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, East, paper birch leaves	E440	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, South, Salix leaves	E440	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, West, equisetum	E440	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B East Salix Leaves 2	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B South Salix Leaves 2	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, Centre Salix Twigs	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, Centre, Dwarf birch leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, Centre, Salix leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, Composite, fescue	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, East Salix twigs	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, East, Dwarf birch leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, East, Salix leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, North, Salix leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, North, Salix twigs	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, South, dwarf birch leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, South, Salix leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, South, Salix twigs	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, West, Salix leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, West, Salix twigs	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D-3B North Salix Twigs	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, Centre, dwarf birch leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, Centre, Salix leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, Centre, Salix twigs	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, East Salic twigs	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, East, dwarf birch leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, East, Salix leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, North dwarf birch leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, North, Salix leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, South Salix Leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, South Salix Twigs	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, South, dwarf birch leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, West, Salix leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, West, Salix twigs,	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B Centre Labrador Tea Leaves-2	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B North Salix Leaves-2	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, Centre, dwarf birch leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, North, Salix twigs	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, South, Salix twigs	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5 Centre Equisetum-2	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5 South Poplar Leaves-2	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, Centre, equisetum	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, East, poplar leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, East, poplar twigs	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, Noth, Salix leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, South, poplar leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, South, poplar twigs	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, West, equisetum	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, Centre, equisetum	E440	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, Centre, Salix twigs	E440	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, East, paper birch twigs	E440	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, North, equisetum	E440	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, North, Salix leaves	E440	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, North, Salix twigs	E440	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, South, dwarf birch	E440	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, South, Salix twigs	E440	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, West, Salix leaves	E440	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓

Matrix: **Biota**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, West, Salix twigs	E440	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, Centre, labrador tea leaves	E440	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B Centre Salix Leaves 2	E440A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, North dwarf birch leaves	E440A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, West, dwarf birch leaves	E440A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, West, dwarf birch leaves	E440A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, East, dwarf birch leaves	E440A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, East, labrador tea leaves	E440A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, East, Salix leaves	E440A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, North, equisetum	E440A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, North, Salix leaves	E440A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, South, Salix leaves	E440A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, West labrador tea leaves	E440A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, West, dwarf birch leaves	E440A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, Centre, Salix leaves	E440A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, North, equisetum	E440A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, South, equisetum	E440A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, West, Salix leaves	E440A	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓

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			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, Centre, Salix leaves	E440A	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, East, paper birch leaves	E440A	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, South, Salix leaves	E440A	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, West, equisetum	E440A	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B East Salix Leaves 2	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B South Salix Leaves 2	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, Centre Salix Twigs	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, Centre, Dwarf birch leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, Centre, Salix leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, Composite, fescue	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, East Salix twigs	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, East, Dwarf birch leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, East, Salix leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, North, Salix leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, North, Salix twigs	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, South, dwarf birch leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, South, Salix leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, South, Salix twigs	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, West, Salix leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, West, Salix twigs	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D-3B North Salix Twigs	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, Centre, dwarf birch leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, Centre, Salix leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, Centre, Salix twigs	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, East Salic twigs	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, East, dwarf birch leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, East, Salix leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, North dwarf birch leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, North, Salix leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, South Salix Leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, South Salix Twigs	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, South, dwarf birch leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, West, Salix leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, West, Salix twigs,	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B Centre Labrador Tea Leaves-2	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B North Salix Leaves-2	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, Centre, dwarf birch leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, North, Salix twigs	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, South, Salix twigs	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5 Centre Equisetum-2	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5 South Poplar Leaves-2	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, Centre, equisetum	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, East, poplar leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, East, poplar twigs	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, Noth, Salix leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, South, poplar leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, South, poplar twigs	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, West, equisetum	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, Centre, equisetum	E440A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, Centre, Salix twigs	E440A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, East, paper birch twigs	E440A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, North, equisetum	E440A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, North, Salix leaves	E440A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, North, Salix twigs	E440A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, South, dwarf birch	E440A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, South, Salix twigs	E440A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, West, Salix leaves	E440A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, West, Salix twigs	E440A	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Metals in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, Centre, labrador tea leaves	E440A	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B Centre Salix Leaves 2	E440.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, North dwarf birch leaves	E440.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, West, dwarf birch leaves	E440.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, West, dwarf birch leaves	E440.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, East, dwarf birch leaves	E440.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, East, labrador tea leaves	E440.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, East, Salix leaves	E440.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, North, equisetum	E440.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, North, Salix leaves	E440.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, South, Salix leaves	E440.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, West labrador tea leaves	E440.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, West, dwarf birch leaves	E440.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, Centre, Salix leaves	E440.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, North, equisetum	E440.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, South, equisetum	E440.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, West, Salix leaves	E440.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, Centre, Salix leaves	E440.Ag	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, East, paper birch leaves	E440.Ag	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, South, Salix leaves	E440.Ag	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, West, equisetum	E440.Ag	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B East Salix Leaves 2	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B South Salix Leaves 2	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

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Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

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			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, Centre Salix Twigs	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, Centre, Dwarf birch leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, Centre, Salix leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, Composite, fescue	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, East Salix twigs	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, East, Dwarf birch leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
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Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, North, Salix leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, North, Salix twigs	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

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			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, South, dwarf birch leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
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LDPE bag D1-B, South, Salix leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, South, Salix twigs	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, West, Salix leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, West, Salix twigs	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D-3B North Salix Twigs	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, Centre, dwarf birch leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, Centre, Salix leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, Centre, Salix twigs	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, East Salic twigs	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, East, dwarf birch leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, East, Salix leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, North dwarf birch leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, North, Salix leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, South Salix Leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, South Salix Twigs	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, South, dwarf birch leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, West, Salix leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, West, Salix twigs,	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B Centre Labrador Tea Leaves-2	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B North Salix Leaves-2	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, Centre, dwarf birch leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, North, Salix twigs	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, South, Salix twigs	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5 Centre Equisetum-2	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5 South Poplar Leaves-2	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, Centre, equisetum	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, East, poplar leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, East, poplar twigs	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, Noth, Salix leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, South, poplar leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, South, poplar twigs	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, West, equisetum	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, Centre, equisetum	E440.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, Centre, Salix twigs	E440.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, East, paper birch twigs	E440.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, North, equisetum	E440.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, North, Salix leaves	E440.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, North, Salix twigs	E440.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, South, dwarf birch	E440.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, South, Salix twigs	E440.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, West, Salix leaves	E440.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, West, Salix twigs	E440.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, Centre, labrador tea leaves	E440.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B Centre Salix Leaves 2	E440A.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, North dwarf birch leaves	E440A.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, West, dwarf birch leaves	E440A.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, West, dwarf birch leaves	E440A.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, East, dwarf birch leaves	E440A.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, East, labrador tea leaves	E440A.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, East, Salix leaves	E440A.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, North, equisetum	E440A.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, North, Salix leaves	E440A.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, South, Salix leaves	E440A.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, West labrador tea leaves	E440A.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, West, dwarf birch leaves	E440A.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, Centre, Salix leaves	E440A.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, North, equisetum	E440A.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, South, equisetum	E440A.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, West, Salix leaves	E440A.Ag	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, Centre, Salix leaves	E440A.Ag	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, East, paper birch leaves	E440A.Ag	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, South, Salix leaves	E440A.Ag	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, West, equisetum	E440A.Ag	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B East Salix Leaves 2	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B South Salix Leaves 2	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, Centre Salix Twigs	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, Centre, Dwarf birch leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, Centre, Salix leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, Composite, fescue	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, East Salix twigs	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, East, Dwarf birch leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

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			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, East, Salix leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, North, Salix leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, North, Salix twigs	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, South, dwarf birch leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, South, Salix leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, South, Salix twigs	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, West, Salix leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, West, Salix twigs	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D-3B North Salix Twigs	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

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Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, Centre, dwarf birch leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, Centre, Salix leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, Centre, Salix twigs	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, East Salic twigs	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, East, dwarf birch leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, East, Salix leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, North dwarf birch leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, North, Salix leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, South Salix Leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

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			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, South Salix Twigs	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, South, dwarf birch leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, West, Salix leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, West, Salix twigs,	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B Centre Labrador Tea Leaves-2	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B North Salix Leaves-2	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, Centre, dwarf birch leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, North, Salix twigs	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, South, Salix twigs	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5 Centre Equisetum-2	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5 South Poplar Leaves-2	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, Centre, equisetum	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, East, poplar leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, East, poplar twigs	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, Noth, Salix leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, South, poplar leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, South, poplar twigs	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, West, equisetum	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, Centre, equisetum	E440A.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, Centre, Salix twigs	E440A.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, East, paper birch twigs	E440A.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, North, equisetum	E440A.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, North, Salix leaves	E440A.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, North, Salix twigs	E440A.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, South, dwarf birch	E440A.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, South, Salix twigs	E440A.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, West, Salix leaves	E440A.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, West, Salix twigs	E440A.Ag	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Silver in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, Centre, labrador tea leaves	E440A.Ag	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B Centre Salix Leaves 2	E440.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, North dwarf birch leaves	E440.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, West, dwarf birch leaves	E440.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, West, dwarf birch leaves	E440.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, East, dwarf birch leaves	E440.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, East, labrador tea leaves	E440.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, East, Salix leaves	E440.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, North, equisetum	E440.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, North, Salix leaves	E440.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, South, Salix leaves	E440.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, West labrador tea leaves	E440.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, West, dwarf birch leaves	E440.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, Centre, Salix leaves	E440.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, North, equisetum	E440.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, South, equisetum	E440.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, West, Salix leaves	E440.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, Centre, Salix leaves	E440.Ti	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, East, paper birch leaves	E440.Ti	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, South, Salix leaves	E440.Ti	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, West, equisetum	E440.Ti	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B East Salix Leaves 2	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B South Salix Leaves 2	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, Centre Salix Twigs	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, Centre, Dwarf birch leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, Centre, Salix leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, Composite, fescue	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, East Salix twigs	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, East, Dwarf birch leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, East, Salix leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, North, Salix leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, North, Salix twigs	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, South, dwarf birch leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, South, Salix leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, South, Salix twigs	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, West, Salix leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D1-B, West, Salix twigs	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D-3B North Salix Twigs	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, Centre, dwarf birch leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, Centre, Salix leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, Centre, Salix twigs	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, East Salic twigs	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, East, dwarf birch leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, East, Salix leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, North dwarf birch leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, North, Salix leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, South Salix Leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, South Salix Twigs	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, South, dwarf birch leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, West, Salix leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D3-B, West, Salix twigs,	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B Centre Labrador Tea Leaves-2	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B North Salix Leaves-2	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, Centre, dwarf birch leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, North, Salix twigs	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, South, Salix twigs	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5 Centre Equisetum-2	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5 South Poplar Leaves-2	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, Centre, equisetum	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, East, poplar leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, East, poplar twigs	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, Noth, Salix leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

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Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, South, poplar leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, South, poplar twigs	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D5, West, equisetum	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, Centre, equisetum	E440.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, Centre, Salix twigs	E440.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, East, paper birch twigs	E440.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, North, equisetum	E440.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, North, Salix leaves	E440.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, North, Salix twigs	E440.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓

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Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, South, dwarf birch	E440.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, South, Salix twigs	E440.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, West, Salix leaves	E440.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D2-B, West, Salix twigs	E440.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (DRY units, Routine)										
LDPE bag D4-B, Centre, labrador tea leaves	E440.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B Centre Salix Leaves 2	E440A.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, North dwarf birch leaves	E440A.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, West, dwarf birch leaves	E440A.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, West, dwarf birch leaves	E440A.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, East, dwarf birch leaves	E440A.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, East, labrador tea leaves	E440A.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, East, Salix leaves	E440A.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, North, equisetum	E440A.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, North, Salix leaves	E440A.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, South, Salix leaves	E440A.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, West labrador tea leaves	E440A.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, West, dwarf birch leaves	E440A.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, Centre, Salix leaves	E440A.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, North, equisetum	E440A.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, South, equisetum	E440A.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, West, Salix leaves	E440A.Ti	21-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	41 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, Centre, Salix leaves	E440A.Ti	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, East, paper birch leaves	E440A.Ti	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, South, Salix leaves	E440A.Ti	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, West, equisetum	E440A.Ti	20-Jul-2022	30-Aug-2022	----	----		30-Aug-2022	730 days	42 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B East Salix Leaves 2	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B South Salix Leaves 2	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, Centre Salix Twigs	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, Centre, Dwarf birch leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, Centre, Salix leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, Composite, fescue	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, East Salix twigs	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, East, Dwarf birch leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, East, Salix leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, North, Salix leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, North, Salix twigs	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, South, dwarf birch leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, South, Salix leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, South, Salix twigs	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, West, Salix leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D1-B, West, Salix twigs	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D-3B North Salix Twigs	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, Centre, dwarf birch leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, Centre, Salix leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, Centre, Salix twigs	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, East Salic twigs	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, East, dwarf birch leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, East, Salix leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, North dwarf birch leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, North, Salix leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, South Salix Leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, South Salix Twigs	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, South, dwarf birch leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, West, Salix leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D3-B, West, Salix twigs,	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B Centre Labrador Tea Leaves-2	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B North Salix Leaves-2	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, Centre, dwarf birch leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, North, Salix twigs	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, South, Salix twigs	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5 Centre Equisetum-2	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5 South Poplar Leaves-2	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, Centre, equisetum	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, East, poplar leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, East, poplar twigs	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, Noth, Salix leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, South, poplar leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, South, poplar twigs	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D5, West, equisetum	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	43 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, Centre, equisetum	E440A.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, Centre, Salix twigs	E440A.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, East, paper birch twigs	E440A.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, North, equisetum	E440A.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, North, Salix leaves	E440A.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, North, Salix twigs	E440A.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, South, dwarf birch	E440A.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, South, Salix twigs	E440A.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, West, Salix leaves	E440A.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D2-B, West, Salix twigs	E440A.Ti	20-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Metals : Titanium in Biota by CRC ICPMS (WET units, Routine)										
LDPE bag D4-B, Centre, labrador tea leaves	E440A.Ti	21-Jul-2022	02-Sep-2022	----	----		02-Sep-2022	730 days	44 days	✓
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B Centre Salix Leaves 2	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B East Salix Leaves 2	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B South Salix Leaves 2	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B, Centre Salix Twigs	E144	21-Jul-2022	----	----	----		23-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B, Centre, Dwarf birch leaves	E144	21-Jul-2022	----	----	----		23-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B, Centre, Salix leaves	E144	21-Jul-2022	----	----	----		23-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B, Composite, fescue	E144	21-Jul-2022	----	----	----		23-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B, East Salix twigs	E144	21-Jul-2022	----	----	----		23-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B, East, Dwarf birch leaves	E144	21-Jul-2022	----	----	----		23-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B, East, Salix leaves	E144	21-Jul-2022	----	----	----		23-Aug-2022	----	----	

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B, North dwarf birch leaves	E144	21-Jul-2022	----	----	----		23-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B, North, Salix leaves	E144	21-Jul-2022	----	----	----		23-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B, North, Salix twigs	E144	21-Jul-2022	----	----	----		23-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B, South, dwarf birch leaves	E144	21-Jul-2022	----	----	----		23-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B, South, Salix leaves	E144	21-Jul-2022	----	----	----		23-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B, South, Salix twigs	E144	21-Jul-2022	----	----	----		23-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B, West, dwarf birch leaves	E144	21-Jul-2022	----	----	----		23-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B, West, Salix leaves	E144	21-Jul-2022	----	----	----		23-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D1-B, West, Salix twigs	E144	21-Jul-2022	----	----	----		23-Aug-2022	----	----	

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D2-B, Centre, equisetum	E144	20-Jul-2022	----	----	----		23-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D2-B, Centre, Salix leaves	E144	20-Jul-2022	----	----	----		23-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D2-B, Centre, Salix twigs	E144	20-Jul-2022	----	----	----		23-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D2-B, East, paper birch leaves	E144	20-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D2-B, East, paper birch twigs	E144	20-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D2-B, North, equisetum	E144	20-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D2-B, North, Salix leaves	E144	20-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D2-B, North, Salix twigs	E144	20-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D2-B, South, dwarf birch	E144	20-Jul-2022	----	----	----		24-Aug-2022	----	----	

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D2-B, South, Salix leaves	E144	20-Jul-2022	----	----	----		23-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D2-B, South, Salix twigs	E144	20-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D2-B, West, equisetum	E144	20-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D2-B, West, Salix leaves	E144	20-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D2-B, West, Salix twigs	E144	20-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D-3B North Salix Twigs	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D3-B, Centre, dwarf birch leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D3-B, Centre, Salix leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D3-B, Centre, Salix twigs	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D3-B, East Salic twigs	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D3-B, East, dwarf birch leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D3-B, East, Salix leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D3-B, North dwarf birch leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D3-B, North, Salix leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D3-B, South Salix Leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D3-B, South Salix Twigs	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D3-B, South, dwarf birch leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D3-B, West, dwarf birch leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D3-B, West, Salix leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D3-B, West, Salix twigs,	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D4-B Centre Labrador Tea Leaves-2	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D4-B North Salix Leaves-2	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D4-B, Centre, dwarf birch leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D4-B, Centre, labrador tea leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D4-B, East, dwarf birch leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D4-B, East, labrador tea leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D4-B, East, Salix leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D4-B, North, equisetum	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D4-B, North, Salix leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D4-B, North, Salix twigs	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D4-B, South, Salix leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D4-B, South, Salix twigs	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D4-B, West labrador tea leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D4-B, West, dwarf birch leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D5 Centre Equisetum-2	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D5 South Poplar Leaves-2	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D5, Centre, equisetum	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D5, Centre, Salix leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D5, East, poplar leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D5, East, poplar twigs	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D5, North, equisetum	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D5, Noth, Salix leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D5, South, equisetum	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D5, South, poplar leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag D5, South, poplar twigs	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	

Matrix: **Biota**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
LDPE bag										
D5, West, equisetum	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag										
D5, West, Salix leaves	E144	21-Jul-2022	----	----	----		24-Aug-2022	----	----	

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Biota**

Evaluation: ✗ = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Mercury in Biota by CVAAS (DRY units, Routine)	E510	622764	5	77	6.4	5.0	✓
Mercury in Biota by CVAAS (WET units, Routine)	E510A	622771	5	77	6.4	5.0	✓
Metals in Biota by CRC ICPMS (DRY units, Routine)	E440	622765	5	77	6.4	5.0	✓
Metals in Biota by CRC ICPMS (WET units, Routine)	E440A	622770	5	77	6.4	5.0	✓
Moisture Content by Gravimetry	E144	615359	4	75	5.3	5.0	✓
Silver in Biota by CRC ICPMS (DRY units, Routine)	E440.Ag	622766	5	77	6.4	5.0	✓
Silver in Biota by CRC ICPMS (WET units, Routine)	E440A.Ag	622768	5	77	6.4	5.0	✓
Titanium in Biota by CRC ICPMS (DRY units, Routine)	E440.Ti	622767	5	75	6.6	5.0	✓
Titanium in Biota by CRC ICPMS (WET units, Routine)	E440A.Ti	622769	5	75	6.6	5.0	✓
Laboratory Control Samples (LCS)							
Mercury in Biota by CVAAS (DRY units, Routine)	E510	622764	10	77	12.9	10.0	✓
Mercury in Biota by CVAAS (WET units, Routine)	E510A	622771	10	77	12.9	10.0	✓
Metals in Biota by CRC ICPMS (DRY units, Routine)	E440	622765	10	77	12.9	10.0	✓
Metals in Biota by CRC ICPMS (WET units, Routine)	E440A	622770	10	77	12.9	10.0	✓
Moisture Content by Gravimetry	E144	615359	4	75	5.3	5.0	✓
Silver in Biota by CRC ICPMS (DRY units, Routine)	E440.Ag	622766	10	77	12.9	10.0	✓
Silver in Biota by CRC ICPMS (WET units, Routine)	E440A.Ag	622768	10	77	12.9	10.0	✓
Titanium in Biota by CRC ICPMS (DRY units, Routine)	E440.Ti	622767	6	75	8.0	10.0	✗
Titanium in Biota by CRC ICPMS (WET units, Routine)	E440A.Ti	622769	6	75	8.0	10.0	✗
Method Blanks (MB)							
Mercury in Biota by CVAAS (DRY units, Routine)	E510	622764	5	77	6.4	5.0	✓
Mercury in Biota by CVAAS (WET units, Routine)	E510A	622771	5	77	6.4	5.0	✓
Metals in Biota by CRC ICPMS (DRY units, Routine)	E440	622765	5	77	6.4	5.0	✓
Metals in Biota by CRC ICPMS (WET units, Routine)	E440A	622770	5	77	6.4	5.0	✓
Moisture Content by Gravimetry	E144	615359	4	75	5.3	5.0	✓
Silver in Biota by CRC ICPMS (DRY units, Routine)	E440.Ag	622766	5	77	6.4	5.0	✓
Silver in Biota by CRC ICPMS (WET units, Routine)	E440A.Ag	622768	5	77	6.4	5.0	✓
Titanium in Biota by CRC ICPMS (DRY units, Routine)	E440.Ti	622767	5	75	6.6	5.0	✓
Titanium in Biota by CRC ICPMS (WET units, Routine)	E440A.Ti	622769	5	75	6.6	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Biota	Puget Sound Water Quality Authority/CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Metals in Biota by CRC ICPMS (DRY units, Routine)	E440 Vancouver - Environmental	Biota	EPA 200.3/6020B (mod)	Tissue samples are homogenized and sub-sampled prior to hotblock digestion with HNO3, HCl, and H2O2. Analysis is by Collision/Reaction Cell ICPMS. Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.
Silver in Biota by CRC ICPMS (DRY units, Routine)	E440.Ag Vancouver - Environmental	Biota	EPA 200.3/6020B (mod)	Tissue samples are homogenized and sub-sampled prior to hotblock digestion with HNO3, HCl, and H2O2. Analysis is by Collision/Reaction Cell ICPMS. Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.
Titanium in Biota by CRC ICPMS (DRY units, Routine)	E440.Ti Vancouver - Environmental	Biota	EPA 200.3/6020B (mod)	Tissue samples are homogenized and sub-sampled prior to hotblock digestion with HNO3, HCl, and H2O2. Analysis is by Collision/Reaction Cell ICPMS. Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.
Metals in Biota by CRC ICPMS (WET units, Routine)	E440A Vancouver - Environmental	Biota	EPA 200.3/6020B (mod)	Tissue samples are homogenized and sub-sampled prior to hotblock digestion with HNO3, HCl, and H2O2. Analysis is by Collision/Reaction Cell ICPMS. Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.
Silver in Biota by CRC ICPMS (WET units, Routine)	E440A.Ag Vancouver - Environmental	Biota	EPA 200.3/6020B (mod)	Tissue samples are homogenized and sub-sampled prior to hotblock digestion with HNO3, HCl, and H2O2. Analysis is by Collision/Reaction Cell ICPMS. Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Titanium in Biota by CRC ICPMS (WET units, Routine)	E440A.Ti Vancouver - Environmental	Biota	EPA 200.3/6020B (mod)	Tissue samples are homogenized and sub-sampled prior to hotblock digestion with HNO3, HCl, and H2O2. Analysis is by Collision/Reaction Cell ICPMS. Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.
Mercury in Biota by CVAAS (DRY units, Routine)	E510 Vancouver - Environmental	Biota	EPA 200.3/1631 Appendix (mod)	Samples are homogenized and sub-sampled prior to hotblock digestion with HNO3, HCl, and H2O2. Analysis is by CVAAS.
Mercury in Biota by CVAAS (WET units, Routine)	E510A Vancouver - Environmental	Biota	EPA 200.3/1631 Appendix (mod)	Samples are homogenized and sub-sampled prior to hotblock digestion with HNO3, HCl, and H2O2. Analysis is by CVAAS.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Metals and Mercury Biota Digestion	EP440 Vancouver - Environmental	Biota	EPA 200.3	This method uses a heated strong acid digestion with HNO3, HCl, and H2O2 and is intended to provide a conservative estimate of bio-available metals.

QUALITY CONTROL REPORT

Work Order	: **WR2200752**	Page	: 1 of 49
Client	: Victoria Gold (Yukon) Corp.	Laboratory	: Whitehorse - Environmental
Contact	: Bill Bowden	Account Manager	: Emmanuel Mariano
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: #12 151 Industrial Road Whitehorse, Yukon Canada Y1A 2V3
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 867 668 6689
Project	: Eagle Gold	Date Samples Received	: 22-Jul-2022 10:55
PO	: 26251	Date Analysis Commenced	: 23-Aug-2022
C-O-C number	: ----	Issue Date	: 06-Sep-2022 16:44
Sampler	: David Krug		
Site	: Victoria Gold Corp.		
Quote number	: Q68199		
No. of samples received	: 75		
No. of samples analysed	: 75		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Hamideh Moradi	Analyst	Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Vancouver Metals, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia
Salimah Khimani	Lab Assistant	Vancouver Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Biota**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 615359)											
WR2200752-001	D1-B, Centre, Salix leaves	moisture	----	E144	0.50	%	63.7	64.7	1.55%	20%	----
Physical Tests (QC Lot: 616216)											
WR2200752-021	D2-B, South, Salix twigs	moisture	----	E144	0.50	%	51.9	51.6	0.494%	20%	----
Physical Tests (QC Lot: 616219)											
WR2200752-041	D3-B, West, Salix twigs,	moisture	----	E144	0.50	%	61.2	62.5	2.09%	20%	----
Physical Tests (QC Lot: 616225)											
WR2200752-061	D5, South, poplar leaves	moisture	----	E144	0.50	%	68.4	68.0	0.514%	20%	----
Metals (QC Lot: 622764)											
WR2200752-052	D4-B, South, Salix leaves	mercury	7439-97-6	E510	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
Metals (QC Lot: 622765)											
WR2200752-052	D4-B, South, Salix leaves	aluminum	7429-90-5	E440	2.0	mg/kg	33.4	35.1	4.95%	40%	----
		antimony	7440-36-0	E440	0.010	mg/kg	0.051	0.054	5.71%	40%	----
		arsenic	7440-38-2	E440	0.020	mg/kg	0.986	0.942	4.60%	40%	----
		barium	7440-39-3	E440	0.050	mg/kg	10.2	9.85	3.75%	40%	----
		beryllium	7440-41-7	E440	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		bismuth	7440-69-9	E440	0.010	mg/kg	0.012	0.026	0.014	Diff <2x LOR	----
		boron	7440-42-8	E440	1.0	mg/kg	3.7	3.8	0.1	Diff <2x LOR	----
		cadmium	7440-43-9	E440	0.0050	mg/kg	0.394	0.377	4.46%	40%	----
		calcium	7440-70-2	E440	20	mg/kg	7590	7680	1.18%	60%	----
		cesium	7440-46-2	E440	0.0050	mg/kg	0.0222	0.0225	0.0002	Diff <2x LOR	----
		chromium	7440-47-3	E440	0.050	mg/kg	0.084	0.075	0.009	Diff <2x LOR	----
		cobalt	7440-48-4	E440	0.020	mg/kg	0.493	0.498	1.09%	40%	----
		copper	7440-50-8	E440	0.10	mg/kg	1.56	1.57	0.689%	40%	----
		iron	7439-89-6	E440	3.0	mg/kg	115	115	0.247%	40%	----
		lead	7439-92-1	E440	0.020	mg/kg	0.144	0.149	3.32%	40%	----
		lithium	7439-93-2	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		magnesium	7439-95-4	E440	2.0	mg/kg	2730	2650	2.81%	40%	----
		manganese	7439-96-5	E440	0.050	mg/kg	58.2	58.6	0.574%	40%	----
		molybdenum	7439-98-7	E440	0.020	mg/kg	0.209	0.200	4.26%	40%	----
		nickel	7440-02-0	E440	0.20	mg/kg	0.24	0.26	0.01	Diff <2x LOR	----
		phosphorus	7723-14-0	E440	10	mg/kg	1340	1260	6.69%	40%	----

Sub-Matrix: **Biota**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Metals (QC Lot: 622765) - continued											
WR2200752-052	D4-B, South, Salix leaves	potassium	7440-09-7	E440	20	mg/kg	11800	11300	4.27%	40%	----
		rubidium	7440-17-7	E440	0.050	mg/kg	4.90	4.76	2.70%	40%	----
		selenium	7782-49-2	E440	0.050	mg/kg	0.202	0.215	0.013	Diff <2x LOR	----
		sodium	7440-23-5	E440	20	mg/kg	<20	<20	0	Diff <2x LOR	----
		strontium	7440-24-6	E440	0.050	mg/kg	27.4	26.3	3.80%	60%	----
		tellurium	13494-80-9	E440	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		thallium	7440-28-0	E440	0.0020	mg/kg	<0.0020	<0.0020	0	Diff <2x LOR	----
		tin	7440-31-5	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		uranium	7440-61-1	E440	0.0020	mg/kg	0.0088	0.0080	0.0008	Diff <2x LOR	----
		vanadium	7440-62-2	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		zinc	7440-66-6	E440	0.50	mg/kg	54.2	51.6	4.86%	40%	----
		zirconium	7440-67-7	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
Metals (QC Lot: 622766)											
WR2200752-052	D4-B, South, Salix leaves	silver	7440-22-4	E440.Ag	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
Metals (QC Lot: 622767)											
WR2200752-052	D4-B, South, Salix leaves	titanium	7440-32-6	E440.Ti	0.25	mg/kg	1.74	1.70	2.19%	40%	----
Metals (QC Lot: 622768)											
WR2200752-052	D4-B, South, Salix leaves	silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt	<0.0010	<0.0010	0	Diff <2x LOR	----
Metals (QC Lot: 622769)											
WR2200752-052	D4-B, South, Salix leaves	titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt	0.710	0.694	2.19%	40%	----
Metals (QC Lot: 622770)											
WR2200752-052	D4-B, South, Salix leaves	aluminum	7429-90-5	E440A	0.40	mg/kg wwt	13.6	14.3	4.95%	40%	----
		antimony	7440-36-0	E440A	0.0020	mg/kg wwt	0.0209	0.0221	5.71%	40%	----
		arsenic	7440-38-2	E440A	0.0040	mg/kg wwt	0.402	0.384	4.60%	40%	----
		barium	7440-39-3	E440A	0.010	mg/kg wwt	4.17	4.02	3.75%	40%	----
		beryllium	7440-41-7	E440A	0.0020	mg/kg wwt	<0.0020	<0.0020	0	Diff <2x LOR	----
		bismuth	7440-69-9	E440A	0.0020	mg/kg wwt	0.0048	# 0.0107	0.0058	Diff <2x LOR	DUP-H
		boron	7440-42-8	E440A	0.20	mg/kg wwt	1.51	1.55	3.12%	40%	----
		cadmium	7440-43-9	E440A	0.0010	mg/kg wwt	0.161	0.154	4.46%	40%	----
		calcium	7440-70-2	E440A	4.0	mg/kg wwt	3100	3130	1.18%	60%	----
		cesium	7440-46-2	E440A	0.0010	mg/kg wwt	0.0090	0.0092	1.13%	40%	----
		chromium	7440-47-3	E440A	0.010	mg/kg wwt	0.034	0.031	0.004	Diff <2x LOR	----
		cobalt	7440-48-4	E440A	0.0040	mg/kg wwt	0.201	0.203	1.09%	40%	----
		copper	7440-50-8	E440A	0.020	mg/kg wwt	0.635	0.640	0.689%	40%	----
		iron	7439-89-6	E440A	0.60	mg/kg wwt	46.7	46.8	0.247%	40%	----

Sub-Matrix: **Biota**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 622770) - continued											
WR2200752-052	D4-B, South, Salix leaves	lead	7439-92-1	E440A	0.0040	mg/kg wwt	0.0587	0.0607	3.32%	40%	----
		lithium	7439-93-2	E440A	0.10	mg/kg wwt	<0.10	<0.10	0	Diff <2x LOR	----
		magnesium	7439-95-4	E440A	0.40	mg/kg wwt	1110	1080	2.81%	40%	----
		manganese	7439-96-5	E440A	0.010	mg/kg wwt	23.7	23.9	0.574%	40%	----
		molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt	0.0850	0.0815	4.26%	40%	----
		nickel	7440-02-0	E440A	0.040	mg/kg wwt	0.100	0.105	0.006	Diff <2x LOR	----
		phosphorus	7723-14-0	E440A	2.0	mg/kg wwt	549	513	6.69%	40%	----
		potassium	7440-09-7	E440A	4.0	mg/kg wwt	4820	4620	4.27%	40%	----
		rubidium	7440-17-7	E440A	0.010	mg/kg wwt	2.00	1.94	2.70%	40%	----
		selenium	7782-49-2	E440A	0.010	mg/kg wwt	0.082	0.087	6.10%	40%	----
		sodium	7440-23-5	E440A	4.0	mg/kg wwt	<4.0	<4.0	0	Diff <2x LOR	----
		strontium	7440-24-6	E440A	0.010	mg/kg wwt	11.2	10.7	3.80%	60%	----
		tellurium	13494-80-9	E440A	0.0040	mg/kg wwt	<0.0040	<0.0040	0	Diff <2x LOR	----
		thallium	7440-28-0	E440A	0.00040	mg/kg wwt	<0.00040	<0.00040	0	Diff <2x LOR	----
		tin	7440-31-5	E440A	0.020	mg/kg wwt	0.025	0.025	0.0003	Diff <2x LOR	----
		uranium	7440-61-1	E440A	0.00040	mg/kg wwt	0.00358	0.00327	9.00%	40%	----
		vanadium	7440-62-2	E440A	0.020	mg/kg wwt	0.028	0.027	0.0006	Diff <2x LOR	----
		zinc	7440-66-6	E440A	0.10	mg/kg wwt	22.1	21.0	4.86%	40%	----
		zirconium	7440-67-7	E440A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
Metals (QC Lot: 622771)											
WR2200752-052	D4-B, South, Salix leaves	mercury	7439-97-6	E510A	0.0012	mg/kg wwt	<0.0012	0.0015	0.0002	Diff <2x LOR	----
Metals (QC Lot: 624361)											
WR2200752-003	D1-B, Centre, Dwarf birch leaves	aluminum	7429-90-5	E440	2.0	mg/kg	13.0	13.2	1.08%	40%	----
		antimony	7440-36-0	E440	0.010	mg/kg	0.013	<0.010	0.003	Diff <2x LOR	----
		arsenic	7440-38-2	E440	0.020	mg/kg	0.172	0.169	2.05%	40%	----
		barium	7440-39-3	E440	0.050	mg/kg	41.8	42.6	2.03%	40%	----
		beryllium	7440-41-7	E440	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		bismuth	7440-69-9	E440	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		boron	7440-42-8	E440	1.0	mg/kg	8.5	8.6	0.549%	40%	----
		cadmium	7440-43-9	E440	0.0050	mg/kg	0.399	0.407	2.06%	40%	----
		calcium	7440-70-2	E440	20	mg/kg	4500	4490	0.150%	60%	----
		cesium	7440-46-2	E440	0.0050	mg/kg	0.0435	0.0433	0.518%	40%	----
		chromium	7440-47-3	E440	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt	7440-48-4	E440	0.020	mg/kg	0.330	0.340	3.12%	40%	----
		copper	7440-50-8	E440	0.10	mg/kg	4.65	4.78	2.90%	40%	----

Sub-Matrix: **Biota**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 624361) - continued											
WR2200752-003	D1-B, Centre, Dwarf birch leaves	iron	7439-89-6	E440	3.0	mg/kg	65.0	69.9	7.22%	40%	----
		lead	7439-92-1	E440	0.020	mg/kg	0.053	0.046	0.006	Diff <2x LOR	----
		lithium	7439-93-2	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		magnesium	7439-95-4	E440	2.0	mg/kg	2340	2490	6.47%	40%	----
		manganese	7439-96-5	E440	0.050	mg/kg	2520	2650	4.95%	40%	----
		molybdenum	7439-98-7	E440	0.020	mg/kg	0.021	<0.020	0.0010	Diff <2x LOR	----
		nickel	7440-02-0	E440	0.20	mg/kg	2.11	2.14	1.64%	40%	----
		phosphorus	7723-14-0	E440	10	mg/kg	3350	3400	1.53%	40%	----
		potassium	7440-09-7	E440	20	mg/kg	6890	7120	3.33%	40%	----
		rubidium	7440-17-7	E440	0.050	mg/kg	19.6	19.9	1.53%	40%	----
		selenium	7782-49-2	E440	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		sodium	7440-23-5	E440	20	mg/kg	<20	<20	0	Diff <2x LOR	----
		strontium	7440-24-6	E440	0.050	mg/kg	12.5	12.8	2.71%	60%	----
		tellurium	13494-80-9	E440	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		thallium	7440-28-0	E440	0.0020	mg/kg	<0.0020	<0.0020	0	Diff <2x LOR	----
		tin	7440-31-5	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		uranium	7440-61-1	E440	0.0020	mg/kg	<0.0020	<0.0020	0	Diff <2x LOR	----
		vanadium	7440-62-2	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		zinc	7440-66-6	E440	0.50	mg/kg	293	302	2.97%	40%	----
		zirconium	7440-67-7	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
Metals (QC Lot: 624362)											
WR2200752-003	D1-B, Centre, Dwarf birch leaves	mercury	7439-97-6	E510	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
Metals (QC Lot: 624363)											
WR2200752-003	D1-B, Centre, Dwarf birch leaves	silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt	0.0014	0.0015	0.0001	Diff <2x LOR	----
Metals (QC Lot: 624364)											
WR2200752-003	D1-B, Centre, Dwarf birch leaves	titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt	0.206	0.212	0.006	Diff <2x LOR	----
Metals (QC Lot: 624365)											
WR2200752-003	D1-B, Centre, Dwarf birch leaves	silver	7440-22-4	E440.Ag	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
Metals (QC Lot: 624366)											
WR2200752-003	D1-B, Centre, Dwarf birch leaves	titanium	7440-32-6	E440.Ti	0.25	mg/kg	0.66	0.68	0.02	Diff <2x LOR	----
Metals (QC Lot: 624367)											
WR2200752-003	D1-B, Centre, Dwarf birch leaves	aluminum	7429-90-5	E440A	0.40	mg/kg wwt	4.04	4.09	1.08%	40%	----

Sub-Matrix: **Biota**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Metals (QC Lot: 624367) - continued											
WR2200752-003	D1-B, Centre, Dwarf birch leaves	antimony	7440-36-0	E440A	0.0020	mg/kg wwt	0.0040	0.0030	0.0011	Diff <2x LOR	----
		arsenic	7440-38-2	E440A	0.0040	mg/kg wwt	0.0535	0.0524	2.05%	40%	----
		barium	7440-39-3	E440A	0.010	mg/kg wwt	13.0	13.2	2.03%	40%	----
		beryllium	7440-41-7	E440A	0.0020	mg/kg wwt	<0.0020	<0.0020	0	Diff <2x LOR	----
		bismuth	7440-69-9	E440A	0.0020	mg/kg wwt	<0.0020	<0.0020	0	Diff <2x LOR	----
		boron	7440-42-8	E440A	0.20	mg/kg wwt	2.64	2.66	0.549%	40%	----
		cadmium	7440-43-9	E440A	0.0010	mg/kg wwt	0.124	0.126	2.06%	40%	----
		calcium	7440-70-2	E440A	4.0	mg/kg wwt	1400	1390	0.150%	60%	----
		cesium	7440-46-2	E440A	0.0010	mg/kg wwt	0.0135	0.0134	0.518%	40%	----
		chromium	7440-47-3	E440A	0.010	mg/kg wwt	<0.010	<0.010	0	Diff <2x LOR	----
		cobalt	7440-48-4	E440A	0.0040	mg/kg wwt	0.102	0.106	3.12%	40%	----
		copper	7440-50-8	E440A	0.020	mg/kg wwt	1.44	1.48	2.90%	40%	----
		iron	7439-89-6	E440A	0.60	mg/kg wwt	20.2	21.7	7.22%	40%	----
		lead	7439-92-1	E440A	0.0040	mg/kg wwt	0.0164	0.0144	0.0020	Diff <2x LOR	----
		lithium	7439-93-2	E440A	0.10	mg/kg wwt	<0.10	<0.10	0	Diff <2x LOR	----
		magnesium	7439-95-4	E440A	0.40	mg/kg wwt	725	774	6.47%	40%	----
		manganese	7439-96-5	E440A	0.010	mg/kg wwt	783	823	4.95%	40%	----
		molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt	0.0065	0.0061	0.0004	Diff <2x LOR	----
		nickel	7440-02-0	E440A	0.040	mg/kg wwt	0.655	0.666	1.64%	40%	----
		phosphorus	7723-14-0	E440A	2.0	mg/kg wwt	1040	1060	1.53%	40%	----
		potassium	7440-09-7	E440A	4.0	mg/kg wwt	2140	2210	3.33%	40%	----
		rubidium	7440-17-7	E440A	0.010	mg/kg wwt	6.09	6.18	1.53%	40%	----
		selenium	7782-49-2	E440A	0.010	mg/kg wwt	<0.010	<0.010	0	Diff <2x LOR	----
		sodium	7440-23-5	E440A	4.0	mg/kg wwt	<4.0	<4.0	0	Diff <2x LOR	----
		strontium	7440-24-6	E440A	0.010	mg/kg wwt	3.87	3.98	2.71%	60%	----
		tellurium	13494-80-9	E440A	0.0040	mg/kg wwt	<0.0040	<0.0040	0	Diff <2x LOR	----
		thallium	7440-28-0	E440A	0.00040	mg/kg wwt	<0.00040	<0.00040	0	Diff <2x LOR	----
		tin	7440-31-5	E440A	0.020	mg/kg wwt	<0.020	<0.020	0	Diff <2x LOR	----
		uranium	7440-61-1	E440A	0.00040	mg/kg wwt	<0.00040	0.00052	0.00012	Diff <2x LOR	----
		vanadium	7440-62-2	E440A	0.020	mg/kg wwt	<0.020	<0.020	0	Diff <2x LOR	----
		zinc	7440-66-6	E440A	0.10	mg/kg wwt	90.8	93.6	2.97%	40%	----
		zirconium	7440-67-7	E440A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
Metals (QC Lot: 624368)											
WR2200752-003	D1-B, Centre, Dwarf birch leaves	mercury	7439-97-6	E510A	0.0010	mg/kg wwt	0.0012	0.0012	0.00001	Diff <2x LOR	----

Sub-Matrix: **Biota**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 624379)											
WR2200752-034	D3-B, South, dwarf birch leaves	mercury	7439-97-6	E510	0.0050	mg/kg	0.0056	0.0052	0.0004	Diff <2x LOR	----
Metals (QC Lot: 624380)											
WR2200752-034	D3-B, South, dwarf birch leaves	aluminum	7429-90-5	E440	2.0	mg/kg	79.0	74.6	5.79%	40%	----
		antimony	7440-36-0	E440	0.010	mg/kg	0.074	0.087	15.6%	40%	----
		arsenic	7440-38-2	E440	0.020	mg/kg	1.01	1.03	1.93%	40%	----
		barium	7440-39-3	E440	0.050	mg/kg	37.2	38.8	4.18%	40%	----
		beryllium	7440-41-7	E440	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		bismuth	7440-69-9	E440	0.010	mg/kg	0.041	0.059	36.0%	40%	----
		boron	7440-42-8	E440	1.0	mg/kg	6.1	6.7	10.0%	40%	----
		cadmium	7440-43-9	E440	0.0050	mg/kg	0.252	0.271	7.32%	40%	----
		calcium	7440-70-2	E440	20	mg/kg	4910	5110	4.06%	60%	----
		cesium	7440-46-2	E440	0.0050	mg/kg	0.0679	0.0672	0.921%	40%	----
		chromium	7440-47-3	E440	0.050	mg/kg	0.170	0.172	0.002	Diff <2x LOR	----
		cobalt	7440-48-4	E440	0.020	mg/kg	0.420	0.436	3.81%	40%	----
		copper	7440-50-8	E440	0.10	mg/kg	5.08	5.18	1.96%	40%	----
		iron	7439-89-6	E440	3.0	mg/kg	154	159	2.85%	40%	----
		lead	7439-92-1	E440	0.020	mg/kg	0.274	0.302	9.71%	40%	----
		lithium	7439-93-2	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		magnesium	7439-95-4	E440	2.0	mg/kg	2280	2330	2.27%	40%	----
		manganese	7439-96-5	E440	0.050	mg/kg	2110	2060	2.46%	40%	----
		molybdenum	7439-98-7	E440	0.020	mg/kg	0.048	0.048	0.00008	Diff <2x LOR	----
		nickel	7440-02-0	E440	0.20	mg/kg	4.64	4.62	0.515%	40%	----
		phosphorus	7723-14-0	E440	10	mg/kg	3890	3790	2.61%	40%	----
		potassium	7440-09-7	E440	20	mg/kg	7670	7720	0.676%	40%	----
		rubidium	7440-17-7	E440	0.050	mg/kg	14.3	14.3	0.270%	40%	----
		selenium	7782-49-2	E440	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		sodium	7440-23-5	E440	20	mg/kg	<20	<20	0	Diff <2x LOR	----
		strontium	7440-24-6	E440	0.050	mg/kg	11.8	12.0	1.39%	60%	----
		tellurium	13494-80-9	E440	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		thallium	7440-28-0	E440	0.0020	mg/kg	<0.0020	<0.0020	0	Diff <2x LOR	----
		tin	7440-31-5	E440	0.10	mg/kg	0.16	0.17	0.01	Diff <2x LOR	----
		uranium	7440-61-1	E440	0.0020	mg/kg	0.0150	0.0151	0.443%	40%	----
		vanadium	7440-62-2	E440	0.10	mg/kg	0.13	0.13	0.0006	Diff <2x LOR	----
		zinc	7440-66-6	E440	0.50	mg/kg	175	178	1.72%	40%	----
		zirconium	7440-67-7	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----

Sub-Matrix: **Biota**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 624381)											
WR2200752-034	D3-B, South, dwarf birch leaves	silver	7440-22-4	E440.Ag	0.0050	mg/kg	0.0064	0.0085	0.0021	Diff <2x LOR	----
Metals (QC Lot: 624382)											
WR2200752-034	D3-B, South, dwarf birch leaves	titanium	7440-32-6	E440.Ti	0.25	mg/kg	4.50	4.32	4.00%	40%	----
Metals (QC Lot: 624383)											
WR2200752-034	D3-B, South, dwarf birch leaves	silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt	0.0022	0.0029	0.0007	Diff <2x LOR	----
Metals (QC Lot: 624384)											
WR2200752-034	D3-B, South, dwarf birch leaves	titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt	1.52	1.46	4.00%	40%	----
Metals (QC Lot: 624385)											
WR2200752-034	D3-B, South, dwarf birch leaves	aluminum	7429-90-5	E440A	0.40	mg/kg wwt	26.6	25.1	5.79%	40%	----
		antimony	7440-36-0	E440A	0.0020	mg/kg wwt	0.0251	0.0294	15.6%	40%	----
		arsenic	7440-38-2	E440A	0.0040	mg/kg wwt	0.341	0.348	1.93%	40%	----
		barium	7440-39-3	E440A	0.010	mg/kg wwt	12.5	13.1	4.18%	40%	----
		beryllium	7440-41-7	E440A	0.0020	mg/kg wwt	<0.0020	<0.0020	0	Diff <2x LOR	----
		bismuth	7440-69-9	E440A	0.0020	mg/kg wwt	0.0138	0.0199	36.0%	40%	----
		boron	7440-42-8	E440A	0.20	mg/kg wwt	2.04	2.26	10.0%	40%	----
		cadmium	7440-43-9	E440A	0.0010	mg/kg wwt	0.0850	0.0915	7.32%	40%	----
		calcium	7440-70-2	E440A	4.0	mg/kg wwt	1650	1720	4.06%	60%	----
		cesium	7440-46-2	E440A	0.0010	mg/kg wwt	0.0229	0.0227	0.921%	40%	----
		chromium	7440-47-3	E440A	0.010	mg/kg wwt	0.057	0.058	1.20%	40%	----
		cobalt	7440-48-4	E440A	0.0040	mg/kg wwt	0.142	0.147	3.81%	40%	----
		copper	7440-50-8	E440A	0.020	mg/kg wwt	1.71	1.74	1.96%	40%	----
		iron	7439-89-6	E440A	0.60	mg/kg wwt	51.9	53.4	2.85%	40%	----
		lead	7439-92-1	E440A	0.0040	mg/kg wwt	0.0924	0.102	9.71%	40%	----
		lithium	7439-93-2	E440A	0.10	mg/kg wwt	<0.10	<0.10	0	Diff <2x LOR	----
		magnesium	7439-95-4	E440A	0.40	mg/kg wwt	768	786	2.27%	40%	----
		manganese	7439-96-5	E440A	0.010	mg/kg wwt	711	694	2.46%	40%	----
		molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt	0.0161	0.0161	0.00002	Diff <2x LOR	----
		nickel	7440-02-0	E440A	0.040	mg/kg wwt	1.56	1.56	0.515%	40%	----
		phosphorus	7723-14-0	E440A	2.0	mg/kg wwt	1310	1280	2.61%	40%	----
		potassium	7440-09-7	E440A	4.0	mg/kg wwt	2580	2600	0.676%	40%	----
		rubidium	7440-17-7	E440A	0.010	mg/kg wwt	4.82	4.81	0.270%	40%	----
		selenium	7782-49-2	E440A	0.010	mg/kg wwt	<0.010	<0.010	0	Diff <2x LOR	----
		sodium	7440-23-5	E440A	4.0	mg/kg wwt	<4.0	<4.0	0	Diff <2x LOR	----

Sub-Matrix: **Biota**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Metals (QC Lot: 624385) - continued											
WR2200752-034	D3-B, South, dwarf birch leaves	strontium	7440-24-6	E440A	0.010	mg/kg wwt	4.00	4.05	1.39%	60%	----
		tellurium	13494-80-9	E440A	0.0040	mg/kg wwt	<0.0040	<0.0040	0	Diff <2x LOR	----
		thallium	7440-28-0	E440A	0.00040	mg/kg wwt	<0.00040	<0.00040	0	Diff <2x LOR	----
		tin	7440-31-5	E440A	0.020	mg/kg wwt	0.054	0.057	0.004	Diff <2x LOR	----
		uranium	7440-61-1	E440A	0.00040	mg/kg wwt	0.00507	0.00509	0.443%	40%	----
		vanadium	7440-62-2	E440A	0.020	mg/kg wwt	0.044	0.045	0.0002	Diff <2x LOR	----
		zinc	7440-66-6	E440A	0.10	mg/kg wwt	58.8	59.9	1.72%	40%	----
		zirconium	7440-67-7	E440A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
Metals (QC Lot: 624386)											
WR2200752-034	D3-B, South, dwarf birch leaves	mercury	7439-97-6	E510A	0.0011	mg/kg wwt	0.0019	0.0018	0.0001	Diff <2x LOR	----
Metals (QC Lot: 624391)											
WR2200752-069	D1-B East Salix Leaves 2	mercury	7439-97-6	E510	0.0050	mg/kg	0.0058	0.0056	0.0002	Diff <2x LOR	----
Metals (QC Lot: 624392)											
WR2200752-069	D1-B East Salix Leaves 2	aluminum	7429-90-5	E440	2.0	mg/kg	31.6	31.5	0.234%	40%	----
		antimony	7440-36-0	E440	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		arsenic	7440-38-2	E440	0.020	mg/kg	0.188	0.180	4.50%	40%	----
		barium	7440-39-3	E440	0.050	mg/kg	41.6	40.5	2.59%	40%	----
		beryllium	7440-41-7	E440	0.010	mg/kg	0.022	0.021	0.0008	Diff <2x LOR	----
		bismuth	7440-69-9	E440	0.010	mg/kg	0.010	<0.010	0.000010	Diff <2x LOR	----
		boron	7440-42-8	E440	1.0	mg/kg	2.9	2.6	0.3	Diff <2x LOR	----
		cadmium	7440-43-9	E440	0.0050	mg/kg	4.62	4.59	0.619%	40%	----
		calcium	7440-70-2	E440	20	mg/kg	7590	7450	1.86%	60%	----
		cesium	7440-46-2	E440	0.0050	mg/kg	0.244	0.250	2.39%	40%	----
		chromium	7440-47-3	E440	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		cobalt	7440-48-4	E440	0.020	mg/kg	5.10	4.96	2.80%	40%	----
		copper	7440-50-8	E440	0.10	mg/kg	3.36	3.26	2.83%	40%	----
		iron	7439-89-6	E440	3.0	mg/kg	59.4	59.3	0.209%	40%	----
		lead	7439-92-1	E440	0.020	mg/kg	0.113	0.111	2.10%	40%	----
		lithium	7439-93-2	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		magnesium	7439-95-4	E440	2.0	mg/kg	2960	2880	2.52%	40%	----
		manganese	7439-96-5	E440	0.050	mg/kg	1190	1140	4.10%	40%	----
		molybdenum	7439-98-7	E440	0.020	mg/kg	0.113	0.116	2.63%	40%	----
		nickel	7440-02-0	E440	0.20	mg/kg	6.26	6.07	3.03%	40%	----
		phosphorus	7723-14-0	E440	10	mg/kg	2430	2380	2.03%	40%	----

Sub-Matrix: **Biota**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Metals (QC Lot: 624392) - continued											
WR2200752-069	D1-B East Salix Leaves 2	potassium	7440-09-7	E440	20	mg/kg	8570	8510	0.751%	40%	----
		rubidium	7440-17-7	E440	0.050	mg/kg	25.6	25.4	0.966%	40%	----
		selenium	7782-49-2	E440	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		sodium	7440-23-5	E440	20	mg/kg	<20	<20	0	Diff <2x LOR	----
		strontium	7440-24-6	E440	0.050	mg/kg	47.1	47.7	1.26%	60%	----
		tellurium	13494-80-9	E440	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		thallium	7440-28-0	E440	0.0020	mg/kg	<0.0020	<0.0020	0	Diff <2x LOR	----
		tin	7440-31-5	E440	0.10	mg/kg	0.23	0.24	0.009	Diff <2x LOR	----
		uranium	7440-61-1	E440	0.0020	mg/kg	0.0026	<0.0020	0.0006	Diff <2x LOR	----
		vanadium	7440-62-2	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		zinc	7440-66-6	E440	0.50	mg/kg	86.7	88.3	1.85%	40%	----
		zirconium	7440-67-7	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
Metals (QC Lot: 624393)											
WR2200752-069	D1-B East Salix Leaves 2	silver	7440-22-4	E440.Ag	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
Metals (QC Lot: 624394)											
WR2200752-069	D1-B East Salix Leaves 2	titanium	7440-32-6	E440.Ti	0.25	mg/kg	0.70	0.81	0.10	Diff <2x LOR	----
Metals (QC Lot: 624395)											
WR2200752-069	D1-B East Salix Leaves 2	silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt	0.0013	0.0012	0.0001	Diff <2x LOR	----
Metals (QC Lot: 624396)											
WR2200752-069	D1-B East Salix Leaves 2	titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt	0.260	0.298	13.7%	40%	----
Metals (QC Lot: 624397)											
WR2200752-069	D1-B East Salix Leaves 2	aluminum	7429-90-5	E440A	0.40	mg/kg wwt	11.6	11.6	0.234%	40%	----
		antimony	7440-36-0	E440A	0.0020	mg/kg wwt	0.0035	0.0035	0.00003	Diff <2x LOR	----
		arsenic	7440-38-2	E440A	0.0040	mg/kg wwt	0.0695	0.0665	4.50%	40%	----
		barium	7440-39-3	E440A	0.010	mg/kg wwt	15.3	14.9	2.59%	40%	----
		beryllium	7440-41-7	E440A	0.0020	mg/kg wwt	0.0080	0.0078	0.0003	Diff <2x LOR	----
		bismuth	7440-69-9	E440A	0.0020	mg/kg wwt	0.0037	0.0032	0.0004	Diff <2x LOR	----
		boron	7440-42-8	E440A	0.20	mg/kg wwt	1.06	0.97	9.60%	40%	----
		cadmium	7440-43-9	E440A	0.0010	mg/kg wwt	1.70	1.69	0.619%	40%	----
		calcium	7440-70-2	E440A	4.0	mg/kg wwt	2800	2750	1.86%	60%	----
		cesium	7440-46-2	E440A	0.0010	mg/kg wwt	0.0899	0.0920	2.39%	40%	----
		chromium	7440-47-3	E440A	0.010	mg/kg wwt	0.011	0.010	0.0009	Diff <2x LOR	----
		cobalt	7440-48-4	E440A	0.0040	mg/kg wwt	1.88	1.83	2.80%	40%	----
		copper	7440-50-8	E440A	0.020	mg/kg wwt	1.24	1.20	2.83%	40%	----
		iron	7439-89-6	E440A	0.60	mg/kg wwt	21.9	21.9	0.209%	40%	----

Sub-Matrix: **Biota**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 624397) - continued											
WR2200752-069	D1-B East Salix Leaves 2	lead	7439-92-1	E440A	0.0040	mg/kg wwt	0.0417	0.0409	2.10%	40%	----
		lithium	7439-93-2	E440A	0.10	mg/kg wwt	<0.10	<0.10	0	Diff <2x LOR	----
		magnesium	7439-95-4	E440A	0.40	mg/kg wwt	1090	1060	2.52%	40%	----
		manganese	7439-96-5	E440A	0.010	mg/kg wwt	439	421	4.10%	40%	----
		molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt	0.0417	0.0428	2.63%	40%	----
		nickel	7440-02-0	E440A	0.040	mg/kg wwt	2.31	2.24	3.03%	40%	----
		phosphorus	7723-14-0	E440A	2.0	mg/kg wwt	897	879	2.03%	40%	----
		potassium	7440-09-7	E440A	4.0	mg/kg wwt	3160	3140	0.751%	40%	----
		rubidium	7440-17-7	E440A	0.010	mg/kg wwt	9.46	9.37	0.966%	40%	----
		selenium	7782-49-2	E440A	0.010	mg/kg wwt	0.013	0.013	0.0002	Diff <2x LOR	----
		sodium	7440-23-5	E440A	4.0	mg/kg wwt	<4.0	<4.0	0	Diff <2x LOR	----
		strontium	7440-24-6	E440A	0.010	mg/kg wwt	17.4	17.6	1.26%	60%	----
		tellurium	13494-80-9	E440A	0.0040	mg/kg wwt	<0.0040	<0.0040	0	Diff <2x LOR	----
		thallium	7440-28-0	E440A	0.00040	mg/kg wwt	<0.00040	<0.00040	0	Diff <2x LOR	----
		tin	7440-31-5	E440A	0.020	mg/kg wwt	0.084	0.088	0.003	Diff <2x LOR	----
		uranium	7440-61-1	E440A	0.00040	mg/kg wwt	0.00095	0.00069	0.00026	Diff <2x LOR	----
		vanadium	7440-62-2	E440A	0.020	mg/kg wwt	<0.020	<0.020	0	Diff <2x LOR	----
		zinc	7440-66-6	E440A	0.10	mg/kg wwt	32.0	32.6	1.85%	40%	----
		zirconium	7440-67-7	E440A	0.040	mg/kg wwt	<0.040	<0.040	0	Diff <2x LOR	----
Metals (QC Lot: 624398)											
WR2200752-069	D1-B East Salix Leaves 2	mercury	7439-97-6	E510A	0.0010	mg/kg wwt	0.0022	0.0021	0.00007	Diff <2x LOR	----
Metals (QC Lot: 628316)											
CG2210715-002	Anonymous	aluminum	7429-90-5	E440	2.0	mg/kg	106	94.4	11.8%	40%	----
		antimony	7440-36-0	E440	0.010	mg/kg	0.020	0.018	0.002	Diff <2x LOR	----
		arsenic	7440-38-2	E440	0.020	mg/kg	0.046	0.042	0.004	Diff <2x LOR	----
		barium	7440-39-3	E440	0.050	mg/kg	5.78	5.78	0.0470%	40%	----
		beryllium	7440-41-7	E440	0.010	mg/kg	0.012	0.011	0.001	Diff <2x LOR	----
		bismuth	7440-69-9	E440	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		boron	7440-42-8	E440	1.0	mg/kg	13.0	12.0	8.11%	40%	----
		cadmium	7440-43-9	E440	0.0050	mg/kg	0.638	0.644	1.000%	40%	----
		calcium	7440-70-2	E440	20	mg/kg	1810	1880	3.35%	60%	----
		cesium	7440-46-2	E440	0.0050	mg/kg	0.0594	0.0568	4.50%	40%	----
		chromium	7440-47-3	E440	0.050	mg/kg	0.207	0.120	0.087	Diff <2x LOR	----
		cobalt	7440-48-4	E440	0.020	mg/kg	0.596	0.590	1.01%	40%	----
		copper	7440-50-8	E440	0.10	mg/kg	3.97	3.88	2.32%	40%	----

Sub-Matrix: **Biota**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Metals (QC Lot: 628316) - continued											
CG2210715-002	Anonymous	iron	7439-89-6	E440	3.0	mg/kg	101	91.0	10.2%	40%	----
		lead	7439-92-1	E440	0.020	mg/kg	0.148	0.140	5.59%	40%	----
		lithium	7439-93-2	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		magnesium	7439-95-4	E440	2.0	mg/kg	1090	1080	0.899%	40%	----
		manganese	7439-96-5	E440	0.050	mg/kg	76.3	69.9	8.82%	40%	----
		molybdenum	7439-98-7	E440	0.020	mg/kg	0.443	0.445	0.392%	40%	----
		nickel	7440-02-0	E440	0.20	mg/kg	5.34	5.16	3.40%	40%	----
		phosphorus	7723-14-0	E440	10	mg/kg	1740	1660	4.83%	40%	----
		potassium	7440-09-7	E440	20	mg/kg	7270	7050	3.08%	40%	----
		rubidium	7440-17-7	E440	0.050	mg/kg	9.78	9.47	3.22%	40%	----
		selenium	7782-49-2	E440	0.050	mg/kg	1.54	1.48	4.35%	40%	----
		sodium	7440-23-5	E440	20	mg/kg	<20	<20	0	Diff <2x LOR	----
		strontium	7440-24-6	E440	0.050	mg/kg	1.14	1.15	0.809%	60%	----
		tellurium	13494-80-9	E440	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		thallium	7440-28-0	E440	0.0020	mg/kg	0.0138	0.0145	4.79%	40%	----
		tin	7440-31-5	E440	0.10	mg/kg	0.57	0.47	19.7%	40%	----
		uranium	7440-61-1	E440	0.0020	mg/kg	0.0135	0.0129	4.54%	40%	----
		vanadium	7440-62-2	E440	0.10	mg/kg	0.35	0.30	0.04	Diff <2x LOR	----
		zinc	7440-66-6	E440	0.50	mg/kg	57.4	59.0	2.78%	40%	----
		zirconium	7440-67-7	E440	0.20	mg/kg	0.42	0.52	0.11	Diff <2x LOR	----
Metals (QC Lot: 628317)											
CG2210715-002	Anonymous	silver	7440-22-4	E440.Ag	0.0050	mg/kg	0.107	0.0930	14.4%	40%	----
Metals (QC Lot: 628318)											
CG2210715-002	Anonymous	aluminum	7429-90-5	E440A	0.40	mg/kg wwt	44.4	39.4	11.8%	40%	----
		antimony	7440-36-0	E440A	0.0020	mg/kg wwt	0.0083	0.0076	0.0007	Diff <2x LOR	----
		arsenic	7440-38-2	E440A	0.0040	mg/kg wwt	0.0194	0.0175	0.0019	Diff <2x LOR	----
		barium	7440-39-3	E440A	0.010	mg/kg wwt	2.42	2.41	0.0470%	40%	----
		beryllium	7440-41-7	E440A	0.0020	mg/kg wwt	0.0050	0.0046	0.0005	Diff <2x LOR	----
		bismuth	7440-69-9	E440A	0.0020	mg/kg wwt	<0.0020	<0.0020	0	Diff <2x LOR	----
		boron	7440-42-8	E440A	0.20	mg/kg wwt	5.42	5.00	8.11%	40%	----
		cadmium	7440-43-9	E440A	0.0010	mg/kg wwt	0.266	0.269	1.000%	40%	----
		calcium	7440-70-2	E440A	4.0	mg/kg wwt	758	784	3.35%	60%	----
		cesium	7440-46-2	E440A	0.0010	mg/kg wwt	0.0248	0.0237	4.50%	40%	----
		chromium	7440-47-3	E440A	0.010	mg/kg wwt	0.086	0.050	53.4%	40%	DUP-H
		cobalt	7440-48-4	E440A	0.0040	mg/kg wwt	0.249	0.246	1.01%	40%	----

Sub-Matrix: **Biota**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 628318) - continued											
CG2210715-002	Anonymous	copper	7440-50-8	E440A	0.020	mg/kg wwt	1.66	1.62	2.32%	40%	----
		iron	7439-89-6	E440A	0.60	mg/kg wwt	42.1	38.0	10.2%	40%	----
		lead	7439-92-1	E440A	0.0040	mg/kg wwt	0.0619	0.0585	5.59%	40%	----
		lithium	7439-93-2	E440A	0.10	mg/kg wwt	0.16	0.15	0.01	Diff <2x LOR	----
		magnesium	7439-95-4	E440A	0.40	mg/kg wwt	454	450	0.899%	40%	----
		manganese	7439-96-5	E440A	0.010	mg/kg wwt	31.9	29.2	8.82%	40%	----
		molybdenum	7439-98-7	E440A	0.0040	mg/kg wwt	0.185	0.186	0.392%	40%	----
		nickel	7440-02-0	E440A	0.040	mg/kg wwt	2.23	2.16	3.40%	40%	----
		phosphorus	7723-14-0	E440A	2.0	mg/kg wwt	727	693	4.83%	40%	----
		potassium	7440-09-7	E440A	4.0	mg/kg wwt	3040	2940	3.08%	40%	----
		rubidium	7440-17-7	E440A	0.010	mg/kg wwt	4.08	3.96	3.22%	40%	----
		selenium	7782-49-2	E440A	0.010	mg/kg wwt	0.645	0.618	4.35%	40%	----
		sodium	7440-23-5	E440A	4.0	mg/kg wwt	<4.0	<4.0	0	Diff <2x LOR	----
		strontium	7440-24-6	E440A	0.010	mg/kg wwt	0.476	0.480	0.809%	60%	----
		tellurium	13494-80-9	E440A	0.0040	mg/kg wwt	<0.0040	<0.0040	0	Diff <2x LOR	----
		thallium	7440-28-0	E440A	0.00040	mg/kg wwt	0.00578	0.00606	4.79%	40%	----
		tin	7440-31-5	E440A	0.020	mg/kg wwt	0.238	0.196	19.7%	40%	----
		uranium	7440-61-1	E440A	0.00040	mg/kg wwt	0.00564	0.00539	4.54%	40%	----
		vanadium	7440-62-2	E440A	0.020	mg/kg wwt	0.146	0.128	13.2%	40%	----
		zinc	7440-66-6	E440A	0.10	mg/kg wwt	24.0	24.6	2.78%	40%	----
		zirconium	7440-67-7	E440A	0.040	mg/kg wwt	0.174	0.219	0.045	Diff <2x LOR	----
Metals (QC Lot: 628319)											
CG2210715-002	Anonymous	silver	7440-22-4	E440A.Ag	0.0010	mg/kg wwt	0.0448	0.0388	14.4%	40%	----
Metals (QC Lot: 628320)											
CG2210715-002	Anonymous	mercury	7439-97-6	E510A	0.0013	mg/kg wwt	0.0030	0.0024	0.0006	Diff <2x LOR	----
Metals (QC Lot: 628321)											
CG2210715-002	Anonymous	mercury	7439-97-6	E510	0.0050	mg/kg	0.0072	0.0056	0.0015	Diff <2x LOR	----
Metals (QC Lot: 628324)											
WR2200752-046	D4-B, Centre, labrador tea leaves	titanium	7440-32-6	E440.Ti	0.25	mg/kg	5.00	3.46	36.2%	40%	----
Metals (QC Lot: 628325)											
WR2200752-046	D4-B, Centre, labrador tea leaves	titanium	7440-32-6	E440A.Ti	0.050	mg/kg wwt	2.27	1.57	36.2%	40%	----

Qualifiers

Qualifier	Description
DUP-H	*Duplicate results outside ALS DQO, due to sample heterogeneity.*

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Biota**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 615359)						
moisture	----	E144	0.5	%	<0.50	----
Physical Tests (QCLot: 616216)						
moisture	----	E144	0.5	%	<0.50	----
Physical Tests (QCLot: 616219)						
moisture	----	E144	0.5	%	<0.50	----
Physical Tests (QCLot: 616225)						
moisture	----	E144	0.5	%	<0.50	----
Metals (QCLot: 622764)						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 622765)						
aluminum	7429-90-5	E440	2	mg/kg	<2.0	----
antimony	7440-36-0	E440	0.01	mg/kg	<0.010	----
arsenic	7440-38-2	E440	0.02	mg/kg	<0.020	----
barium	7440-39-3	E440	0.05	mg/kg	<0.050	----
beryllium	7440-41-7	E440	0.01	mg/kg	<0.010	----
bismuth	7440-69-9	E440	0.01	mg/kg	<0.010	----
boron	7440-42-8	E440	1	mg/kg	<1.0	----
cadmium	7440-43-9	E440	0.005	mg/kg	<0.0050	----
calcium	7440-70-2	E440	20	mg/kg	<20	----
cesium	7440-46-2	E440	0.005	mg/kg	<0.0050	----
chromium	7440-47-3	E440	0.05	mg/kg	<0.050	----
cobalt	7440-48-4	E440	0.02	mg/kg	<0.020	----
copper	7440-50-8	E440	0.1	mg/kg	<0.10	----
iron	7439-89-6	E440	3	mg/kg	<3.0	----
lead	7439-92-1	E440	0.02	mg/kg	<0.020	----
lithium	7439-93-2	E440	0.5	mg/kg	<0.50	----
magnesium	7439-95-4	E440	2	mg/kg	<2.0	----
manganese	7439-96-5	E440	0.05	mg/kg	<0.050	----
molybdenum	7439-98-7	E440	0.02	mg/kg	<0.020	----
nickel	7440-02-0	E440	0.2	mg/kg	<0.20	----
phosphorus	7723-14-0	E440	10	mg/kg	<10	----
potassium	7440-09-7	E440	20	mg/kg	<20	----
rubidium	7440-17-7	E440	0.05	mg/kg	<0.050	----

Sub-Matrix: **Biota**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 622765) - continued						
selenium	7782-49-2	E440	0.05	mg/kg	<0.050	----
sodium	7440-23-5	E440	20	mg/kg	<20	----
strontium	7440-24-6	E440	0.05	mg/kg	<0.050	----
tellurium	13494-80-9	E440	0.02	mg/kg	<0.020	----
thallium	7440-28-0	E440	0.002	mg/kg	<0.0020	----
tin	7440-31-5	E440	0.1	mg/kg	<0.10	----
uranium	7440-61-1	E440	0.002	mg/kg	<0.0020	----
vanadium	7440-62-2	E440	0.1	mg/kg	<0.10	----
zinc	7440-66-6	E440	0.5	mg/kg	<0.50	----
zirconium	7440-67-7	E440	0.2	mg/kg	<0.20	----
Metals (QCLot: 622766)						
silver	7440-22-4	E440.Ag	0.005	mg/kg	<0.0050	----
Metals (QCLot: 622767)						
titanium	7440-32-6	E440.Ti	0.25	mg/kg	<0.25	----
Metals (QCLot: 622768)						
silver	7440-22-4	E440A.Ag	0.001	mg/kg wwt	<0.0010	----
Metals (QCLot: 622769)						
titanium	7440-32-6	E440A.Ti	0.05	mg/kg wwt	<0.050	----
Metals (QCLot: 622770)						
aluminum	7429-90-5	E440A	0.4	mg/kg wwt	<0.40	----
antimony	7440-36-0	E440A	0.002	mg/kg wwt	<0.0020	----
arsenic	7440-38-2	E440A	0.004	mg/kg wwt	<0.0040	----
barium	7440-39-3	E440A	0.01	mg/kg wwt	<0.010	----
beryllium	7440-41-7	E440A	0.002	mg/kg wwt	<0.0020	----
bismuth	7440-69-9	E440A	0.002	mg/kg wwt	<0.0020	----
boron	7440-42-8	E440A	0.2	mg/kg wwt	<0.20	----
cadmium	7440-43-9	E440A	0.001	mg/kg wwt	<0.0010	----
calcium	7440-70-2	E440A	4	mg/kg wwt	<4.0	----
cesium	7440-46-2	E440A	0.001	mg/kg wwt	<0.0010	----
chromium	7440-47-3	E440A	0.01	mg/kg wwt	<0.010	----
cobalt	7440-48-4	E440A	0.004	mg/kg wwt	<0.0040	----
copper	7440-50-8	E440A	0.02	mg/kg wwt	<0.020	----
iron	7439-89-6	E440A	0.6	mg/kg wwt	<0.60	----
lead	7439-92-1	E440A	0.004	mg/kg wwt	<0.0040	----
lithium	7439-93-2	E440A	0.1	mg/kg wwt	<0.10	----
magnesium	7439-95-4	E440A	0.4	mg/kg wwt	<0.40	----

Sub-Matrix: **Biota**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 622770) - continued						
manganese	7439-96-5	E440A	0.01	mg/kg wwt	<0.010	----
molybdenum	7439-98-7	E440A	0.004	mg/kg wwt	<0.0040	----
nickel	7440-02-0	E440A	0.04	mg/kg wwt	<0.040	----
phosphorus	7723-14-0	E440A	2	mg/kg wwt	<2.0	----
potassium	7440-09-7	E440A	4	mg/kg wwt	<4.0	----
rubidium	7440-17-7	E440A	0.01	mg/kg wwt	<0.010	----
selenium	7782-49-2	E440A	0.01	mg/kg wwt	<0.010	----
sodium	7440-23-5	E440A	4	mg/kg wwt	<4.0	----
strontium	7440-24-6	E440A	0.01	mg/kg wwt	<0.010	----
tellurium	13494-80-9	E440A	0.004	mg/kg wwt	<0.0040	----
thallium	7440-28-0	E440A	0.0004	mg/kg wwt	<0.00040	----
tin	7440-31-5	E440A	0.02	mg/kg wwt	<0.020	----
uranium	7440-61-1	E440A	0.0004	mg/kg wwt	<0.00040	----
vanadium	7440-62-2	E440A	0.02	mg/kg wwt	<0.020	----
zinc	7440-66-6	E440A	0.1	mg/kg wwt	<0.10	----
zirconium	7440-67-7	E440A	0.04	mg/kg wwt	<0.040	----
Metals (QCLot: 622771)						
mercury	7439-97-6	E510A	0.001	mg/kg wwt	<0.0010	----
Metals (QCLot: 624361)						
aluminum	7429-90-5	E440	2	mg/kg	<2.0	----
antimony	7440-36-0	E440	0.01	mg/kg	<0.010	----
arsenic	7440-38-2	E440	0.02	mg/kg	<0.020	----
barium	7440-39-3	E440	0.05	mg/kg	<0.050	----
beryllium	7440-41-7	E440	0.01	mg/kg	<0.010	----
bismuth	7440-69-9	E440	0.01	mg/kg	<0.010	----
boron	7440-42-8	E440	1	mg/kg	<1.0	----
cadmium	7440-43-9	E440	0.005	mg/kg	<0.0050	----
calcium	7440-70-2	E440	20	mg/kg	<20	----
cesium	7440-46-2	E440	0.005	mg/kg	<0.0050	----
chromium	7440-47-3	E440	0.05	mg/kg	<0.050	----
cobalt	7440-48-4	E440	0.02	mg/kg	<0.020	----
copper	7440-50-8	E440	0.1	mg/kg	<0.10	----
iron	7439-89-6	E440	3	mg/kg	<3.0	----
lead	7439-92-1	E440	0.02	mg/kg	<0.020	----
lithium	7439-93-2	E440	0.5	mg/kg	<0.50	----
magnesium	7439-95-4	E440	2	mg/kg	<2.0	----

Sub-Matrix: **Biota**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 624361) - continued						
manganese	7439-96-5	E440	0.05	mg/kg	<0.050	----
molybdenum	7439-98-7	E440	0.02	mg/kg	<0.020	----
nickel	7440-02-0	E440	0.2	mg/kg	<0.20	----
phosphorus	7723-14-0	E440	10	mg/kg	<10	----
potassium	7440-09-7	E440	20	mg/kg	<20	----
rubidium	7440-17-7	E440	0.05	mg/kg	<0.050	----
selenium	7782-49-2	E440	0.05	mg/kg	<0.050	----
sodium	7440-23-5	E440	20	mg/kg	<20	----
strontium	7440-24-6	E440	0.05	mg/kg	<0.050	----
tellurium	13494-80-9	E440	0.02	mg/kg	<0.020	----
thallium	7440-28-0	E440	0.002	mg/kg	<0.0020	----
tin	7440-31-5	E440	0.1	mg/kg	<0.10	----
uranium	7440-61-1	E440	0.002	mg/kg	<0.0020	----
vanadium	7440-62-2	E440	0.1	mg/kg	<0.10	----
zinc	7440-66-6	E440	0.5	mg/kg	<0.50	----
zirconium	7440-67-7	E440	0.2	mg/kg	<0.20	----
Metals (QCLot: 624362)						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 624363)						
silver	7440-22-4	E440A.Ag	0.001	mg/kg wwt	<0.0010	----
Metals (QCLot: 624364)						
titanium	7440-32-6	E440A.Ti	0.05	mg/kg wwt	<0.050	----
Metals (QCLot: 624365)						
silver	7440-22-4	E440.Ag	0.005	mg/kg	<0.0050	----
Metals (QCLot: 624366)						
titanium	7440-32-6	E440.Ti	0.25	mg/kg	<0.25	----
Metals (QCLot: 624367)						
aluminum	7429-90-5	E440A	0.4	mg/kg wwt	<0.40	----
antimony	7440-36-0	E440A	0.002	mg/kg wwt	<0.0020	----
arsenic	7440-38-2	E440A	0.004	mg/kg wwt	<0.0040	----
barium	7440-39-3	E440A	0.01	mg/kg wwt	<0.010	----
beryllium	7440-41-7	E440A	0.002	mg/kg wwt	<0.0020	----
bismuth	7440-69-9	E440A	0.002	mg/kg wwt	<0.0020	----
boron	7440-42-8	E440A	0.2	mg/kg wwt	<0.20	----
cadmium	7440-43-9	E440A	0.001	mg/kg wwt	<0.0010	----
calcium	7440-70-2	E440A	4	mg/kg wwt	<4.0	----

Sub-Matrix: **Biota**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 624367) - continued						
cesium	7440-46-2	E440A	0.001	mg/kg wwt	<0.0010	----
chromium	7440-47-3	E440A	0.01	mg/kg wwt	<0.010	----
cobalt	7440-48-4	E440A	0.004	mg/kg wwt	<0.0040	----
copper	7440-50-8	E440A	0.02	mg/kg wwt	<0.020	----
iron	7439-89-6	E440A	0.6	mg/kg wwt	<0.60	----
lead	7439-92-1	E440A	0.004	mg/kg wwt	<0.0040	----
lithium	7439-93-2	E440A	0.1	mg/kg wwt	<0.10	----
magnesium	7439-95-4	E440A	0.4	mg/kg wwt	<0.40	----
manganese	7439-96-5	E440A	0.01	mg/kg wwt	<0.010	----
molybdenum	7439-98-7	E440A	0.004	mg/kg wwt	<0.0040	----
nickel	7440-02-0	E440A	0.04	mg/kg wwt	<0.040	----
phosphorus	7723-14-0	E440A	2	mg/kg wwt	<2.0	----
potassium	7440-09-7	E440A	4	mg/kg wwt	<4.0	----
rubidium	7440-17-7	E440A	0.01	mg/kg wwt	<0.010	----
selenium	7782-49-2	E440A	0.01	mg/kg wwt	<0.010	----
sodium	7440-23-5	E440A	4	mg/kg wwt	<4.0	----
strontium	7440-24-6	E440A	0.01	mg/kg wwt	<0.010	----
tellurium	13494-80-9	E440A	0.004	mg/kg wwt	<0.0040	----
thallium	7440-28-0	E440A	0.0004	mg/kg wwt	<0.00040	----
tin	7440-31-5	E440A	0.02	mg/kg wwt	<0.020	----
uranium	7440-61-1	E440A	0.0004	mg/kg wwt	<0.00040	----
vanadium	7440-62-2	E440A	0.02	mg/kg wwt	<0.020	----
zinc	7440-66-6	E440A	0.1	mg/kg wwt	<0.10	----
zirconium	7440-67-7	E440A	0.04	mg/kg wwt	<0.040	----
Metals (QCLot: 624368)						
mercury	7439-97-6	E510A	0.001	mg/kg wwt	<0.0010	----
Metals (QCLot: 624379)						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 624380)						
aluminum	7429-90-5	E440	2	mg/kg	<2.0	----
antimony	7440-36-0	E440	0.01	mg/kg	<0.010	----
arsenic	7440-38-2	E440	0.02	mg/kg	<0.020	----
barium	7440-39-3	E440	0.05	mg/kg	<0.050	----
beryllium	7440-41-7	E440	0.01	mg/kg	<0.010	----
bismuth	7440-69-9	E440	0.01	mg/kg	<0.010	----
boron	7440-42-8	E440	1	mg/kg	<1.0	----

Sub-Matrix: **Biota**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 624380) - continued						
cadmium	7440-43-9	E440	0.005	mg/kg	<0.0050	----
calcium	7440-70-2	E440	20	mg/kg	<20	----
cesium	7440-46-2	E440	0.005	mg/kg	<0.0050	----
chromium	7440-47-3	E440	0.05	mg/kg	<0.050	----
cobalt	7440-48-4	E440	0.02	mg/kg	<0.020	----
copper	7440-50-8	E440	0.1	mg/kg	<0.10	----
iron	7439-89-6	E440	3	mg/kg	<3.0	----
lead	7439-92-1	E440	0.02	mg/kg	<0.020	----
lithium	7439-93-2	E440	0.5	mg/kg	<0.50	----
magnesium	7439-95-4	E440	2	mg/kg	<2.0	----
manganese	7439-96-5	E440	0.05	mg/kg	<0.050	----
molybdenum	7439-98-7	E440	0.02	mg/kg	<0.020	----
nickel	7440-02-0	E440	0.2	mg/kg	<0.20	----
phosphorus	7723-14-0	E440	10	mg/kg	<10	----
potassium	7440-09-7	E440	20	mg/kg	<20	----
rubidium	7440-17-7	E440	0.05	mg/kg	<0.050	----
selenium	7782-49-2	E440	0.05	mg/kg	<0.050	----
sodium	7440-23-5	E440	20	mg/kg	<20	----
strontium	7440-24-6	E440	0.05	mg/kg	<0.050	----
tellurium	13494-80-9	E440	0.02	mg/kg	<0.020	----
thallium	7440-28-0	E440	0.002	mg/kg	<0.0020	----
tin	7440-31-5	E440	0.1	mg/kg	<0.10	----
uranium	7440-61-1	E440	0.002	mg/kg	<0.0020	----
vanadium	7440-62-2	E440	0.1	mg/kg	<0.10	----
zinc	7440-66-6	E440	0.5	mg/kg	<0.50	----
zirconium	7440-67-7	E440	0.2	mg/kg	<0.20	----
Metals (QCLot: 624381)						
silver	7440-22-4	E440.Ag	0.005	mg/kg	<0.0050	----
Metals (QCLot: 624382)						
titanium	7440-32-6	E440.Ti	0.25	mg/kg	<0.25	----
Metals (QCLot: 624383)						
silver	7440-22-4	E440A.Ag	0.001	mg/kg wwt	<0.0010	----
Metals (QCLot: 624384)						
titanium	7440-32-6	E440A.Ti	0.05	mg/kg wwt	<0.050	----
Metals (QCLot: 624385)						
aluminum	7429-90-5	E440A	0.4	mg/kg wwt	<0.40	----

Sub-Matrix: **Biota**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 624385) - continued						
antimony	7440-36-0	E440A	0.002	mg/kg wwt	<0.0020	----
arsenic	7440-38-2	E440A	0.004	mg/kg wwt	<0.0040	----
barium	7440-39-3	E440A	0.01	mg/kg wwt	<0.010	----
beryllium	7440-41-7	E440A	0.002	mg/kg wwt	<0.0020	----
bismuth	7440-69-9	E440A	0.002	mg/kg wwt	<0.0020	----
boron	7440-42-8	E440A	0.2	mg/kg wwt	<0.20	----
cadmium	7440-43-9	E440A	0.001	mg/kg wwt	<0.0010	----
calcium	7440-70-2	E440A	4	mg/kg wwt	<4.0	----
cesium	7440-46-2	E440A	0.001	mg/kg wwt	<0.0010	----
chromium	7440-47-3	E440A	0.01	mg/kg wwt	<0.010	----
cobalt	7440-48-4	E440A	0.004	mg/kg wwt	<0.0040	----
copper	7440-50-8	E440A	0.02	mg/kg wwt	<0.020	----
iron	7439-89-6	E440A	0.6	mg/kg wwt	<0.60	----
lead	7439-92-1	E440A	0.004	mg/kg wwt	<0.0040	----
lithium	7439-93-2	E440A	0.1	mg/kg wwt	<0.10	----
magnesium	7439-95-4	E440A	0.4	mg/kg wwt	<0.40	----
manganese	7439-96-5	E440A	0.01	mg/kg wwt	<0.010	----
molybdenum	7439-98-7	E440A	0.004	mg/kg wwt	<0.0040	----
nickel	7440-02-0	E440A	0.04	mg/kg wwt	<0.040	----
phosphorus	7723-14-0	E440A	2	mg/kg wwt	<2.0	----
potassium	7440-09-7	E440A	4	mg/kg wwt	<4.0	----
rubidium	7440-17-7	E440A	0.01	mg/kg wwt	<0.010	----
selenium	7782-49-2	E440A	0.01	mg/kg wwt	<0.010	----
sodium	7440-23-5	E440A	4	mg/kg wwt	<4.0	----
strontium	7440-24-6	E440A	0.01	mg/kg wwt	<0.010	----
tellurium	13494-80-9	E440A	0.004	mg/kg wwt	<0.0040	----
thallium	7440-28-0	E440A	0.0004	mg/kg wwt	<0.00040	----
tin	7440-31-5	E440A	0.02	mg/kg wwt	<0.020	----
uranium	7440-61-1	E440A	0.0004	mg/kg wwt	<0.00040	----
vanadium	7440-62-2	E440A	0.02	mg/kg wwt	<0.020	----
zinc	7440-66-6	E440A	0.1	mg/kg wwt	<0.10	----
zirconium	7440-67-7	E440A	0.04	mg/kg wwt	<0.040	----
Metals (QCLot: 624386)						
mercury	7439-97-6	E510A	0.001	mg/kg wwt	<0.0010	----
Metals (QCLot: 624391)						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----

Sub-Matrix: **Biota**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 624392)						
aluminum	7429-90-5	E440	2	mg/kg	<2.0	----
antimony	7440-36-0	E440	0.01	mg/kg	<0.010	----
arsenic	7440-38-2	E440	0.02	mg/kg	<0.020	----
barium	7440-39-3	E440	0.05	mg/kg	<0.050	----
beryllium	7440-41-7	E440	0.01	mg/kg	<0.010	----
bismuth	7440-69-9	E440	0.01	mg/kg	<0.010	----
boron	7440-42-8	E440	1	mg/kg	<1.0	----
cadmium	7440-43-9	E440	0.005	mg/kg	<0.0050	----
calcium	7440-70-2	E440	20	mg/kg	<20	----
cesium	7440-46-2	E440	0.005	mg/kg	<0.0050	----
chromium	7440-47-3	E440	0.05	mg/kg	<0.050	----
cobalt	7440-48-4	E440	0.02	mg/kg	<0.020	----
copper	7440-50-8	E440	0.1	mg/kg	<0.10	----
iron	7439-89-6	E440	3	mg/kg	<3.0	----
lead	7439-92-1	E440	0.02	mg/kg	<0.020	----
lithium	7439-93-2	E440	0.5	mg/kg	<0.50	----
magnesium	7439-95-4	E440	2	mg/kg	<2.0	----
manganese	7439-96-5	E440	0.05	mg/kg	<0.050	----
molybdenum	7439-98-7	E440	0.02	mg/kg	<0.020	----
nickel	7440-02-0	E440	0.2	mg/kg	<0.20	----
phosphorus	7723-14-0	E440	10	mg/kg	<10	----
potassium	7440-09-7	E440	20	mg/kg	<20	----
rubidium	7440-17-7	E440	0.05	mg/kg	<0.050	----
selenium	7782-49-2	E440	0.05	mg/kg	<0.050	----
sodium	7440-23-5	E440	20	mg/kg	<20	----
strontium	7440-24-6	E440	0.05	mg/kg	<0.050	----
tellurium	13494-80-9	E440	0.02	mg/kg	<0.020	----
thallium	7440-28-0	E440	0.002	mg/kg	<0.0020	----
tin	7440-31-5	E440	0.1	mg/kg	<0.10	----
uranium	7440-61-1	E440	0.002	mg/kg	<0.0020	----
vanadium	7440-62-2	E440	0.1	mg/kg	<0.10	----
zinc	7440-66-6	E440	0.5	mg/kg	<0.50	----
zirconium	7440-67-7	E440	0.2	mg/kg	<0.20	----
Metals (QCLot: 624393)						
silver	7440-22-4	E440.Ag	0.005	mg/kg	<0.0050	----
Metals (QCLot: 624394)						

Sub-Matrix: **Biota**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 624394) - continued						
titanium	7440-32-6	E440.Ti	0.25	mg/kg	<0.25	----
Metals (QCLot: 624395)						
silver	7440-22-4	E440A.Ag	0.001	mg/kg wwt	<0.0010	----
Metals (QCLot: 624396)						
titanium	7440-32-6	E440A.Ti	0.05	mg/kg wwt	<0.050	----
Metals (QCLot: 624397)						
aluminum	7429-90-5	E440A	0.4	mg/kg wwt	<0.40	----
antimony	7440-36-0	E440A	0.002	mg/kg wwt	<0.0020	----
arsenic	7440-38-2	E440A	0.004	mg/kg wwt	<0.0040	----
barium	7440-39-3	E440A	0.01	mg/kg wwt	<0.010	----
beryllium	7440-41-7	E440A	0.002	mg/kg wwt	<0.0020	----
bismuth	7440-69-9	E440A	0.002	mg/kg wwt	<0.0020	----
boron	7440-42-8	E440A	0.2	mg/kg wwt	<0.20	----
cadmium	7440-43-9	E440A	0.001	mg/kg wwt	<0.0010	----
calcium	7440-70-2	E440A	4	mg/kg wwt	<4.0	----
cesium	7440-46-2	E440A	0.001	mg/kg wwt	<0.0010	----
chromium	7440-47-3	E440A	0.01	mg/kg wwt	<0.010	----
cobalt	7440-48-4	E440A	0.004	mg/kg wwt	<0.0040	----
copper	7440-50-8	E440A	0.02	mg/kg wwt	<0.020	----
iron	7439-89-6	E440A	0.6	mg/kg wwt	<0.60	----
lead	7439-92-1	E440A	0.004	mg/kg wwt	<0.0040	----
lithium	7439-93-2	E440A	0.1	mg/kg wwt	<0.10	----
magnesium	7439-95-4	E440A	0.4	mg/kg wwt	<0.40	----
manganese	7439-96-5	E440A	0.01	mg/kg wwt	<0.010	----
molybdenum	7439-98-7	E440A	0.004	mg/kg wwt	<0.0040	----
nickel	7440-02-0	E440A	0.04	mg/kg wwt	<0.040	----
phosphorus	7723-14-0	E440A	2	mg/kg wwt	<2.0	----
potassium	7440-09-7	E440A	4	mg/kg wwt	<4.0	----
rubidium	7440-17-7	E440A	0.01	mg/kg wwt	<0.010	----
selenium	7782-49-2	E440A	0.01	mg/kg wwt	<0.010	----
sodium	7440-23-5	E440A	4	mg/kg wwt	<4.0	----
strontium	7440-24-6	E440A	0.01	mg/kg wwt	<0.010	----
tellurium	13494-80-9	E440A	0.004	mg/kg wwt	<0.0040	----
thallium	7440-28-0	E440A	0.0004	mg/kg wwt	<0.00040	----
tin	7440-31-5	E440A	0.02	mg/kg wwt	<0.020	----
uranium	7440-61-1	E440A	0.0004	mg/kg wwt	<0.00040	----

Sub-Matrix: **Biota**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 624397) - continued						
vanadium	7440-62-2	E440A	0.02	mg/kg wwt	<0.020	----
zinc	7440-66-6	E440A	0.1	mg/kg wwt	<0.10	----
zirconium	7440-67-7	E440A	0.04	mg/kg wwt	<0.040	----
Metals (QCLot: 624398)						
mercury	7439-97-6	E510A	0.001	mg/kg wwt	<0.0010	----
Metals (QCLot: 628316)						
aluminum	7429-90-5	E440	2	mg/kg	<2.0	----
antimony	7440-36-0	E440	0.01	mg/kg	<0.010	----
arsenic	7440-38-2	E440	0.02	mg/kg	<0.020	----
barium	7440-39-3	E440	0.05	mg/kg	<0.050	----
beryllium	7440-41-7	E440	0.01	mg/kg	<0.010	----
bismuth	7440-69-9	E440	0.01	mg/kg	<0.010	----
boron	7440-42-8	E440	1	mg/kg	<1.0	----
cadmium	7440-43-9	E440	0.005	mg/kg	<0.0050	----
calcium	7440-70-2	E440	20	mg/kg	<20	----
cesium	7440-46-2	E440	0.005	mg/kg	<0.0050	----
chromium	7440-47-3	E440	0.05	mg/kg	<0.050	----
cobalt	7440-48-4	E440	0.02	mg/kg	<0.020	----
copper	7440-50-8	E440	0.1	mg/kg	<0.10	----
iron	7439-89-6	E440	3	mg/kg	<3.0	----
lead	7439-92-1	E440	0.02	mg/kg	<0.020	----
lithium	7439-93-2	E440	0.5	mg/kg	<0.50	----
magnesium	7439-95-4	E440	2	mg/kg	<2.0	----
manganese	7439-96-5	E440	0.05	mg/kg	<0.050	----
molybdenum	7439-98-7	E440	0.02	mg/kg	<0.020	----
nickel	7440-02-0	E440	0.2	mg/kg	<0.20	----
phosphorus	7723-14-0	E440	10	mg/kg	<10	----
potassium	7440-09-7	E440	20	mg/kg	<20	----
rubidium	7440-17-7	E440	0.05	mg/kg	<0.050	----
selenium	7782-49-2	E440	0.05	mg/kg	<0.050	----
sodium	7440-23-5	E440	20	mg/kg	<20	----
strontium	7440-24-6	E440	0.05	mg/kg	<0.050	----
tellurium	13494-80-9	E440	0.02	mg/kg	<0.020	----
thallium	7440-28-0	E440	0.002	mg/kg	<0.0020	----
tin	7440-31-5	E440	0.1	mg/kg	<0.10	----
uranium	7440-61-1	E440	0.002	mg/kg	<0.0020	----

Sub-Matrix: **Biota**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 628316) - continued						
vanadium	7440-62-2	E440	0.1	mg/kg	<0.10	----
zinc	7440-66-6	E440	0.5	mg/kg	<0.50	----
zirconium	7440-67-7	E440	0.2	mg/kg	<0.20	----
Metals (QCLot: 628317)						
silver	7440-22-4	E440.Ag	0.005	mg/kg	<0.0050	----
Metals (QCLot: 628318)						
aluminum	7429-90-5	E440A	0.4	mg/kg wwt	<0.40	----
antimony	7440-36-0	E440A	0.002	mg/kg wwt	<0.0020	----
arsenic	7440-38-2	E440A	0.004	mg/kg wwt	<0.0040	----
barium	7440-39-3	E440A	0.01	mg/kg wwt	<0.010	----
beryllium	7440-41-7	E440A	0.002	mg/kg wwt	<0.0020	----
bismuth	7440-69-9	E440A	0.002	mg/kg wwt	<0.0020	----
boron	7440-42-8	E440A	0.2	mg/kg wwt	<0.20	----
cadmium	7440-43-9	E440A	0.001	mg/kg wwt	<0.0010	----
calcium	7440-70-2	E440A	4	mg/kg wwt	<4.0	----
cesium	7440-46-2	E440A	0.001	mg/kg wwt	<0.0010	----
chromium	7440-47-3	E440A	0.01	mg/kg wwt	<0.010	----
cobalt	7440-48-4	E440A	0.004	mg/kg wwt	<0.0040	----
copper	7440-50-8	E440A	0.02	mg/kg wwt	<0.020	----
iron	7439-89-6	E440A	0.6	mg/kg wwt	<0.60	----
lead	7439-92-1	E440A	0.004	mg/kg wwt	<0.0040	----
lithium	7439-93-2	E440A	0.1	mg/kg wwt	<0.10	----
magnesium	7439-95-4	E440A	0.4	mg/kg wwt	<0.40	----
manganese	7439-96-5	E440A	0.01	mg/kg wwt	<0.010	----
molybdenum	7439-98-7	E440A	0.004	mg/kg wwt	<0.0040	----
nickel	7440-02-0	E440A	0.04	mg/kg wwt	<0.040	----
phosphorus	7723-14-0	E440A	2	mg/kg wwt	<2.0	----
potassium	7440-09-7	E440A	4	mg/kg wwt	<4.0	----
rubidium	7440-17-7	E440A	0.01	mg/kg wwt	<0.010	----
selenium	7782-49-2	E440A	0.01	mg/kg wwt	<0.010	----
sodium	7440-23-5	E440A	4	mg/kg wwt	<4.0	----
strontium	7440-24-6	E440A	0.01	mg/kg wwt	<0.010	----
tellurium	13494-80-9	E440A	0.004	mg/kg wwt	<0.0040	----
thallium	7440-28-0	E440A	0.0004	mg/kg wwt	<0.00040	----
tin	7440-31-5	E440A	0.02	mg/kg wwt	<0.020	----
uranium	7440-61-1	E440A	0.0004	mg/kg wwt	<0.00040	----

Sub-Matrix: **Biota**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 628318) - continued						
vanadium	7440-62-2	E440A	0.02	mg/kg wwt	<0.020	----
zinc	7440-66-6	E440A	0.1	mg/kg wwt	<0.10	----
zirconium	7440-67-7	E440A	0.04	mg/kg wwt	<0.040	----
Metals (QCLot: 628319)						
silver	7440-22-4	E440A.Ag	0.001	mg/kg wwt	<0.0010	----
Metals (QCLot: 628320)						
mercury	7439-97-6	E510A	0.001	mg/kg wwt	<0.0010	----
Metals (QCLot: 628321)						
mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----
Metals (QCLot: 628324)						
titanium	7440-32-6	E440.Ti	0.25	mg/kg	<0.25	----
Metals (QCLot: 628325)						
titanium	7440-32-6	E440A.Ti	0.05	mg/kg wwt	<0.050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Biota**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 615359)									
moisture	----	E144	0.5	%	50 %	100	90.0	110	----
Physical Tests (QCLot: 616216)									
moisture	----	E144	0.5	%	50 %	99.8	90.0	110	----
Physical Tests (QCLot: 616219)									
moisture	----	E144	0.5	%	50 %	100	90.0	110	----
Physical Tests (QCLot: 616225)									
moisture	----	E144	0.5	%	50 %	98.7	90.0	110	----
Metals (QCLot: 622764)									
mercury	7439-97-6	E510	0.005	mg/kg	0.02 mg/kg	103	80.0	120	----
Metals (QCLot: 622765)									
aluminum	7429-90-5	E440	2	mg/kg	20 mg/kg	106	80.0	120	----
antimony	7440-36-0	E440	0.01	mg/kg	10 mg/kg	112	80.0	120	----
arsenic	7440-38-2	E440	0.02	mg/kg	10 mg/kg	104	80.0	120	----
barium	7440-39-3	E440	0.05	mg/kg	2.5 mg/kg	108	80.0	120	----
beryllium	7440-41-7	E440	0.01	mg/kg	1 mg/kg	102	80.0	120	----
bismuth	7440-69-9	E440	0.01	mg/kg	10 mg/kg	104	80.0	120	----
boron	7440-42-8	E440	1	mg/kg	10 mg/kg	102	80.0	120	----
cadmium	7440-43-9	E440	0.005	mg/kg	1 mg/kg	104	80.0	120	----
calcium	7440-70-2	E440	20	mg/kg	500 mg/kg	106	80.0	120	----
cesium	7440-46-2	E440	0.005	mg/kg	0.5 mg/kg	112	80.0	120	----
chromium	7440-47-3	E440	0.05	mg/kg	2.5 mg/kg	103	80.0	120	----
cobalt	7440-48-4	E440	0.02	mg/kg	2.5 mg/kg	104	80.0	120	----
copper	7440-50-8	E440	0.1	mg/kg	2.5 mg/kg	102	80.0	120	----
iron	7439-89-6	E440	3	mg/kg	10 mg/kg	105	80.0	120	----
lead	7439-92-1	E440	0.02	mg/kg	5 mg/kg	111	80.0	120	----
lithium	7439-93-2	E440	0.5	mg/kg	2.5 mg/kg	107	80.0	120	----
magnesium	7439-95-4	E440	2	mg/kg	500 mg/kg	102	80.0	120	----
manganese	7439-96-5	E440	0.05	mg/kg	2.5 mg/kg	104	80.0	120	----
molybdenum	7439-98-7	E440	0.02	mg/kg	2.5 mg/kg	114	80.0	120	----
nickel	7440-02-0	E440	0.2	mg/kg	5 mg/kg	103	80.0	120	----
phosphorus	7723-14-0	E440	10	mg/kg	100 mg/kg	108	80.0	120	----
potassium	7440-09-7	E440	20	mg/kg	500 mg/kg	102	80.0	120	----
rubidium	7440-17-7	E440	0.05	mg/kg	1 mg/kg	104	80.0	120	----

Sub-Matrix: **Biota**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 622765) - continued									
selenium	7782-49-2	E440	0.05	mg/kg	10 mg/kg	106	80.0	120	----
sodium	7440-23-5	E440	20	mg/kg	500 mg/kg	102	80.0	120	----
strontium	7440-24-6	E440	0.05	mg/kg	2.5 mg/kg	113	80.0	120	----
tellurium	13494-80-9	E440	0.02	mg/kg	1 mg/kg	111	80.0	120	----
thallium	7440-28-0	E440	0.002	mg/kg	10 mg/kg	106	80.0	120	----
tin	7440-31-5	E440	0.1	mg/kg	5 mg/kg	105	80.0	120	----
uranium	7440-61-1	E440	0.002	mg/kg	0.05 mg/kg	110	80.0	120	----
vanadium	7440-62-2	E440	0.1	mg/kg	5 mg/kg	106	80.0	120	----
zinc	7440-66-6	E440	0.5	mg/kg	5 mg/kg	102	80.0	120	----
zirconium	7440-67-7	E440	0.2	mg/kg	1 mg/kg	107	80.0	120	----
Metals (QCLot: 622766)									
silver	7440-22-4	E440.Ag	0.005	mg/kg	1 mg/kg	101	80.0	120	----
Metals (QCLot: 622767)									
titanium	7440-32-6	E440.Ti	0.25	mg/kg	2.5 mg/kg	100	80.0	120	----
Metals (QCLot: 622768)									
silver	7440-22-4	E440A.Ag	0.001	mg/kg wwt	1 mg/kg wwt	101	80.0	120	----
Metals (QCLot: 622769)									
titanium	7440-32-6	E440A.Ti	0.05	mg/kg wwt	2.5 mg/kg wwt	100	80.0	120	----
Metals (QCLot: 622770)									
aluminum	7429-90-5	E440A	0.4	mg/kg wwt	20 mg/kg wwt	106	80.0	120	----
antimony	7440-36-0	E440A	0.002	mg/kg wwt	10 mg/kg wwt	112	80.0	120	----
arsenic	7440-38-2	E440A	0.004	mg/kg wwt	10 mg/kg wwt	104	80.0	120	----
barium	7440-39-3	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	108	80.0	120	----
beryllium	7440-41-7	E440A	0.002	mg/kg wwt	1 mg/kg wwt	102	80.0	120	----
bismuth	7440-69-9	E440A	0.002	mg/kg wwt	10 mg/kg wwt	104	80.0	120	----
boron	7440-42-8	E440A	0.2	mg/kg wwt	10 mg/kg wwt	102	80.0	120	----
cadmium	7440-43-9	E440A	0.001	mg/kg wwt	1 mg/kg wwt	104	80.0	120	----
calcium	7440-70-2	E440A	4	mg/kg wwt	500 mg/kg wwt	106	80.0	120	----
cesium	7440-46-2	E440A	0.001	mg/kg wwt	0.5 mg/kg wwt	112	80.0	120	----
chromium	7440-47-3	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	103	80.0	120	----
cobalt	7440-48-4	E440A	0.004	mg/kg wwt	2.5 mg/kg wwt	104	80.0	120	----
copper	7440-50-8	E440A	0.02	mg/kg wwt	2.5 mg/kg wwt	102	80.0	120	----
iron	7439-89-6	E440A	0.6	mg/kg wwt	10 mg/kg wwt	105	80.0	120	----
lead	7439-92-1	E440A	0.004	mg/kg wwt	5 mg/kg wwt	111	80.0	120	----
lithium	7439-93-2	E440A	0.1	mg/kg wwt	2.5 mg/kg wwt	107	80.0	120	----
magnesium	7439-95-4	E440A	0.4	mg/kg wwt	500 mg/kg wwt	102	80.0	120	----
manganese	7439-96-5	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	104	80.0	120	----

Sub-Matrix: **Biota**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 622770) - continued									
molybdenum	7439-98-7	E440A	0.004	mg/kg wwt	2.5 mg/kg wwt	114	80.0	120	----
nickel	7440-02-0	E440A	0.04	mg/kg wwt	5 mg/kg wwt	103	80.0	120	----
phosphorus	7723-14-0	E440A	2	mg/kg wwt	100 mg/kg wwt	108	80.0	120	----
potassium	7440-09-7	E440A	4	mg/kg wwt	500 mg/kg wwt	102	80.0	120	----
rubidium	7440-17-7	E440A	0.01	mg/kg wwt	1 mg/kg wwt	104	80.0	120	----
selenium	7782-49-2	E440A	0.01	mg/kg wwt	10 mg/kg wwt	106	80.0	120	----
sodium	7440-23-5	E440A	4	mg/kg wwt	500 mg/kg wwt	102	80.0	120	----
strontium	7440-24-6	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	113	80.0	120	----
tellurium	13494-80-9	E440A	0.004	mg/kg wwt	1 mg/kg wwt	111	80.0	120	----
thallium	7440-28-0	E440A	0.0004	mg/kg wwt	10 mg/kg wwt	106	80.0	120	----
tin	7440-31-5	E440A	0.02	mg/kg wwt	5 mg/kg wwt	105	80.0	120	----
uranium	7440-61-1	E440A	0.0004	mg/kg wwt	0.05 mg/kg wwt	110	80.0	120	----
vanadium	7440-62-2	E440A	0.02	mg/kg wwt	5 mg/kg wwt	106	80.0	120	----
zinc	7440-66-6	E440A	0.1	mg/kg wwt	5 mg/kg wwt	102	80.0	120	----
zirconium	7440-67-7	E440A	0.04	mg/kg wwt	1 mg/kg wwt	107	80.0	120	----
Metals (QCLot: 622771)									
mercury	7439-97-6	E510A	0.001	mg/kg wwt	0.02 mg/kg wwt	103	80.0	120	----
Metals (QCLot: 624361)									
aluminum	7429-90-5	E440	2	mg/kg	20 mg/kg	111	80.0	120	----
antimony	7440-36-0	E440	0.01	mg/kg	10 mg/kg	102	80.0	120	----
arsenic	7440-38-2	E440	0.02	mg/kg	10 mg/kg	105	80.0	120	----
barium	7440-39-3	E440	0.05	mg/kg	2.5 mg/kg	111	80.0	120	----
beryllium	7440-41-7	E440	0.01	mg/kg	1 mg/kg	102	80.0	120	----
bismuth	7440-69-9	E440	0.01	mg/kg	10 mg/kg	97.8	80.0	120	----
boron	7440-42-8	E440	1	mg/kg	10 mg/kg	99.5	80.0	120	----
cadmium	7440-43-9	E440	0.005	mg/kg	1 mg/kg	100	80.0	120	----
calcium	7440-70-2	E440	20	mg/kg	500 mg/kg	100	80.0	120	----
cesium	7440-46-2	E440	0.005	mg/kg	0.5 mg/kg	98.4	80.0	120	----
chromium	7440-47-3	E440	0.05	mg/kg	2.5 mg/kg	104	80.0	120	----
cobalt	7440-48-4	E440	0.02	mg/kg	2.5 mg/kg	103	80.0	120	----
copper	7440-50-8	E440	0.1	mg/kg	2.5 mg/kg	102	80.0	120	----
iron	7439-89-6	E440	3	mg/kg	10 mg/kg	111	80.0	120	----
lead	7439-92-1	E440	0.02	mg/kg	5 mg/kg	102	80.0	120	----
lithium	7439-93-2	E440	0.5	mg/kg	2.5 mg/kg	104	80.0	120	----
magnesium	7439-95-4	E440	2	mg/kg	500 mg/kg	109	80.0	120	----
manganese	7439-96-5	E440	0.05	mg/kg	2.5 mg/kg	105	80.0	120	----
molybdenum	7439-98-7	E440	0.02	mg/kg	2.5 mg/kg	101	80.0	120	----

Sub-Matrix: **Biota**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 624361) - continued									
nickel	7440-02-0	E440	0.2	mg/kg	5 mg/kg	103	80.0	120	----
phosphorus	7723-14-0	E440	10	mg/kg	100 mg/kg	110	80.0	120	----
potassium	7440-09-7	E440	20	mg/kg	500 mg/kg	111	80.0	120	----
rubidium	7440-17-7	E440	0.05	mg/kg	1 mg/kg	107	80.0	120	----
selenium	7782-49-2	E440	0.05	mg/kg	10 mg/kg	106	80.0	120	----
sodium	7440-23-5	E440	20	mg/kg	500 mg/kg	111	80.0	120	----
strontium	7440-24-6	E440	0.05	mg/kg	2.5 mg/kg	102	80.0	120	----
tellurium	13494-80-9	E440	0.02	mg/kg	1 mg/kg	101	80.0	120	----
thallium	7440-28-0	E440	0.002	mg/kg	10 mg/kg	99.8	80.0	120	----
tin	7440-31-5	E440	0.1	mg/kg	5 mg/kg	98.6	80.0	120	----
uranium	7440-61-1	E440	0.002	mg/kg	0.05 mg/kg	102	80.0	120	----
vanadium	7440-62-2	E440	0.1	mg/kg	5 mg/kg	107	80.0	120	----
zinc	7440-66-6	E440	0.5	mg/kg	5 mg/kg	104	80.0	120	----
zirconium	7440-67-7	E440	0.2	mg/kg	1 mg/kg	97.1	80.0	120	----
Metals (QCLot: 624362)									
mercury	7439-97-6	E510	0.005	mg/kg	0.02 mg/kg	102	80.0	120	----
Metals (QCLot: 624363)									
silver	7440-22-4	E440A.Ag	0.001	mg/kg wwt	1 mg/kg wwt	89.6	80.0	120	----
Metals (QCLot: 624364)									
titanium	7440-32-6	E440A.Ti	0.05	mg/kg wwt	2.5 mg/kg wwt	101	80.0	120	----
Metals (QCLot: 624365)									
silver	7440-22-4	E440.Ag	0.005	mg/kg	1 mg/kg	89.6	80.0	120	----
Metals (QCLot: 624366)									
titanium	7440-32-6	E440.Ti	0.25	mg/kg	2.5 mg/kg	101	80.0	120	----
Metals (QCLot: 624367)									
aluminum	7429-90-5	E440A	0.4	mg/kg wwt	20 mg/kg wwt	111	80.0	120	----
antimony	7440-36-0	E440A	0.002	mg/kg wwt	10 mg/kg wwt	102	80.0	120	----
arsenic	7440-38-2	E440A	0.004	mg/kg wwt	10 mg/kg wwt	105	80.0	120	----
barium	7440-39-3	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	111	80.0	120	----
beryllium	7440-41-7	E440A	0.002	mg/kg wwt	1 mg/kg wwt	102	80.0	120	----
bismuth	7440-69-9	E440A	0.002	mg/kg wwt	10 mg/kg wwt	97.8	80.0	120	----
boron	7440-42-8	E440A	0.2	mg/kg wwt	10 mg/kg wwt	99.5	80.0	120	----
cadmium	7440-43-9	E440A	0.001	mg/kg wwt	1 mg/kg wwt	100	80.0	120	----
calcium	7440-70-2	E440A	4	mg/kg wwt	500 mg/kg wwt	100	80.0	120	----
cesium	7440-46-2	E440A	0.001	mg/kg wwt	0.5 mg/kg wwt	98.4	80.0	120	----
chromium	7440-47-3	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	104	80.0	120	----
cobalt	7440-48-4	E440A	0.004	mg/kg wwt	2.5 mg/kg wwt	103	80.0	120	----

Sub-Matrix: **Biota**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 624367) - continued									
copper	7440-50-8	E440A	0.02	mg/kg wwt	2.5 mg/kg wwt	102	80.0	120	----
iron	7439-89-6	E440A	0.6	mg/kg wwt	10 mg/kg wwt	111	80.0	120	----
lead	7439-92-1	E440A	0.004	mg/kg wwt	5 mg/kg wwt	102	80.0	120	----
lithium	7439-93-2	E440A	0.1	mg/kg wwt	2.5 mg/kg wwt	104	80.0	120	----
magnesium	7439-95-4	E440A	0.4	mg/kg wwt	500 mg/kg wwt	109	80.0	120	----
manganese	7439-96-5	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	105	80.0	120	----
molybdenum	7439-98-7	E440A	0.004	mg/kg wwt	2.5 mg/kg wwt	101	80.0	120	----
nickel	7440-02-0	E440A	0.04	mg/kg wwt	5 mg/kg wwt	103	80.0	120	----
phosphorus	7723-14-0	E440A	2	mg/kg wwt	100 mg/kg wwt	110	80.0	120	----
potassium	7440-09-7	E440A	4	mg/kg wwt	500 mg/kg wwt	111	80.0	120	----
rubidium	7440-17-7	E440A	0.01	mg/kg wwt	1 mg/kg wwt	107	80.0	120	----
selenium	7782-49-2	E440A	0.01	mg/kg wwt	10 mg/kg wwt	106	80.0	120	----
sodium	7440-23-5	E440A	4	mg/kg wwt	500 mg/kg wwt	111	80.0	120	----
strontium	7440-24-6	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	102	80.0	120	----
tellurium	13494-80-9	E440A	0.004	mg/kg wwt	1 mg/kg wwt	101	80.0	120	----
thallium	7440-28-0	E440A	0.0004	mg/kg wwt	10 mg/kg wwt	99.8	80.0	120	----
tin	7440-31-5	E440A	0.02	mg/kg wwt	5 mg/kg wwt	98.6	80.0	120	----
uranium	7440-61-1	E440A	0.0004	mg/kg wwt	0.05 mg/kg wwt	102	80.0	120	----
vanadium	7440-62-2	E440A	0.02	mg/kg wwt	5 mg/kg wwt	107	80.0	120	----
zinc	7440-66-6	E440A	0.1	mg/kg wwt	5 mg/kg wwt	104	80.0	120	----
zirconium	7440-67-7	E440A	0.04	mg/kg wwt	1 mg/kg wwt	97.1	80.0	120	----
Metals (QCLot: 624368)									
mercury	7439-97-6	E510A	0.001	mg/kg wwt	0.02 mg/kg wwt	102	80.0	120	----
Metals (QCLot: 624379)									
mercury	7439-97-6	E510	0.005	mg/kg	0.02 mg/kg	100	80.0	120	----
Metals (QCLot: 624380)									
aluminum	7429-90-5	E440	2	mg/kg	20 mg/kg	105	80.0	120	----
antimony	7440-36-0	E440	0.01	mg/kg	10 mg/kg	103	80.0	120	----
arsenic	7440-38-2	E440	0.02	mg/kg	10 mg/kg	104	80.0	120	----
barium	7440-39-3	E440	0.05	mg/kg	2.5 mg/kg	112	80.0	120	----
beryllium	7440-41-7	E440	0.01	mg/kg	1 mg/kg	100	80.0	120	----
bismuth	7440-69-9	E440	0.01	mg/kg	10 mg/kg	98.8	80.0	120	----
boron	7440-42-8	E440	1	mg/kg	10 mg/kg	94.8	80.0	120	----
cadmium	7440-43-9	E440	0.005	mg/kg	1 mg/kg	102	80.0	120	----
calcium	7440-70-2	E440	20	mg/kg	500 mg/kg	99.3	80.0	120	----
cesium	7440-46-2	E440	0.005	mg/kg	0.5 mg/kg	102	80.0	120	----
chromium	7440-47-3	E440	0.05	mg/kg	2.5 mg/kg	103	80.0	120	----

Sub-Matrix: **Biota**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 624380) - continued									
cobalt	7440-48-4	E440	0.02	mg/kg	2.5 mg/kg	101	80.0	120	----
copper	7440-50-8	E440	0.1	mg/kg	2.5 mg/kg	100	80.0	120	----
iron	7439-89-6	E440	3	mg/kg	10 mg/kg	110	80.0	120	----
lead	7439-92-1	E440	0.02	mg/kg	5 mg/kg	102	80.0	120	----
lithium	7439-93-2	E440	0.5	mg/kg	2.5 mg/kg	104	80.0	120	----
magnesium	7439-95-4	E440	2	mg/kg	500 mg/kg	107	80.0	120	----
manganese	7439-96-5	E440	0.05	mg/kg	2.5 mg/kg	102	80.0	120	----
molybdenum	7439-98-7	E440	0.02	mg/kg	2.5 mg/kg	102	80.0	120	----
nickel	7440-02-0	E440	0.2	mg/kg	5 mg/kg	102	80.0	120	----
phosphorus	7723-14-0	E440	10	mg/kg	100 mg/kg	106	80.0	120	----
potassium	7440-09-7	E440	20	mg/kg	500 mg/kg	107	80.0	120	----
rubidium	7440-17-7	E440	0.05	mg/kg	1 mg/kg	106	80.0	120	----
selenium	7782-49-2	E440	0.05	mg/kg	10 mg/kg	104	80.0	120	----
sodium	7440-23-5	E440	20	mg/kg	500 mg/kg	108	80.0	120	----
strontium	7440-24-6	E440	0.05	mg/kg	2.5 mg/kg	104	80.0	120	----
tellurium	13494-80-9	E440	0.02	mg/kg	1 mg/kg	108	80.0	120	----
thallium	7440-28-0	E440	0.002	mg/kg	10 mg/kg	100	80.0	120	----
tin	7440-31-5	E440	0.1	mg/kg	5 mg/kg	100	80.0	120	----
uranium	7440-61-1	E440	0.002	mg/kg	0.05 mg/kg	105	80.0	120	----
vanadium	7440-62-2	E440	0.1	mg/kg	5 mg/kg	104	80.0	120	----
zinc	7440-66-6	E440	0.5	mg/kg	5 mg/kg	103	80.0	120	----
zirconium	7440-67-7	E440	0.2	mg/kg	1 mg/kg	99.7	80.0	120	----
Metals (QCLot: 624381)									
silver	7440-22-4	E440.Ag	0.005	mg/kg	1 mg/kg	90.9	80.0	120	----
Metals (QCLot: 624382)									
titanium	7440-32-6	E440.Ti	0.25	mg/kg	2.5 mg/kg	97.8	80.0	120	----
Metals (QCLot: 624383)									
silver	7440-22-4	E440A.Ag	0.001	mg/kg wwt	1 mg/kg wwt	90.9	80.0	120	----
Metals (QCLot: 624384)									
titanium	7440-32-6	E440A.Ti	0.05	mg/kg wwt	2.5 mg/kg wwt	97.8	80.0	120	----
Metals (QCLot: 624385)									
aluminum	7429-90-5	E440A	0.4	mg/kg wwt	20 mg/kg wwt	105	80.0	120	----
antimony	7440-36-0	E440A	0.002	mg/kg wwt	10 mg/kg wwt	103	80.0	120	----
arsenic	7440-38-2	E440A	0.004	mg/kg wwt	10 mg/kg wwt	104	80.0	120	----
barium	7440-39-3	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	112	80.0	120	----
beryllium	7440-41-7	E440A	0.002	mg/kg wwt	1 mg/kg wwt	100	80.0	120	----
bismuth	7440-69-9	E440A	0.002	mg/kg wwt	10 mg/kg wwt	98.8	80.0	120	----

Sub-Matrix: **Biota**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 624385) - continued									
boron	7440-42-8	E440A	0.2	mg/kg wwt	10 mg/kg wwt	94.8	80.0	120	----
cadmium	7440-43-9	E440A	0.001	mg/kg wwt	1 mg/kg wwt	102	80.0	120	----
calcium	7440-70-2	E440A	4	mg/kg wwt	500 mg/kg wwt	99.3	80.0	120	----
cesium	7440-46-2	E440A	0.001	mg/kg wwt	0.5 mg/kg wwt	102	80.0	120	----
chromium	7440-47-3	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	103	80.0	120	----
cobalt	7440-48-4	E440A	0.004	mg/kg wwt	2.5 mg/kg wwt	101	80.0	120	----
copper	7440-50-8	E440A	0.02	mg/kg wwt	2.5 mg/kg wwt	100	80.0	120	----
iron	7439-89-6	E440A	0.6	mg/kg wwt	10 mg/kg wwt	110	80.0	120	----
lead	7439-92-1	E440A	0.004	mg/kg wwt	5 mg/kg wwt	102	80.0	120	----
lithium	7439-93-2	E440A	0.1	mg/kg wwt	2.5 mg/kg wwt	104	80.0	120	----
magnesium	7439-95-4	E440A	0.4	mg/kg wwt	500 mg/kg wwt	107	80.0	120	----
manganese	7439-96-5	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	102	80.0	120	----
molybdenum	7439-98-7	E440A	0.004	mg/kg wwt	2.5 mg/kg wwt	102	80.0	120	----
nickel	7440-02-0	E440A	0.04	mg/kg wwt	5 mg/kg wwt	102	80.0	120	----
phosphorus	7723-14-0	E440A	2	mg/kg wwt	100 mg/kg wwt	106	80.0	120	----
potassium	7440-09-7	E440A	4	mg/kg wwt	500 mg/kg wwt	107	80.0	120	----
rubidium	7440-17-7	E440A	0.01	mg/kg wwt	1 mg/kg wwt	106	80.0	120	----
selenium	7782-49-2	E440A	0.01	mg/kg wwt	10 mg/kg wwt	104	80.0	120	----
sodium	7440-23-5	E440A	4	mg/kg wwt	500 mg/kg wwt	108	80.0	120	----
strontium	7440-24-6	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	104	80.0	120	----
tellurium	13494-80-9	E440A	0.004	mg/kg wwt	1 mg/kg wwt	108	80.0	120	----
thallium	7440-28-0	E440A	0.0004	mg/kg wwt	10 mg/kg wwt	100	80.0	120	----
tin	7440-31-5	E440A	0.02	mg/kg wwt	5 mg/kg wwt	100	80.0	120	----
uranium	7440-61-1	E440A	0.0004	mg/kg wwt	0.05 mg/kg wwt	105	80.0	120	----
vanadium	7440-62-2	E440A	0.02	mg/kg wwt	5 mg/kg wwt	104	80.0	120	----
zinc	7440-66-6	E440A	0.1	mg/kg wwt	5 mg/kg wwt	103	80.0	120	----
zirconium	7440-67-7	E440A	0.04	mg/kg wwt	1 mg/kg wwt	99.7	80.0	120	----
Metals (QCLot: 624386)									
mercury	7439-97-6	E510A	0.001	mg/kg wwt	0.02 mg/kg wwt	100	80.0	120	----
Metals (QCLot: 624391)									
mercury	7439-97-6	E510	0.005	mg/kg	0.02 mg/kg	92.4	80.0	120	----
Metals (QCLot: 624392)									
aluminum	7429-90-5	E440	2	mg/kg	20 mg/kg	108	80.0	120	----
antimony	7440-36-0	E440	0.01	mg/kg	10 mg/kg	94.6	80.0	120	----
arsenic	7440-38-2	E440	0.02	mg/kg	10 mg/kg	104	80.0	120	----
barium	7440-39-3	E440	0.05	mg/kg	2.5 mg/kg	114	80.0	120	----
beryllium	7440-41-7	E440	0.01	mg/kg	1 mg/kg	96.9	80.0	120	----

Sub-Matrix: **Biota**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 624392) - continued									
bismuth	7440-69-9	E440	0.01	mg/kg	10 mg/kg	88.3	80.0	120	----
boron	7440-42-8	E440	1	mg/kg	10 mg/kg	96.3	80.0	120	----
cadmium	7440-43-9	E440	0.005	mg/kg	1 mg/kg	102	80.0	120	----
calcium	7440-70-2	E440	20	mg/kg	500 mg/kg	94.8	80.0	120	----
cesium	7440-46-2	E440	0.005	mg/kg	0.5 mg/kg	94.5	80.0	120	----
chromium	7440-47-3	E440	0.05	mg/kg	2.5 mg/kg	103	80.0	120	----
cobalt	7440-48-4	E440	0.02	mg/kg	2.5 mg/kg	102	80.0	120	----
copper	7440-50-8	E440	0.1	mg/kg	2.5 mg/kg	101	80.0	120	----
iron	7439-89-6	E440	3	mg/kg	10 mg/kg	110	80.0	120	----
lead	7439-92-1	E440	0.02	mg/kg	5 mg/kg	91.5	80.0	120	----
lithium	7439-93-2	E440	0.5	mg/kg	2.5 mg/kg	101	80.0	120	----
magnesium	7439-95-4	E440	2	mg/kg	500 mg/kg	108	80.0	120	----
manganese	7439-96-5	E440	0.05	mg/kg	2.5 mg/kg	104	80.0	120	----
molybdenum	7439-98-7	E440	0.02	mg/kg	2.5 mg/kg	95.6	80.0	120	----
nickel	7440-02-0	E440	0.2	mg/kg	5 mg/kg	102	80.0	120	----
phosphorus	7723-14-0	E440	10	mg/kg	100 mg/kg	109	80.0	120	----
potassium	7440-09-7	E440	20	mg/kg	500 mg/kg	108	80.0	120	----
rubidium	7440-17-7	E440	0.05	mg/kg	1 mg/kg	106	80.0	120	----
selenium	7782-49-2	E440	0.05	mg/kg	10 mg/kg	107	80.0	120	----
sodium	7440-23-5	E440	20	mg/kg	500 mg/kg	106	80.0	120	----
strontium	7440-24-6	E440	0.05	mg/kg	2.5 mg/kg	96.6	80.0	120	----
tellurium	13494-80-9	E440	0.02	mg/kg	1 mg/kg	96.4	80.0	120	----
thallium	7440-28-0	E440	0.002	mg/kg	10 mg/kg	88.8	80.0	120	----
tin	7440-31-5	E440	0.1	mg/kg	5 mg/kg	93.1	80.0	120	----
uranium	7440-61-1	E440	0.002	mg/kg	0.05 mg/kg	91.8	80.0	120	----
vanadium	7440-62-2	E440	0.1	mg/kg	5 mg/kg	106	80.0	120	----
zinc	7440-66-6	E440	0.5	mg/kg	5 mg/kg	100	80.0	120	----
zirconium	7440-67-7	E440	0.2	mg/kg	1 mg/kg	91.7	80.0	120	----
Metals (QCLot: 624393)									
silver	7440-22-4	E440.Ag	0.005	mg/kg	1 mg/kg	84.6	80.0	120	----
Metals (QCLot: 624394)									
titanium	7440-32-6	E440.Ti	0.25	mg/kg	2.5 mg/kg	99.4	80.0	120	----
Metals (QCLot: 624395)									
silver	7440-22-4	E440A.Ag	0.001	mg/kg wwt	1 mg/kg wwt	84.6	80.0	120	----
Metals (QCLot: 624396)									
titanium	7440-32-6	E440A.Ti	0.05	mg/kg wwt	2.5 mg/kg wwt	99.4	80.0	120	----
Metals (QCLot: 624397)									

Sub-Matrix: **Biota**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 624397) - continued									
aluminum	7429-90-5	E440A	0.4	mg/kg wwt	20 mg/kg wwt	108	80.0	120	----
antimony	7440-36-0	E440A	0.002	mg/kg wwt	10 mg/kg wwt	94.6	80.0	120	----
arsenic	7440-38-2	E440A	0.004	mg/kg wwt	10 mg/kg wwt	104	80.0	120	----
barium	7440-39-3	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	114	80.0	120	----
beryllium	7440-41-7	E440A	0.002	mg/kg wwt	1 mg/kg wwt	96.9	80.0	120	----
bismuth	7440-69-9	E440A	0.002	mg/kg wwt	10 mg/kg wwt	88.3	80.0	120	----
boron	7440-42-8	E440A	0.2	mg/kg wwt	10 mg/kg wwt	96.3	80.0	120	----
cadmium	7440-43-9	E440A	0.001	mg/kg wwt	1 mg/kg wwt	102	80.0	120	----
calcium	7440-70-2	E440A	4	mg/kg wwt	500 mg/kg wwt	94.8	80.0	120	----
cesium	7440-46-2	E440A	0.001	mg/kg wwt	0.5 mg/kg wwt	94.5	80.0	120	----
chromium	7440-47-3	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	103	80.0	120	----
cobalt	7440-48-4	E440A	0.004	mg/kg wwt	2.5 mg/kg wwt	102	80.0	120	----
copper	7440-50-8	E440A	0.02	mg/kg wwt	2.5 mg/kg wwt	101	80.0	120	----
iron	7439-89-6	E440A	0.6	mg/kg wwt	10 mg/kg wwt	110	80.0	120	----
lead	7439-92-1	E440A	0.004	mg/kg wwt	5 mg/kg wwt	91.5	80.0	120	----
lithium	7439-93-2	E440A	0.1	mg/kg wwt	2.5 mg/kg wwt	101	80.0	120	----
magnesium	7439-95-4	E440A	0.4	mg/kg wwt	500 mg/kg wwt	108	80.0	120	----
manganese	7439-96-5	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	104	80.0	120	----
molybdenum	7439-98-7	E440A	0.004	mg/kg wwt	2.5 mg/kg wwt	95.6	80.0	120	----
nickel	7440-02-0	E440A	0.04	mg/kg wwt	5 mg/kg wwt	102	80.0	120	----
phosphorus	7723-14-0	E440A	2	mg/kg wwt	100 mg/kg wwt	109	80.0	120	----
potassium	7440-09-7	E440A	4	mg/kg wwt	500 mg/kg wwt	108	80.0	120	----
rubidium	7440-17-7	E440A	0.01	mg/kg wwt	1 mg/kg wwt	106	80.0	120	----
selenium	7782-49-2	E440A	0.01	mg/kg wwt	10 mg/kg wwt	107	80.0	120	----
sodium	7440-23-5	E440A	4	mg/kg wwt	500 mg/kg wwt	106	80.0	120	----
strontium	7440-24-6	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	96.6	80.0	120	----
tellurium	13494-80-9	E440A	0.004	mg/kg wwt	1 mg/kg wwt	96.4	80.0	120	----
thallium	7440-28-0	E440A	0.0004	mg/kg wwt	10 mg/kg wwt	88.8	80.0	120	----
tin	7440-31-5	E440A	0.02	mg/kg wwt	5 mg/kg wwt	93.1	80.0	120	----
uranium	7440-61-1	E440A	0.0004	mg/kg wwt	0.05 mg/kg wwt	91.8	80.0	120	----
vanadium	7440-62-2	E440A	0.02	mg/kg wwt	5 mg/kg wwt	106	80.0	120	----
zinc	7440-66-6	E440A	0.1	mg/kg wwt	5 mg/kg wwt	100	80.0	120	----
zirconium	7440-67-7	E440A	0.04	mg/kg wwt	1 mg/kg wwt	91.7	80.0	120	----
Metals (QCLot: 624398)									
mercury	7439-97-6	E510A	0.001	mg/kg wwt	0.02 mg/kg wwt	92.4	80.0	120	----
Metals (QCLot: 628316)									
aluminum	7429-90-5	E440	2	mg/kg	20 mg/kg	104	80.0	120	----

Sub-Matrix: **Biota**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 628316) - continued									
antimony	7440-36-0	E440	0.01	mg/kg	10 mg/kg	101	80.0	120	----
arsenic	7440-38-2	E440	0.02	mg/kg	10 mg/kg	104	80.0	120	----
barium	7440-39-3	E440	0.05	mg/kg	2.5 mg/kg	102	80.0	120	----
beryllium	7440-41-7	E440	0.01	mg/kg	1 mg/kg	101	80.0	120	----
bismuth	7440-69-9	E440	0.01	mg/kg	10 mg/kg	96.2	80.0	120	----
boron	7440-42-8	E440	1	mg/kg	10 mg/kg	95.8	80.0	120	----
cadmium	7440-43-9	E440	0.005	mg/kg	1 mg/kg	98.9	80.0	120	----
calcium	7440-70-2	E440	20	mg/kg	500 mg/kg	98.6	80.0	120	----
cesium	7440-46-2	E440	0.005	mg/kg	0.5 mg/kg	98.9	80.0	120	----
chromium	7440-47-3	E440	0.05	mg/kg	2.5 mg/kg	105	80.0	120	----
cobalt	7440-48-4	E440	0.02	mg/kg	2.5 mg/kg	101	80.0	120	----
copper	7440-50-8	E440	0.1	mg/kg	2.5 mg/kg	101	80.0	120	----
iron	7439-89-6	E440	3	mg/kg	10 mg/kg	104	80.0	120	----
lead	7439-92-1	E440	0.02	mg/kg	5 mg/kg	100	80.0	120	----
lithium	7439-93-2	E440	0.5	mg/kg	2.5 mg/kg	107	80.0	120	----
magnesium	7439-95-4	E440	2	mg/kg	500 mg/kg	105	80.0	120	----
manganese	7439-96-5	E440	0.05	mg/kg	2.5 mg/kg	105	80.0	120	----
molybdenum	7439-98-7	E440	0.02	mg/kg	2.5 mg/kg	101	80.0	120	----
nickel	7440-02-0	E440	0.2	mg/kg	5 mg/kg	101	80.0	120	----
phosphorus	7723-14-0	E440	10	mg/kg	100 mg/kg	107	80.0	120	----
potassium	7440-09-7	E440	20	mg/kg	500 mg/kg	107	80.0	120	----
rubidium	7440-17-7	E440	0.05	mg/kg	1 mg/kg	106	80.0	120	----
selenium	7782-49-2	E440	0.05	mg/kg	10 mg/kg	103	80.0	120	----
sodium	7440-23-5	E440	20	mg/kg	500 mg/kg	106	80.0	120	----
strontium	7440-24-6	E440	0.05	mg/kg	2.5 mg/kg	104	80.0	120	----
tellurium	13494-80-9	E440	0.02	mg/kg	1 mg/kg	101	80.0	120	----
thallium	7440-28-0	E440	0.002	mg/kg	10 mg/kg	98.9	80.0	120	----
tin	7440-31-5	E440	0.1	mg/kg	5 mg/kg	100	80.0	120	----
uranium	7440-61-1	E440	0.002	mg/kg	0.05 mg/kg	98.2	80.0	120	----
vanadium	7440-62-2	E440	0.1	mg/kg	5 mg/kg	106	80.0	120	----
zinc	7440-66-6	E440	0.5	mg/kg	5 mg/kg	99.4	80.0	120	----
zirconium	7440-67-7	E440	0.2	mg/kg	1 mg/kg	96.0	80.0	120	----
Metals (QCLot: 628317)									
silver	7440-22-4	E440.Ag	0.005	mg/kg	1 mg/kg	91.0	80.0	120	----
Metals (QCLot: 628318)									
aluminum	7429-90-5	E440A	0.4	mg/kg wwt	20 mg/kg wwt	104	80.0	120	----
antimony	7440-36-0	E440A	0.002	mg/kg wwt	10 mg/kg wwt	101	80.0	120	----

Sub-Matrix: **Biota**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 628318) - continued									
arsenic	7440-38-2	E440A	0.004	mg/kg wwt	10 mg/kg wwt	104	80.0	120	----
barium	7440-39-3	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	102	80.0	120	----
beryllium	7440-41-7	E440A	0.002	mg/kg wwt	1 mg/kg wwt	101	80.0	120	----
bismuth	7440-69-9	E440A	0.002	mg/kg wwt	10 mg/kg wwt	96.2	80.0	120	----
boron	7440-42-8	E440A	0.2	mg/kg wwt	10 mg/kg wwt	95.8	80.0	120	----
cadmium	7440-43-9	E440A	0.001	mg/kg wwt	1 mg/kg wwt	98.9	80.0	120	----
calcium	7440-70-2	E440A	4	mg/kg wwt	500 mg/kg wwt	98.6	80.0	120	----
cesium	7440-46-2	E440A	0.001	mg/kg wwt	0.5 mg/kg wwt	98.9	80.0	120	----
chromium	7440-47-3	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	105	80.0	120	----
cobalt	7440-48-4	E440A	0.004	mg/kg wwt	2.5 mg/kg wwt	101	80.0	120	----
copper	7440-50-8	E440A	0.02	mg/kg wwt	2.5 mg/kg wwt	101	80.0	120	----
iron	7439-89-6	E440A	0.6	mg/kg wwt	10 mg/kg wwt	104	80.0	120	----
lead	7439-92-1	E440A	0.004	mg/kg wwt	5 mg/kg wwt	100	80.0	120	----
lithium	7439-93-2	E440A	0.1	mg/kg wwt	2.5 mg/kg wwt	107	80.0	120	----
magnesium	7439-95-4	E440A	0.4	mg/kg wwt	500 mg/kg wwt	105	80.0	120	----
manganese	7439-96-5	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	105	80.0	120	----
molybdenum	7439-98-7	E440A	0.004	mg/kg wwt	2.5 mg/kg wwt	101	80.0	120	----
nickel	7440-02-0	E440A	0.04	mg/kg wwt	5 mg/kg wwt	101	80.0	120	----
phosphorus	7723-14-0	E440A	2	mg/kg wwt	100 mg/kg wwt	107	80.0	120	----
potassium	7440-09-7	E440A	4	mg/kg wwt	500 mg/kg wwt	107	80.0	120	----
rubidium	7440-17-7	E440A	0.01	mg/kg wwt	1 mg/kg wwt	106	80.0	120	----
selenium	7782-49-2	E440A	0.01	mg/kg wwt	10 mg/kg wwt	103	80.0	120	----
sodium	7440-23-5	E440A	4	mg/kg wwt	500 mg/kg wwt	106	80.0	120	----
strontium	7440-24-6	E440A	0.01	mg/kg wwt	2.5 mg/kg wwt	104	80.0	120	----
tellurium	13494-80-9	E440A	0.004	mg/kg wwt	1 mg/kg wwt	101	80.0	120	----
thallium	7440-28-0	E440A	0.0004	mg/kg wwt	10 mg/kg wwt	98.9	80.0	120	----
tin	7440-31-5	E440A	0.02	mg/kg wwt	5 mg/kg wwt	100	80.0	120	----
uranium	7440-61-1	E440A	0.0004	mg/kg wwt	0.05 mg/kg wwt	98.2	80.0	120	----
vanadium	7440-62-2	E440A	0.02	mg/kg wwt	5 mg/kg wwt	106	80.0	120	----
zinc	7440-66-6	E440A	0.1	mg/kg wwt	5 mg/kg wwt	99.4	80.0	120	----
zirconium	7440-67-7	E440A	0.04	mg/kg wwt	1 mg/kg wwt	96.0	80.0	120	----
Metals (QCLot: 628319)									
silver	7440-22-4	E440A.Ag	0.001	mg/kg wwt	1 mg/kg wwt	91.0	80.0	120	----
Metals (QCLot: 628320)									
mercury	7439-97-6	E510A	0.001	mg/kg wwt	0.02 mg/kg wwt	99.8	80.0	120	----
Metals (QCLot: 628321)									
mercury	7439-97-6	E510	0.005	mg/kg	0.02 mg/kg	99.8	80.0	120	----

Sub-Matrix: **Biota**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 628324)									
titanium	7440-32-6	E440.Ti	0.25	mg/kg	2.5 mg/kg	99.7	80.0	120	----
Metals (QCLot: 628325)									
titanium	7440-32-6	E440A.Ti	0.05	mg/kg wwt	2.5 mg/kg wwt	99.7	80.0	120	----

Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 622764)									
	RM	mercury	7439-97-6	E510	0.331 mg/kg	111	70.0	130	----
Metals (QCLot: 622765)									
	RM	aluminum	7429-90-5	E440	11.2 mg/kg	91.2	70.0	130	----
	RM	arsenic	7440-38-2	E440	34.6 mg/kg	103	70.0	130	----
	RM	bismuth	7440-69-9	E440	0.0247 mg/kg	100.0	60.0	140	----
	RM	cadmium	7440-43-9	E440	14.5 mg/kg	98.8	70.0	130	----
	RM	calcium	7440-70-2	E440	550 mg/kg	101	70.0	130	----
	RM	cesium	7440-46-2	E440	0.0712 mg/kg	105	70.0	130	----
	RM	chromium	7440-47-3	E440	1.96 mg/kg	82.1	70.0	130	----
	RM	cobalt	7440-48-4	E440	0.267 mg/kg	98.0	70.0	130	----
	RM	copper	7440-50-8	E440	35 mg/kg	104	70.0	130	----
	RM	iron	7439-89-6	E440	1070 mg/kg	101	70.0	130	----
	RM	lead	7439-92-1	E440	0.162 mg/kg	# 131	70.0	130	MES
	RM	magnesium	7439-95-4	E440	940 mg/kg	101	70.0	130	----
	RM	manganese	7439-96-5	E440	8.91 mg/kg	102	70.0	130	----
	RM	molybdenum	7439-98-7	E440	1.41 mg/kg	104	70.0	130	----
	RM	nickel	7440-02-0	E440	1.57 mg/kg	86.0	70.0	130	----
	RM	phosphorus	7723-14-0	E440	11500 mg/kg	104	70.0	130	----
	RM	potassium	7440-09-7	E440	14400 mg/kg	107	70.0	130	----
	RM	rubidium	7440-17-7	E440	5.11 mg/kg	99.1	70.0	130	----
	RM	selenium	7782-49-2	E440	8 mg/kg	105	70.0	130	----
	RM	sodium	7440-23-5	E440	10673 mg/kg	101	70.0	130	----
	RM	strontium	7440-24-6	E440	3.92 mg/kg	103	70.0	130	----
	RM	thallium	7440-28-0	E440	0.013 mg/kg	93.2	70.0	130	----
	RM	uranium	7440-61-1	E440	0.0786 mg/kg	108	70.0	130	----
	RM	vanadium	7440-62-2	E440	0.51 mg/kg	100	70.0	130	----
	RM	zinc	7440-66-6	E440	105.3 mg/kg	104	70.0	130	----
Metals (QCLot: 622766)									
	RM	silver	7440-22-4	E440.Ag	2.05 mg/kg	103	70.0	130	----

Sub-Matrix:

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report: RM Target Concentration	Recovery (%): RM	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Metals (QCLot: 622768)									
	RM	silver	7440-22-4	E440A.Ag	2.05 mg/kg wwt	103	70.0	130	----
Metals (QCLot: 622770)									
	RM	aluminum	7429-90-5	E440A	11.2 mg/kg wwt	91.2	70.0	130	----
	RM	arsenic	7440-38-2	E440A	34.6 mg/kg wwt	103	70.0	130	----
	RM	bismuth	7440-69-9	E440A	0.0247 mg/kg wwt	100.0	60.0	140	----
	RM	cadmium	7440-43-9	E440A	14.5 mg/kg wwt	98.8	70.0	130	----
	RM	calcium	7440-70-2	E440A	550 mg/kg wwt	101	70.0	130	----
	RM	cesium	7440-46-2	E440A	0.0712 mg/kg wwt	105	70.0	130	----
	RM	chromium	7440-47-3	E440A	1.96 mg/kg wwt	82.1	70.0	130	----
	RM	cobalt	7440-48-4	E440A	0.267 mg/kg wwt	98.0	70.0	130	----
	RM	copper	7440-50-8	E440A	35 mg/kg wwt	104	70.0	130	----
	RM	iron	7439-89-6	E440A	1070 mg/kg wwt	101	70.0	130	----
	RM	lead	7439-92-1	E440A	0.162 mg/kg wwt	# 131	70.0	130	MES
	RM	magnesium	7439-95-4	E440A	940 mg/kg wwt	101	70.0	130	----
	RM	manganese	7439-96-5	E440A	8.91 mg/kg wwt	102	70.0	130	----
	RM	molybdenum	7439-98-7	E440A	1.41 mg/kg wwt	104	70.0	130	----
	RM	nickel	7440-02-0	E440A	1.57 mg/kg wwt	86.0	70.0	130	----
	RM	phosphorus	7723-14-0	E440A	11500 mg/kg wwt	104	70.0	130	----
	RM	potassium	7440-09-7	E440A	14400 mg/kg wwt	107	70.0	130	----
	RM	rubidium	7440-17-7	E440A	5.11 mg/kg wwt	99.1	70.0	130	----
	RM	selenium	7782-49-2	E440A	8 mg/kg wwt	105	70.0	130	----
	RM	sodium	7440-23-5	E440A	10673 mg/kg wwt	101	70.0	130	----
	RM	strontium	7440-24-6	E440A	3.92 mg/kg wwt	103	70.0	130	----
	RM	thallium	7440-28-0	E440A	0.013 mg/kg wwt	93.2	70.0	130	----
	RM	uranium	7440-61-1	E440A	0.0786 mg/kg wwt	108	70.0	130	----
	RM	vanadium	7440-62-2	E440A	0.51 mg/kg wwt	100	70.0	130	----
	RM	zinc	7440-66-6	E440A	105.3 mg/kg wwt	104	70.0	130	----
Metals (QCLot: 622771)									
	RM	mercury	7439-97-6	E510A	0.331 mg/kg wwt	111	70.0	130	----
Metals (QCLot: 624361)									
	RM	aluminum	7429-90-5	E440	11.2 mg/kg	98.5	70.0	130	----

Sub-Matrix:

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report: RM Target Concentration	Recovery (%): RM	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Metals (QCLot: 624361) - continued									
	RM	arsenic	7440-38-2	E440	34.6 mg/kg	102	70.0	130	----
	RM	bismuth	7440-69-9	E440	0.0247 mg/kg	84.3	60.0	140	----
	RM	cadmium	7440-43-9	E440	14.5 mg/kg	97.0	70.0	130	----
	RM	calcium	7440-70-2	E440	550 mg/kg	102	70.0	130	----
	RM	cesium	7440-46-2	E440	0.0712 mg/kg	95.8	70.0	130	----
	RM	chromium	7440-47-3	E440	1.96 mg/kg	109	70.0	130	----
	RM	cobalt	7440-48-4	E440	0.267 mg/kg	100	70.0	130	----
	RM	copper	7440-50-8	E440	35 mg/kg	99.9	70.0	130	----
	RM	iron	7439-89-6	E440	1070 mg/kg	105	70.0	130	----
	RM	lead	7439-92-1	E440	0.162 mg/kg	89.2	70.0	130	----
	RM	magnesium	7439-95-4	E440	940 mg/kg	105	70.0	130	----
	RM	manganese	7439-96-5	E440	8.91 mg/kg	100	70.0	130	----
	RM	molybdenum	7439-98-7	E440	1.41 mg/kg	95.4	70.0	130	----
	RM	nickel	7440-02-0	E440	1.57 mg/kg	98.6	70.0	130	----
	RM	phosphorus	7723-14-0	E440	11500 mg/kg	102	70.0	130	----
	RM	potassium	7440-09-7	E440	14400 mg/kg	107	70.0	130	----
	RM	rubidium	7440-17-7	E440	5.11 mg/kg	101	70.0	130	----
	RM	selenium	7782-49-2	E440	8 mg/kg	104	70.0	130	----
	RM	sodium	7440-23-5	E440	10673 mg/kg	104	70.0	130	----
	RM	strontium	7440-24-6	E440	3.92 mg/kg	98.5	70.0	130	----
	RM	thallium	7440-28-0	E440	0.013 mg/kg	80.9	70.0	130	----
	RM	uranium	7440-61-1	E440	0.0786 mg/kg	106	70.0	130	----
	RM	vanadium	7440-62-2	E440	0.51 mg/kg	99.3	70.0	130	----
	RM	zinc	7440-66-6	E440	105.3 mg/kg	105	70.0	130	----
Metals (QCLot: 624362)									
	RM	mercury	7439-97-6	E510	0.331 mg/kg	112	70.0	130	----
Metals (QCLot: 624363)									
	RM	silver	7440-22-4	E440A.Ag	2.05 mg/kg wwt	92.0	70.0	130	----
Metals (QCLot: 624365)									
	RM	silver	7440-22-4	E440.Ag	2.05 mg/kg	92.0	70.0	130	----
Metals (QCLot: 624367)									
	RM	aluminum	7429-90-5	E440A	11.2 mg/kg wwt	98.5	70.0	130	----
	RM	arsenic	7440-38-2	E440A	34.6 mg/kg wwt	102	70.0	130	----

Sub-Matrix:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 624367) - continued									
	RM	bismuth	7440-69-9	E440A	0.0247 mg/kg wwt	84.3	60.0	140	----
	RM	cadmium	7440-43-9	E440A	14.5 mg/kg wwt	97.0	70.0	130	----
	RM	calcium	7440-70-2	E440A	550 mg/kg wwt	102	70.0	130	----
	RM	cesium	7440-46-2	E440A	0.0712 mg/kg wwt	95.8	70.0	130	----
	RM	chromium	7440-47-3	E440A	1.96 mg/kg wwt	109	70.0	130	----
	RM	cobalt	7440-48-4	E440A	0.267 mg/kg wwt	100	70.0	130	----
	RM	copper	7440-50-8	E440A	35 mg/kg wwt	99.9	70.0	130	----
	RM	iron	7439-89-6	E440A	1070 mg/kg wwt	105	70.0	130	----
	RM	lead	7439-92-1	E440A	0.162 mg/kg wwt	89.2	70.0	130	----
	RM	magnesium	7439-95-4	E440A	940 mg/kg wwt	105	70.0	130	----
	RM	manganese	7439-96-5	E440A	8.91 mg/kg wwt	100	70.0	130	----
	RM	molybdenum	7439-98-7	E440A	1.41 mg/kg wwt	95.4	70.0	130	----
	RM	nickel	7440-02-0	E440A	1.57 mg/kg wwt	98.6	70.0	130	----
	RM	phosphorus	7723-14-0	E440A	11500 mg/kg wwt	102	70.0	130	----
	RM	potassium	7440-09-7	E440A	14400 mg/kg wwt	107	70.0	130	----
	RM	rubidium	7440-17-7	E440A	5.11 mg/kg wwt	101	70.0	130	----
	RM	selenium	7782-49-2	E440A	8 mg/kg wwt	104	70.0	130	----
	RM	sodium	7440-23-5	E440A	10673 mg/kg wwt	104	70.0	130	----
	RM	strontium	7440-24-6	E440A	3.92 mg/kg wwt	98.5	70.0	130	----
	RM	thallium	7440-28-0	E440A	0.013 mg/kg wwt	80.9	70.0	130	----
	RM	uranium	7440-61-1	E440A	0.0786 mg/kg wwt	106	70.0	130	----
	RM	vanadium	7440-62-2	E440A	0.51 mg/kg wwt	99.3	70.0	130	----
	RM	zinc	7440-66-6	E440A	105.3 mg/kg wwt	105	70.0	130	----
Metals (QCLot: 624368)									
	RM	mercury	7439-97-6	E510A	0.331 mg/kg wwt	112	70.0	130	----
Metals (QCLot: 624379)									
	RM	mercury	7439-97-6	E510	0.331 mg/kg	109	70.0	130	----
Metals (QCLot: 624380)									
	RM	aluminum	7429-90-5	E440	11.2 mg/kg	90.8	70.0	130	----
	RM	arsenic	7440-38-2	E440	34.6 mg/kg	101	70.0	130	----
	RM	bismuth	7440-69-9	E440	0.0247 mg/kg	84.5	60.0	140	----

Sub-Matrix:

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report: RM Target Concentration	Recovery (%): RM	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Metals (QCLot: 624380) - continued									
	RM	cadmium	7440-43-9	E440	14.5 mg/kg	96.6	70.0	130	----
	RM	calcium	7440-70-2	E440	550 mg/kg	101	70.0	130	----
	RM	cesium	7440-46-2	E440	0.0712 mg/kg	98.5	70.0	130	----
	RM	chromium	7440-47-3	E440	1.96 mg/kg	105	70.0	130	----
	RM	cobalt	7440-48-4	E440	0.267 mg/kg	98.2	70.0	130	----
	RM	copper	7440-50-8	E440	35 mg/kg	99.6	70.0	130	----
	RM	iron	7439-89-6	E440	1070 mg/kg	106	70.0	130	----
	RM	lead	7439-92-1	E440	0.162 mg/kg	98.0	70.0	130	----
	RM	magnesium	7439-95-4	E440	940 mg/kg	105	70.0	130	----
	RM	manganese	7439-96-5	E440	8.91 mg/kg	100	70.0	130	----
	RM	molybdenum	7439-98-7	E440	1.41 mg/kg	96.1	70.0	130	----
	RM	nickel	7440-02-0	E440	1.57 mg/kg	103	70.0	130	----
	RM	phosphorus	7723-14-0	E440	11500 mg/kg	97.5	70.0	130	----
	RM	potassium	7440-09-7	E440	14400 mg/kg	104	70.0	130	----
	RM	rubidium	7440-17-7	E440	5.11 mg/kg	101	70.0	130	----
	RM	selenium	7782-49-2	E440	8 mg/kg	101	70.0	130	----
	RM	sodium	7440-23-5	E440	10673 mg/kg	102	70.0	130	----
	RM	strontium	7440-24-6	E440	3.92 mg/kg	95.1	70.0	130	----
	RM	thallium	7440-28-0	E440	0.013 mg/kg	80.2	70.0	130	----
	RM	uranium	7440-61-1	E440	0.0786 mg/kg	105	70.0	130	----
	RM	vanadium	7440-62-2	E440	0.51 mg/kg	97.9	70.0	130	----
	RM	zinc	7440-66-6	E440	105.3 mg/kg	101	70.0	130	----
Metals (QCLot: 624381)									
	RM	silver	7440-22-4	E440.Ag	2.05 mg/kg	92.6	70.0	130	----
Metals (QCLot: 624383)									
	RM	silver	7440-22-4	E440A.Ag	2.05 mg/kg wwt	92.6	70.0	130	----
Metals (QCLot: 624385)									
	RM	aluminum	7429-90-5	E440A	11.2 mg/kg wwt	90.8	70.0	130	----
	RM	arsenic	7440-38-2	E440A	34.6 mg/kg wwt	101	70.0	130	----
	RM	bismuth	7440-69-9	E440A	0.0247 mg/kg wwt	84.5	60.0	140	----
	RM	cadmium	7440-43-9	E440A	14.5 mg/kg wwt	96.6	70.0	130	----
	RM	calcium	7440-70-2	E440A	550 mg/kg wwt	101	70.0	130	----

Sub-Matrix:

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report				
					RM Target Concentration	Recovery (%) RM	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Metals (QCLot: 624385) - continued									
	RM	cesium	7440-46-2	E440A	0.0712 mg/kg wwt	98.5	70.0	130	----
	RM	chromium	7440-47-3	E440A	1.96 mg/kg wwt	105	70.0	130	----
	RM	cobalt	7440-48-4	E440A	0.267 mg/kg wwt	98.2	70.0	130	----
	RM	copper	7440-50-8	E440A	35 mg/kg wwt	99.6	70.0	130	----
	RM	iron	7439-89-6	E440A	1070 mg/kg wwt	106	70.0	130	----
	RM	lead	7439-92-1	E440A	0.162 mg/kg wwt	98.0	70.0	130	----
	RM	magnesium	7439-95-4	E440A	940 mg/kg wwt	105	70.0	130	----
	RM	manganese	7439-96-5	E440A	8.91 mg/kg wwt	100	70.0	130	----
	RM	molybdenum	7439-98-7	E440A	1.41 mg/kg wwt	96.1	70.0	130	----
	RM	nickel	7440-02-0	E440A	1.57 mg/kg wwt	103	70.0	130	----
	RM	phosphorus	7723-14-0	E440A	11500 mg/kg wwt	97.5	70.0	130	----
	RM	potassium	7440-09-7	E440A	14400 mg/kg wwt	104	70.0	130	----
	RM	rubidium	7440-17-7	E440A	5.11 mg/kg wwt	101	70.0	130	----
	RM	selenium	7782-49-2	E440A	8 mg/kg wwt	101	70.0	130	----
	RM	sodium	7440-23-5	E440A	10673 mg/kg wwt	102	70.0	130	----
	RM	strontium	7440-24-6	E440A	3.92 mg/kg wwt	95.1	70.0	130	----
	RM	thallium	7440-28-0	E440A	0.013 mg/kg wwt	80.2	70.0	130	----
	RM	uranium	7440-61-1	E440A	0.0786 mg/kg wwt	105	70.0	130	----
	RM	vanadium	7440-62-2	E440A	0.51 mg/kg wwt	97.9	70.0	130	----
	RM	zinc	7440-66-6	E440A	105.3 mg/kg wwt	101	70.0	130	----
Metals (QCLot: 624386)									
	RM	mercury	7439-97-6	E510A	0.331 mg/kg wwt	109	70.0	130	----
Metals (QCLot: 624391)									
	RM	mercury	7439-97-6	E510	0.331 mg/kg	110	70.0	130	----
Metals (QCLot: 624392)									
	RM	aluminum	7429-90-5	E440	11.2 mg/kg	91.9	70.0	130	----
	RM	arsenic	7440-38-2	E440	34.6 mg/kg	98.8	70.0	130	----
	RM	bismuth	7440-69-9	E440	0.0247 mg/kg	86.9	60.0	140	----
	RM	cadmium	7440-43-9	E440	14.5 mg/kg	94.6	70.0	130	----
	RM	calcium	7440-70-2	E440	550 mg/kg	98.9	70.0	130	----
	RM	cesium	7440-46-2	E440	0.0712 mg/kg	96.7	70.0	130	----
	RM	chromium	7440-47-3	E440	1.96 mg/kg	91.9	70.0	130	----

Sub-Matrix:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 624392) - continued									
	RM	cobalt	7440-48-4	E440	0.267 mg/kg	94.6	70.0	130	----
	RM	copper	7440-50-8	E440	35 mg/kg	98.5	70.0	130	----
	RM	iron	7439-89-6	E440	1070 mg/kg	103	70.0	130	----
	RM	lead	7439-92-1	E440	0.162 mg/kg	# 135	70.0	130	MES
	RM	magnesium	7439-95-4	E440	940 mg/kg	103	70.0	130	----
	RM	manganese	7439-96-5	E440	8.91 mg/kg	98.9	70.0	130	----
	RM	molybdenum	7439-98-7	E440	1.41 mg/kg	95.2	70.0	130	----
	RM	nickel	7440-02-0	E440	1.57 mg/kg	88.2	70.0	130	----
	RM	phosphorus	7723-14-0	E440	11500 mg/kg	97.6	70.0	130	----
	RM	potassium	7440-09-7	E440	14400 mg/kg	103	70.0	130	----
	RM	rubidium	7440-17-7	E440	5.11 mg/kg	98.9	70.0	130	----
	RM	selenium	7782-49-2	E440	8 mg/kg	102	70.0	130	----
	RM	sodium	7440-23-5	E440	10673 mg/kg	102	70.0	130	----
	RM	strontium	7440-24-6	E440	3.92 mg/kg	92.5	70.0	130	----
	RM	thallium	7440-28-0	E440	0.013 mg/kg	77.6	70.0	130	----
	RM	uranium	7440-61-1	E440	0.0786 mg/kg	99.9	70.0	130	----
	RM	vanadium	7440-62-2	E440	0.51 mg/kg	97.2	70.0	130	----
	RM	zinc	7440-66-6	E440	105.3 mg/kg	98.1	70.0	130	----
Metals (QCLot: 624393)									
	RM	silver	7440-22-4	E440.Ag	2.05 mg/kg	91.9	70.0	130	----
Metals (QCLot: 624395)									
	RM	silver	7440-22-4	E440A.Ag	2.05 mg/kg wwt	91.9	70.0	130	----
Metals (QCLot: 624397)									
	RM	aluminum	7429-90-5	E440A	11.2 mg/kg wwt	91.9	70.0	130	----
	RM	arsenic	7440-38-2	E440A	34.6 mg/kg wwt	98.8	70.0	130	----
	RM	bismuth	7440-69-9	E440A	0.0247 mg/kg wwt	86.9	60.0	140	----
	RM	cadmium	7440-43-9	E440A	14.5 mg/kg wwt	94.6	70.0	130	----
	RM	calcium	7440-70-2	E440A	550 mg/kg wwt	98.9	70.0	130	----
	RM	cesium	7440-46-2	E440A	0.0712 mg/kg wwt	96.7	70.0	130	----
	RM	chromium	7440-47-3	E440A	1.96 mg/kg wwt	91.9	70.0	130	----
	RM	cobalt	7440-48-4	E440A	0.267 mg/kg wwt	94.6	70.0	130	----
	RM	copper	7440-50-8	E440A	35 mg/kg wwt	98.5	70.0	130	----

Sub-Matrix:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 624397) - continued									
	RM	iron	7439-89-6	E440A	1070 mg/kg wwt	103	70.0	130	----
	RM	lead	7439-92-1	E440A	0.162 mg/kg wwt	# 135	70.0	130	MES
	RM	magnesium	7439-95-4	E440A	940 mg/kg wwt	103	70.0	130	----
	RM	manganese	7439-96-5	E440A	8.91 mg/kg wwt	98.9	70.0	130	----
	RM	molybdenum	7439-98-7	E440A	1.41 mg/kg wwt	95.2	70.0	130	----
	RM	nickel	7440-02-0	E440A	1.57 mg/kg wwt	88.2	70.0	130	----
	RM	phosphorus	7723-14-0	E440A	11500 mg/kg wwt	97.6	70.0	130	----
	RM	potassium	7440-09-7	E440A	14400 mg/kg wwt	103	70.0	130	----
	RM	rubidium	7440-17-7	E440A	5.11 mg/kg wwt	98.9	70.0	130	----
	RM	selenium	7782-49-2	E440A	8 mg/kg wwt	102	70.0	130	----
	RM	sodium	7440-23-5	E440A	10673 mg/kg wwt	102	70.0	130	----
	RM	strontium	7440-24-6	E440A	3.92 mg/kg wwt	92.5	70.0	130	----
	RM	thallium	7440-28-0	E440A	0.013 mg/kg wwt	77.6	70.0	130	----
	RM	uranium	7440-61-1	E440A	0.0786 mg/kg wwt	99.9	70.0	130	----
	RM	vanadium	7440-62-2	E440A	0.51 mg/kg wwt	97.2	70.0	130	----
	RM	zinc	7440-66-6	E440A	105.3 mg/kg wwt	98.1	70.0	130	----
Metals (QCLot: 624398)									
	RM	mercury	7439-97-6	E510A	0.331 mg/kg wwt	110	70.0	130	----
Metals (QCLot: 628316)									
	RM	aluminum	7429-90-5	E440	11.2 mg/kg	94.7	70.0	130	----
	RM	arsenic	7440-38-2	E440	34.6 mg/kg	99.3	70.0	130	----
	RM	bismuth	7440-69-9	E440	0.0247 mg/kg	100	60.0	140	----
	RM	cadmium	7440-43-9	E440	14.5 mg/kg	95.5	70.0	130	----
	RM	calcium	7440-70-2	E440	550 mg/kg	96.9	70.0	130	----
	RM	cesium	7440-46-2	E440	0.0712 mg/kg	89.0	70.0	130	----
	RM	chromium	7440-47-3	E440	1.96 mg/kg	87.3	70.0	130	----
	RM	cobalt	7440-48-4	E440	0.267 mg/kg	93.6	70.0	130	----
	RM	copper	7440-50-8	E440	35 mg/kg	98.4	70.0	130	----
	RM	iron	7439-89-6	E440	1070 mg/kg	99.1	70.0	130	----
	RM	lead	7439-92-1	E440	0.162 mg/kg	92.0	70.0	130	----
	RM	magnesium	7439-95-4	E440	940 mg/kg	101	70.0	130	----
	RM	manganese	7439-96-5	E440	8.91 mg/kg	101	70.0	130	----

Sub-Matrix:

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report: RM Target Concentration	Reference Material (RM) Report: Recovery (%) RM	Reference Material (RM) Report: Recovery Limits (%) Low	Reference Material (RM) Report: Recovery Limits (%) High	Reference Material (RM) Report: Qualifier
Metals (QCLot: 628316) - continued									
	RM	molybdenum	7439-98-7	E440	1.41 mg/kg	90.2	70.0	130	----
	RM	nickel	7440-02-0	E440	1.57 mg/kg	94.5	70.0	130	----
	RM	phosphorus	7723-14-0	E440	11500 mg/kg	102	70.0	130	----
	RM	potassium	7440-09-7	E440	14400 mg/kg	103	70.0	130	----
	RM	rubidium	7440-17-7	E440	5.11 mg/kg	99.2	70.0	130	----
	RM	selenium	7782-49-2	E440	8 mg/kg	97.4	70.0	130	----
	RM	sodium	7440-23-5	E440	10673 mg/kg	101	70.0	130	----
	RM	strontium	7440-24-6	E440	3.92 mg/kg	91.1	70.0	130	----
	RM	thallium	7440-28-0	E440	0.013 mg/kg	87.4	70.0	130	----
	RM	uranium	7440-61-1	E440	0.0786 mg/kg	98.6	70.0	130	----
	RM	vanadium	7440-62-2	E440	0.51 mg/kg	96.5	70.0	130	----
	RM	zinc	7440-66-6	E440	105.3 mg/kg	97.0	70.0	130	----
Metals (QCLot: 628317)									
	RM	silver	7440-22-4	E440.Ag	2.05 mg/kg	88.3	70.0	130	----
Metals (QCLot: 628318)									
	RM	aluminum	7429-90-5	E440A	11.2 mg/kg wwt	94.7	70.0	130	----
	RM	arsenic	7440-38-2	E440A	34.6 mg/kg wwt	99.3	70.0	130	----
	RM	bismuth	7440-69-9	E440A	0.0247 mg/kg wwt	100	60.0	140	----
	RM	cadmium	7440-43-9	E440A	14.5 mg/kg wwt	95.5	70.0	130	----
	RM	calcium	7440-70-2	E440A	550 mg/kg wwt	96.9	70.0	130	----
	RM	cesium	7440-46-2	E440A	0.0712 mg/kg wwt	89.0	70.0	130	----
	RM	chromium	7440-47-3	E440A	1.96 mg/kg wwt	87.3	70.0	130	----
	RM	cobalt	7440-48-4	E440A	0.267 mg/kg wwt	93.6	70.0	130	----
	RM	copper	7440-50-8	E440A	35 mg/kg wwt	98.4	70.0	130	----
	RM	iron	7439-89-6	E440A	1070 mg/kg wwt	99.1	70.0	130	----
	RM	lead	7439-92-1	E440A	0.162 mg/kg wwt	92.0	70.0	130	----
	RM	magnesium	7439-95-4	E440A	940 mg/kg wwt	101	70.0	130	----
	RM	manganese	7439-96-5	E440A	8.91 mg/kg wwt	101	70.0	130	----
	RM	molybdenum	7439-98-7	E440A	1.41 mg/kg wwt	90.2	70.0	130	----
	RM	nickel	7440-02-0	E440A	1.57 mg/kg wwt	94.5	70.0	130	----
	RM	phosphorus	7723-14-0	E440A	11500 mg/kg wwt	102	70.0	130	----
	RM	potassium	7440-09-7	E440A	14400 mg/kg wwt	103	70.0	130	----

Sub-Matrix:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 628318) - continued									
	RM	rubidium	7440-17-7	E440A	5.11 mg/kg wwt	99.2	70.0	130	----
	RM	selenium	7782-49-2	E440A	8 mg/kg wwt	97.4	70.0	130	----
	RM	sodium	7440-23-5	E440A	10673 mg/kg wwt	101	70.0	130	----
	RM	strontium	7440-24-6	E440A	3.92 mg/kg wwt	91.1	70.0	130	----
	RM	thallium	7440-28-0	E440A	0.013 mg/kg wwt	87.4	70.0	130	----
	RM	uranium	7440-61-1	E440A	0.0786 mg/kg wwt	98.6	70.0	130	----
	RM	vanadium	7440-62-2	E440A	0.51 mg/kg wwt	96.5	70.0	130	----
	RM	zinc	7440-66-6	E440A	105.3 mg/kg wwt	97.0	70.0	130	----
Metals (QCLot: 628319)									
	RM	silver	7440-22-4	E440A.Ag	2.05 mg/kg wwt	88.3	70.0	130	----
Metals (QCLot: 628320)									
	RM	mercury	7439-97-6	E510A	0.331 mg/kg wwt	107	70.0	130	----
Metals (QCLot: 628321)									
	RM	mercury	7439-97-6	E510	0.331 mg/kg	107	70.0	130	----
Metals (QCLot: 628324)									
	RM	titanium	7440-32-6	E440.Ti	1.05 mg/kg	77.3	70.0	130	----
Metals (QCLot: 628325)									
	RM	titanium	7440-32-6	E440A.Ti	1.05 mg/kg wwt	77.3	70.0	130	----

Qualifiers

Qualifier	Description
MES	*Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).*

ALS Environmental

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Canada Toll Free: 1 800 668 9878
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COC # _____

Environmental Division Whitehorse
Work Order Reference
WR2200752

Telephone : +1 867 668 6689

Report To		Report Format / Distribution				Service Requested (Rush for routine analysis subject to availability)
Company:	Victoria Gold (Yukon) Corp.	☑ Standard	☐ Other			◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Bill Bowden	☑ PDF	☑ Excel	☑ Digital	☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TA
Address:	1000 – 1050 West Pender Street	Email 1:	bbowden@vgcx.com			○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm T/
	Vancouver, BC V6E 3S7	Email 2:	david@coregeo.ca			○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-696-6600 Fax:	Email 3:	hcoyle@vgcx.com			Analysis Request
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information				Please indicate below Filtered, Preserved or both (F, P, F
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	Eagle Gold			
Company:		PO / AFE:				
Contact:		LSD:	Victoria Gold Corp.			
Address:						
Phone:	Fax:	Quote #:	Dublin Gulch Tissue Samples			
Lab Work Order # (lab use only)		ALS Contact:	Heather Mackenzie	Sampler:	David Krug	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Mercury in tissue	Metals in tissue										Number of Cr
1	D1-B, Centre, Salix leaves	21-Jul-22			X	X										1
	D1-B Centre Salix Twigs	21-Jul-22			X	X										1
	D1-B, Centre, Dwarf birch leaves	21-Jul-22			X	X										1
	D1-B, East, Salix leaves	21-Jul-22			X	X										1
5	D1-B East Salix twigs	21-Jul-22			X	X										1
	D1-B, East, Dwarf birch leaves	21-Jul-22			X	X										1
	D1-B, South, Salix leaves	21-Jul-22			X	X										1
	D1-B South Salix twigs	21-Jul-22			X	X										1
	D1-B, South, dwarf birch leaves	21-Jul-22			X	X										1
10	D1-B, West, Salix leaves	21-Jul-22			X	X										1
	D1-B, West, Salix twigs	21-Jul-22			X	X										1
	D1-B, West, dwarf birch leaves	21-Jul-22			X	X										1
	D1-B, North, Salix leaves	21-Jul-22			X	X										1
14	D1-B, North, Salix twigs	21-Jul-22			X	X										-
15	D1-B, North dwarf birch leaves	21-Jul-22			X	X										
16	D1-B, Composite, fescue	21-Jul-22			X	X										

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

DO NOT RINSE THE TISSUE SAMPLES. WE WANT THE ANALYSIS TO INCLUDE THE DUST ON THE LEAVES ETC AS WELL AS INCLUDING THE UPTAKE OF METALS IN THE PLANTS.

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

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SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observa Yes / No If Yes ad
David Krug	22-Jul-22		(2)	July 22/22	10:55	0.0°C				

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COC # _____

Report To		**Report Format / Distribution**	**Service Requested** (Rush for routine analysis subject to availability)
Company:	Victoria Gold (Yukon) Corp.	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Bill Bowden	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	1000 - 1050 West Pender Street	Email 1: bbowden@vgcx.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6E 3S7	Email 2: david@coregeo.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-696-6600 Fax:	Email 3: hcoyle@vgcx.com	
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**	**Analysis Request**
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #: Eagle Gold	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		PO / AFE:	
Contact:		LSD: Victoria Gold Corp.	
Address:			
Phone:	Fax:	Quote #: Dublin Gulch Tissue Samples	
Lab Work Order # (lab use only)		**ALS Contact:** Heather Mackenzie	**Sampler:** David Krug

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Mercury in tissue	Metals in tissue										Number of Containers
17	D2-B, Centre, Salix leaves	20-Jul-22			X	X										1
	D2-B, Centre, Salix twigs	20-Jul-22			X	X										1
	D2-B,Centre, equisetum	20-Jul-22			X	X										1
20	D2-B, South, Salix leaves	20-Jul-22			X	X										1
	D2-B, South, Salix twigs	20-Jul-22			X	X										1
	D2-B, South, dwarf birch	20-Jul-22			X	X										1
	D2-B, West, Salix leaves	20-Jul-22			X	X										1
	D2-B, West, Salix twigs	20-Jul-22			X	X										1
25	D2-B, West, equisetum	20-Jul-22			X	X										1
	D2-B, East, paper birch leaves	20-Jul-22			X	X										1
	D2-B, East, paper birch twigs	20-Jul-22			X	X										1
	D2-B, North, Salix leaves	20-Jul-22			X	X										1
	D2-B, North, Salix twigs	20-Jul-22			X	X										1
30	D2-B, North, equisetum	20-Jul-22			X	X										1

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
David Krug	22-Jul-22					°C				

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Report To		**Report Format / Distribution**	**Service Requested** (Rush for routine analysis subject to availability)
Company:	Victoria Gold (Yukon) Corp.	☑ Standard ☐ Other	◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Dill Dowden	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	1000 - 1050 West Pender Street	Email 1: bbowden@vgcx.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6E 3S7	Email 2: david@coregeo.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-696-6600 Fax:	Email 3: hcoyle@vgcx.com	
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**	
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #: Eagle Gold	
Company:		PO / AFE:	
Contact:		LSD: Victoria Gold Corp.	
Address:			
Phone:	Fax:	Quote #: Dublin Gulch Tissue Samples	
Lab Work Order # (lab use only)		**ALS Contact:** Heather Mackenzie	**Sampler:** David Krug

Analysis Request

Please indicate below Filtered, Preserved or both (F, P, F/P)

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Mercury in tissue	Metals in tissue										Number of Containers
31	D3-B, Centre, Salix leaves	21-Jul-22			X	X										1
	D3-B, Centre,Salix twigs	21-Jul-22			X	X										1
	D3-B, Centre, dwarf birch leaves	21-Jul-22			X	X										1
	D3-B, South, dwarf birch leaves	21-Jul-22			X	X										1
35	D3-B, South Salix Leaves	21-Jul-22			X	X										1
	D3-B South Salix Twigs	21-Jul-22			X	X										1
	D3-B, East, dwarf birch leaves	21-Jul-22			X	X										1
	D3-B, East, Salix leaves	21-Jul-22			X	X										1
	D3-B East Salic twigs	21-Jul-22			X	X										1
40	D3-B, West, Salix leaves	21-Jul-22			X	X										1
	D3-B, West, Salix twigs,	21-Jul-22			X	X										1
	D3-B, West, dwarf birch leaves	21-Jul-22			X	X										1
	D3-B, North, Salix leaves	21-Jul-22			X	X										1
44	D3-B, North dwarf birch leaves	21-Jul-22			X	X										1

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
David Krug	22-Jul-22					°C				

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Company:	Victoria Gold (Yukon) Corp.			☑ Standard	☐ Other			◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Bill Bowden			☑ PDF	☑ Excel	☑ Digital	☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	1000 - 1050 West Pender Street			Email 1:	bbowden@vgcx.com			○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6E 3S7			Email 2:	david@coregeo.ca			○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-696-6600	Fax:		Email 3:	hcoyle@vgcx.com			**Analysis Request**
Invoice To	Same as Report ?	☑ Yes	☐ No	**Client / Project Information**				Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?		☐ Yes	☑ No	Job #:	Eagle Gold			
Company:				PO / AFE:				
Contact:				LSD:	Victoria Gold Corp.			
Address:								
Phone:		Fax:		Quote #:	Dublin Gulch Tissue Samples			
Lab Work Order # (lab use only)				**ALS Contact:**	Heather Mackenzie	**Sampler:**	David Krug	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Mercury in tissue	Metals in tissue										Number of Containers
45	D4-B, Centre, dwarf birch leaves	21-Jul-22			X	X										1
	D4-B, Centre, labrador tea leaves	21-Jul-22			X	X										1
	D4-B, West, dwarf birch leaves	21-Jul-22			X	X										1
	D4-B, West labrador tea leaves	21-Jul-22			X	X										1
	D4-B, North, Salix leaves	21-Jul-22			X	X										1
50	D4-B, North, Salix twigs	21-Jul-22			X	X										1
	D4-B, North, equisetum	21-Jul-22			X	X										1
	D4-B, South, Salix leaves	21-Jul-22			X	X										1
	D4-B, South, Salix twigs	21-Jul-22			X	X										1
	D4-B, East, Salix leaves	21-Jul-22			X	X										1
55	D4-B, East, dwarf birch leaves	21-Jul-22			X	X										1
56	D4-B, East, labrador tea leaves	21-Jul-22			X	X										1

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
David Krug	22-Jul-22					°C				

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Contact:	Bill Bowden	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	1000 - 1050 West Pender Street	Email 1: bbowden@vgcx.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6E 3S7	Email 2: david@coregeo.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-696-6600 Fax:	Email 3: hcoyle@vgcx.com	**Analysis Request**
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**	Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #: Eagle Gold	
Company:		PO / AFE:	
Contact:		LSD: Victoria Gold Corp.	
Address:			
Phone:	Fax:	Quote #: Dublin Gulch Tissue Samples	
Lab Work Order # (lab use only)		**ALS Contact:** Heather Mackenzie **Sampler:** David Krug	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Mercury in tissue	Metals in tissue										Number of Containers
57	D5, Centre, Salix leaves	21-Jul-22			X	X										1
	D5, Centre, equisetum	21-Jul-22			X	X										1
	D5, East, poplar leaves	21-Jul-22			X	X										1
60	D5, East, poplar twigs	21-Jul-22			X	X										1
	D5, South, poplar leaves	21-Jul-22			X	X										1
	D5, South, poplar twigs	21-Jul-22			X	X										1
	D5, South, equisetum	21-Jul-22			X	X										1
	D5, West, Salix leaves	21-Jul-22			X	X										1
65	D5, West, equisetum	21-Jul-22			X	X										1
	D5, Noth, Salix leaves	21-Jul-22			X	X										1
67	D5, North, equisetum	21-Jul-22			X	X										1

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
David Krug	22-Jul-22					°C				

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Address:	1000 - 1050 West Pender Street	Email 1: bbowden@vgcx.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6E 3S7	Email 2: david@coregeo.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-696-6600 Fax:	Email 3: hcoyle@vgcx.com	**Analysis Request**
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**	Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #: Eagle Gold	
Company:		PO / AFE:	
Contact:		LSD: Victoria Gold Corp.	
Address:			
Phone:	Fax:	Quote #: Dublin Gulch Tissue Samples	
Lab Work Order # (lab use only)		**ALS Contact:** Heather Mackenzie **Sampler:** David Krug	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Mercury in tissue	Metals in tissue	Number of Containers
68	D1-B Centre Salix Leaves 2	21-Jul-22			X	X	1
	D1-B East Salix Leaves 2	21-Jul-22			X	X	1
70	D1-B South Salix Leaves 2	21-Jul-22			X	X	1
	D4-B Centre Labrador Tea Leaves-2	21-Jul-22			X	X	1
	D4-B North Salix Leaves-2	21-Jul-22			X	X	1
	D5 Centre Equisetum-2	21-Jul-22			X	X	1
74	D5 South Poplar Leaves-2	21-Jul-22			X	X	1

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

DO NOT RINSE THE TISSUE SAMPLES. WE WANT THE ANALYSIS TO INCLUDE THE DUST ON THE LEAVES ETC AS WELL AS INCLUDING THE UPTAKE OF METALS IN THE PLANTS.

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Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
David Krug	22-Jul-22					°C				

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Page 1 of 6

Environmental Division Whitehorse
Work Order Reference
WR2200752

Telephone : +1 867 668 6689

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	Victoria Gold (Yukon) Corp.	☑ Standard ☐ Other		◉ Regular (Standard Turnaround Times - Business Days)
Contact:	Bill Bowden	☑ PDF ☑ Excel ☑ Digital ☐ Fax		○ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address:	1000 - 1050 West Pender Street	Email 1:	bbowden@vgcx.com	○ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Vancouver, BC V6E 3S7	Email 2:	david@coregeo.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-696-6600 Fax:	Email 3:	hcoyle@vgcx.com	Analysis Request
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Please indicate below Filtered, Preserved or both (F, P, F
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	Eagle Gold	
Company:		PO / AFE:		
Contact:		LSD:	Victoria Gold Corp.	
Address:				
Phone:	Fax:	Quote #:	Dublin Gulch Tissue Samples	
Lab Work Order # (lab use only)		ALS Contact:	Heather Mackenzie	Sampler: David Krug

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Mercury in tissue	Metals in tissue	Number of C
1	D1-B, Centre, Salix leaves	21-Jul-22			X	X	1
"	D1-B Centre Salix Twigs	21-Jul-22			X	X	1
"	D1-B, Centre, Dwarf birch leaves	21-Jul-22			X	X	1
"	D1-B, East, Salix leaves	21-Jul-22			X	X	1
5	D1-B East Salix twigs	21-Jul-22			X	X	1
"	D1-B, East, Dwarf birch leaves	21-Jul-22			X	X	1
"	D1-B, South, Salix leaves	21-Jul-22			X	X	1
"	D1-B South Salix twigs	21-Jul-22			X	X	1
"	D1-B, South, dwarf birch leaves	21-Jul-22			X	X	1
10	D1-B, West, Salix leaves	21-Jul-22			X	X	1
"	D1-B, West, Salix twigs	21-Jul-22			X	X	1
"	D1-B, West, dwarf birch leaves	21-Jul-22			X	X	1
"	D1-B, North, Salix leaves	21-Jul-22			X	X	1
14	D1-B, North, Salix twigs	21-Jul-22			X	X	1
15	D1-B, North dwarf birch leaves	21-Jul-22			X	X	1
16	D1-B, Composite, fescue	21-Jul-22			X	X	1

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Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observa Yes / No If Yes ad
David Krug	22-Jul-22		JC	July 22/22	10:55	0.0C				

July 23/22 11:20am -3°C ice pack

GENF 20.00 Fro

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	Vancouver, BC V6E 3S7	Email 2:	david@coregeo.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-696-6600 Fax:	Email 3:	hcoyle@vgcx.com	
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information		Analysis Request
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	Eagle Gold	Please indicate below Filtered, Preserved or both (F, P, F/P)
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Contact:		LSD:	Victoria Gold Corp.	
Address:				
Phone:	Fax:	Quote #:	Dublin Gulch Tissue Samples	
Lab Work Order # (lab use only)		ALS Contact:	Heather Mackenzie	Sampler: David Krug

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Mercury in tissue	Metals in tissue	Number of Containers
17	D2-B, Centre, Salix leaves	20-Jul-22			X	X	1
	D2-B, Centre, Salix twigs	20-Jul-22			X	X	1
	D2-B,Centre, equisetum	20-Jul-22			X	X	1
20	D2-B, South, Salix leaves	20-Jul-22			X	X	1
	D2-B, South, Salix twigs	20-Jul-22			X	X	1
	D2-B, South, dwarf birch	20-Jul-22			X	X	1
	D2-B, West, Salix leaves	20-Jul-22			X	X	1
	D2-B, West, Salix twigs	20-Jul-22			X	X	1
25	D2-B, West, equisetum	20-Jul-22			X	X	1
	D2-B, East, paper birch leaves	20-Jul-22			X	X	1
	D2-B, East, paper birch twigs	20-Jul-22			X	X	1
	D2-B, North, Salix leaves	20-Jul-22			X	X	1
	D2-B, North, Salix twigs	20-Jul-22			X	X	1
30	D2-B, North, equisetum	20-Jul-22			X	X	1

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SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: David Krug	Date (dd-mmm-yy) 22-Jul-22	Time (hh-mm)	Received by: JC Capacle	Date: JUL 23 2022	Time: 1120am	Temperature: -3 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF

GENF 20.00 Front

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	Vancouver, BC V6E 3S7	Email 2: david@coregeo.ca	○ Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone:	604-696-6600 Fax:	Email 3: hcoyle@vgcx.com	**Analysis Request**
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**	Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #: Eagle Gold	
Company:		PO / AFE:	
Contact:		LSD: Victoria Gold Corp.	
Address:			
Phone:	Fax:	Quote #: Dublin Gulch Tissue Samples	
Lab Work Order # (lab use only)		**ALS Contact:** Heather Mackenzie	**Sampler:** David Krug

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Mercury in tissue	Metals in tissue										Number of Containers
31	D3-B, Centre, Salix leaves	21-Jul-22			X	X										1
	D3-B, Centre,Salix twigs	21-Jul-22			X	X										1
	D3-B, Centre, dwarf birch leaves	21-Jul-22			X	X										1
	D3-B, South, dwarf birch leaves	21-Jul-22			X	X										1
35	D3-B, South Salix Leaves	21-Jul-22			X	X										1
	D3-B South Salix Twigs	21-Jul-22			X	X										1
	D3-B, East, dwarf birch leaves	21-Jul-22			X	X										1
	D3-B, East, Salix leaves	21-Jul-22			X	X										1
	D3-B East Salic twigs	21-Jul-22			X	X										1
40	D3-B, West, Salix leaves	21-Jul-22			X	X										1
	D3-B, West, Salix twigs,	21-Jul-22			X	X										1
	D3-B, West, dwarf birch leaves	21-Jul-22			X	X										1
	D3-B, North, Salix leaves	21-Jul-22			X	X										1
14	D3-B, North dwarf birch leaves	21-Jul-22			X	X										1

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Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by: JC	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
David Krug	22-Jul-22		ice packs	JUL 23 2022	1120 am	-3 °C				

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Phone:	604-696-6600 Fax:	Email 3:	hcoyle@vgcx.com	
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**		**Analysis Request**
Hardcopy of Invoice with Report?	☐ Yes ☑ No	Job #:	Eagle Gold	Please indicate below Filtered, Preserved or both (F, P, F/P)
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Contact:		LSD:	Victoria Gold Corp.	
Address:				
Phone:	Fax:	Quote #:	Dublin Gulch Tissue Samples	
Lab Work Order # (lab use only)		**ALS Contact:**	Heather Mackenzie	**Sampler:** David Krug

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Mercury in tissue	Metals in tissue										Number of Containers
45	D4-B, Centre, dwarf birch leaves	21-Jul-22			X	X										1
	D4-B, Centre, labrador tea leaves	21-Jul-22			X	X										1
	D4-B, West, dwarf birch leaves	21-Jul-22			X	X										1
	D4-B, West labrador tea leaves	21-Jul-22			X	X										1
	D4-B, North, Salix leaves	21-Jul-22			X	X										1
50	D4-B, North, Salix twigs	21-Jul-22			X	X										1
	D4-B, North, equisetum	21-Jul-22			X	X										1
	D4-B, South, Salix leaves	21-Jul-22			X	X										1
	D4-B, South, Salix twigs	21-Jul-22			X	X										1
	D4-B, East, Salix leaves	21-Jul-22			X	X										1
55	D4-B, East, dwarf birch leaves	21-Jul-22			X	X										1
56	D4-B, East, labrador tea leaves	21-Jul-22			X	X										1

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Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by: JC	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
David Krug	22-Jul-22		Ice pack	JUL 23 2022	1120 AM	-3 °C				

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Address:				
Phone:	Fax:	Quote #:	Dublin Gulch Tissue Samples	
Lab Work Order # (lab use only)		ALS Contact:	Heather Mackenzie	Sampler: David Krug

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Mercury in tissue	Metals in tissue										Number of Containers
57	D5, Centre, Salix leaves	21-Jul-22			X	X										1
	D5, Centre, equisetum	21-Jul-22			X	X										1
	D5, East, poplar leaves	21-Jul-22			X	X										1
60	D5, East, poplar twigs	21-Jul-22			X	X										1
	D5, South, poplar leaves	21-Jul-22			X	X										1
	D5, South, poplar twigs	21-Jul-22			X	X										1
	D5, South, equisetum	21-Jul-22			X	X										1
	D5, West, Salix leaves	21-Jul-22			X	X										1
65	D5, West, equisetum	21-Jul-22			X	X										1
	D5, Noth, Salix leaves	21-Jul-22			X	X										1
67	D5, North, equisetum	21-Jul-22			X	X										1

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Address:				
Phone:	Fax:	Quote #:	Dublin Gulch Tissue Samples	
Lab Work Order # (lab use only)		**ALS Contact:**	Heather Mackenzie	**Sampler:** David Krug

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Mercury in tissue	Metals in tissue										Number of Containers
68	D1-B Centre Salix Leaves 2	21-Jul-22			X	X										1
	D1-B East Salix Leaves 2	21-Jul-22			X	X										1
70	D1-B South Salix Leaves 2	21-Jul-22			X	X										1
	D4-B Centre Labrador Tea Leaves-2	21-Jul-22			X	X										1
	D4-B North Salix Leaves-2	21-Jul-22			X	X										1
	D5 Centre Equisetum-2	21-Jul-22			X	X										1
74	D5 South Poplar Leaves-2	21-Jul-22			X	X										1

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David Krug	22-Jul-22		ice pack	JUL 23 2022	1120 AM	-3 °C				

MEMORANDUM

Date: March 20th, 2023

To: Bill Bowden, Environmental Manager, Victoria Gold Corp, bboweden@vgcx.com

From: David Krug, Core Geoscience Services Inc., david@coregeo.ca

Subject: Victoria Gold Erosion Control Seeding Program Memo – Eagle Gold Mine – 2023

1. BACKGROUND

Victoria Gold Corp (VGC) retained Core Geoscience Services Inc. (CoreGeo) in partnership with Yukon Seed & Restoration Inc. (YSR) to conduct monitoring and assessment of the seeded sites as part of the 2022 reclamation monitoring program. The results of the assessment are presented in this memo.

A seeding program was conducted by Laberge Environmental at the Eagle Gold Mine during the fall of 2021 for erosion and sediment control on recently disturbed slope areas (Laberge 2021). Seeding was conducted using a custom erosion control mix which included alpine bluegrass (*Poa alpinus*), rocky mountain fescue (*Festuca saximontana*), tufted hairgrass (*Deschampsia caespitosa*), and slender wheatgrass (*Elymus trachycaulus*). The seed mix was applied to 11 areas, including overburden stockpiles, ditches, culverts, and roadway rights-of-way.

2. SEEDING ASSESSMENT

David Krug (CoreGeo) and Andrew Thomson (YSR) conducted assessment of the seeded areas by visual estimates of plant cover to determine the success of seeding efforts and identify problem areas that require additional erosion control measures (or re-seeding). Notes from the assessment are presented in Table 1. A map showing reseeded locations is shown in Figure 1.

Table 1: Results from 2022 seeding assessment by site.

Site	Location	Area (ha)	Rate (kg/ha)	Notes
1	LDSP Northeast	0.3	20.1	Variable coverage of wheatgrass on slope of area 1, between 10-60% coverage. Signs of new seeding. Volunteer yarrow, willow and foxtail barley growing. Adjacent to slope area with high coverage of grass mixture above LDSP.
2	LDSP Southeast	0.4	20.1	Patchy coverage of seeded species. Some flat and sheltered areas had up to 40% cover, much of the site had 0% cover. Overall cover was estimated to be <5%. Wheatgrass is dominant seeded species. Willow stakes and other bioengineering structures with limited new growth, many dead or dying stakes observed. Volunteer foxtail barley, yarrow, and fireweed. Silt fencing has been washed out in many areas.
3	LDSP West	0.3	12.1	Coverage in areas between 50-60%, mainly wheatgrass with limited bluegrass. Signs of equipment being used in the area. Volunteer willow, foxtail, narrow leaf hawksbeard (invasive) and white sweet clover (invasive). Sweet clover was pulled and disposed. Highest

				coverage observed in ditch where seeds accumulated after runoff. Higher coverage on flat areas compared to slopes.
4	Overburden stockpile south of LDSP	0.5	20.1	Flat area had relatively high patchy coverage (50-90%) throughout, comprised mostly of wheatgrass. Sloped areas have much lower coverage. As slope angle increased, coverage generally decreased. Few volunteer plants observed.
5	Overburden Stockpile across from Quonsets	0.7	12.1	Immature wheatgrass plants (not seed producing) with variable coverage (10-60%). Flat top area limited growth, bottom of slope shows high coverage where seed is expected to have washed down to. Volunteer willow, yarrow and foxtail barley growing throughout area. Microsites with more organic material in the soil had higher coverage compared to bare rocky sites.
6	Dublin culvert west side	0.1	20.1	Culvert area appears to have had some disturbance since seeding. New growth only observed at the bottom of the slope with limited coverage (10-20%). Volunteer willows also observed along the bottom of the slope around culvert.
7	Dublin culvert east side	0.1	20.1	Range of rocky soil sizes observed. Very limited new growth on steep slopes round culvert. New growth observed on sections of the slope where rocks created little pockets to trap seed from running off slope. Volunteer willow and alder growing close to riparian zone.
8	Overburden stockpile by Dublin Creek	0.5	20.1	Patchy coverage (5-60%) of wheatgrass across flat topped area of stockpile. Best growth observed in groves perpendicular to slope, where seeds have accumulated. Limited coverage on stockpile slopes. Volunteer willow and fireweed were observed growing the area.
9	Ditch B	0.6	20.1	Variable coverage along ditch B based on microsite conditions. Seeded coverage varying between 0-60% coverage, mainly wheatgrass. Lots of volunteer fireweed, willow, foxtail barley, cinquefoil, sometimes occurring in continuous patches up to 50m.
10	Road on N bank of Dublin Creek	1.2	20.1	Limited growth on steep slopes around culvert. Better seeded coverage on flat areas with soil texture. Volunteer willow, foxtail barley and yarrow sparse throughout. South facing slope areas had patchy coverage of wheatgrass (20-40%).
11	Road on S bank of Dublin Creek	1.2	20.1	Variable slope angles and areas with variable coverage of seeded species between 0-70%, dominated by wheatgrass. Coverage generally increased as slope grade decreased. Good growth observed in terraces and microsites on slopes. Areas with rocky soils had limited growth. Volunteer willow, yarrow, foxtail barley, fireweed and alder observed throughout. Shaded north facing slope areas exhibited some of the highest coverage of seeded species, likely due to higher moisture retention.

Seeded species cover generally ranged from low (approximately 0-30%) to moderate (approximately 30-50%). Factors impacting seeded species cover include an inverse relationship between slope steepness and cover, microsite condition such as soil moisture and organic content, and soil surface texture (seed retention). Wheatgrass is observed to be the dominant seeded species across all sites. Other grasses growing among these sites are too small to be identified accurately so it was difficult to assess the coverage of the other seeded species (alpine bluegrass, rocky mountain fescue, tufted hairgrass). Wheatgrass seeds are larger than the other seeded species, which is a contributing factor in its successful establishment, as they are less likely to be blown/washed away and are hardier compared to the other species.

Generally, as slope angle increased, vegetation cover and growth decreased, likely due to low seed retention on steep surfaces. Shallow slopes and flat areas showed higher coverage compared to slopes. Microsites with the highest seeded vegetation cover were at the outflow of runoff ditches from sloped areas (Photo 31), and in areas with more organic material in the soil. Vegetation was observed growing on slopes in places where small terraces had formed from some type of disturbance. Vegetation density and growth was also influenced by soil texture, where rocky soils have limited growth compared to finer textured soils. This was the case for shallow sloped areas. On steeper slopes, the presence of larger rocky soil appeared to increase seed retention, where they were trapped in cracks between the rocks, facilitating vegetation growth.

Ongoing monitoring of seeded areas is integral for ensuring the desired outcome is achieved; successes and failures are tracked; and alternative means of implementation are used when required. The simplest means of qualitatively monitoring these seeded areas is by collecting photos annually from permanent photo hub monitoring stations. A photo hub monitoring station consists of a fixed point marked with a wooden stake (and GPS coordinates), where photos are taken in each of the 4 cardinal directions (N, S, E, W). Seven photo hub monitoring stations were established during the assessment of the seeded areas (Table 2). Stations were established at locations where photos could capture enough detail to make an accurate assessment of vegetation cover, i.e., photos included large sections of seeded areas, and where photos in multiple directions could be taken. In some cases, photo hubs could only capture one or two photos of a seeded area due to the orientation and or size of the area (e.g., area 3 & 7). All photographs are presented in the photo log at the end of this document.

Table 2: Permanent Vegetation Monitoring Station (VMS) locations within seeded area.

Site Name	Site Area	Coordinates	Photo Directions
VMS-003-1	3	64.030806 N, -135.846032 W	N, E
VMS-004-1	4	64.030331 N, -135.845029 W	N, S, E, W
VMS-005-1	5	64.029125 N, -135.844344 W	N, S, E, W
VMS-007-1	7	64.032993 N, -135.846848 W	N
VMS-008-1	8	64.035468 N, -135.829588 W	N, S, E, W
VMS-008-2	8	64.034973 N, -135.831228 W	N, S, E, W
VMS-011-1	11	64.033101 N, -135.840575 W	N, S, E, W

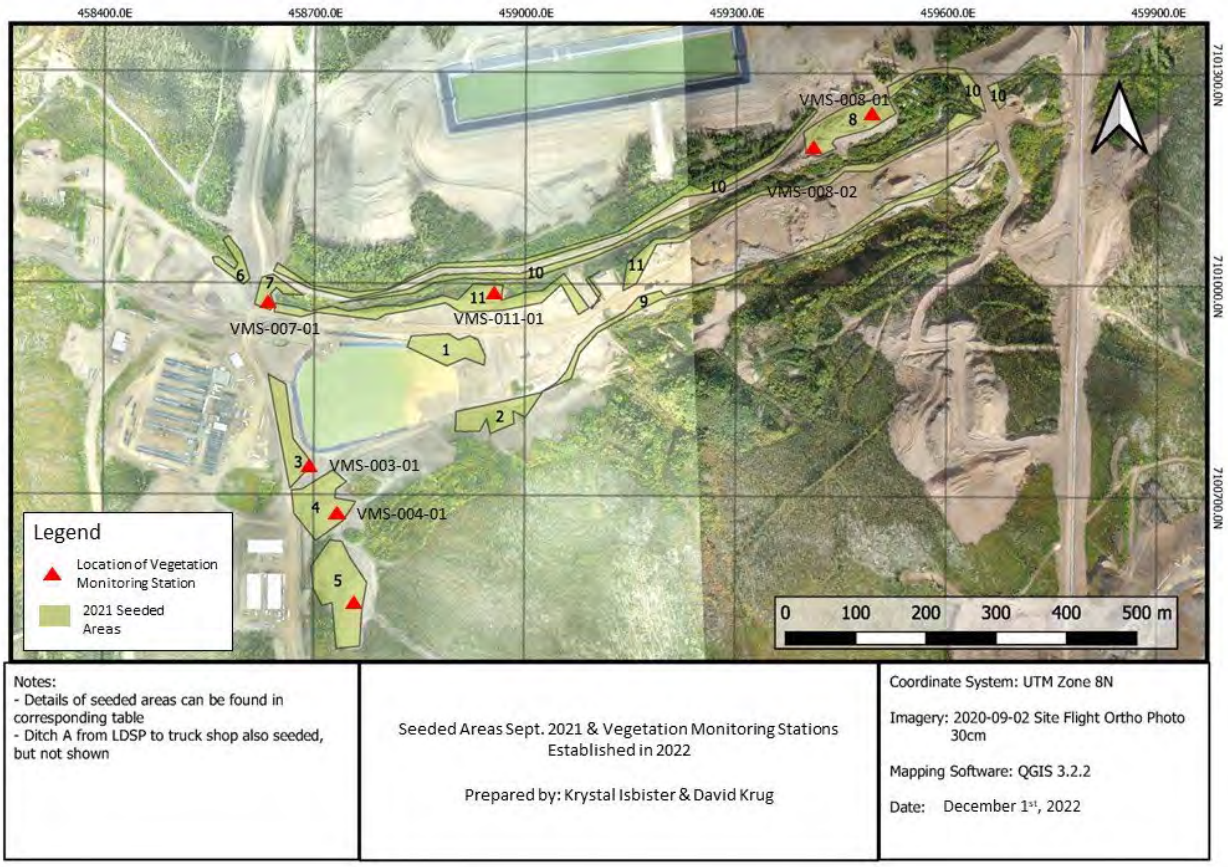


Figure 1: 2021 seeded areas and locations of permanent vegetation monitoring stations.

3. RECOMMENDATIONS

The following list of recommendations are intended to help ensure desirable outcomes are reached for all erosion control seeding programs now and in the future. Recommendations include:

- It is recognized that assessment using visual estimates of plant cover can lead to uncontrolled sampling error due to the subjectivity of the assessment process. As such, future monitoring activities should incorporate the use of a frequency survey technique such as vegetation quadrats. Frequency survey techniques and visual estimates can be used in combination to determine quadrat and site level cover estimates for vegetation. Extra time should be budgeted to include these activities in future field programs.
- Annual monitoring for all the seeded areas, and for any additional areas that are seeded in the future will help determining outcomes of erosion control and reclamation activities. These outcomes, regardless of whether they are determined to meet expectation, can be useful in guiding future reclamation efforts. Additionally, it can take several growing seasons for seeded vegetation to establish and begin performing its erosion control function effectively. The permanent vegetation monitoring stations are an easy way to continue monitoring and assessing the seeded areas. These hubs should be visited annually to collect photographs (from each direction indicated) to create a

time series of images showing the progression of vegetation growth (or lack thereof). The monitoring stations are currently marked with survey stakes and flagging tape. It is also recommended that more permanent and secure markers be installed, such as fence posts or rebar. New monitoring stations should be established to capture images of any newly seeded areas.

- Site preparation should be completed prior to all seeding activities in the future. These measures should include making the site rough and loose, decompaction of the soil, and addition of topsoil. Site preparation is critical for ensuring the successful establishment of seed, especially on sites with steep, erosion prone slopes. CoreGeo observed that on sites with steep slopes, the areas with the highest coverage of seeded species were the terraces or pockets formed from rocks or footsteps. This can be achieved through making sites rough and loose, decompaction of the soil, and adding topsoil or other organic matter (woody debris or forest litter) prior to seeding.

4. CLOSURE

CoreGeo and YSR would like thank Victoria Gold for the opportunity to conduct this work. If you require any additional information or clarification, please do not hesitate to contact David Krug by phone (226) 203-1996 or by email at david@coregeo.ca.

Sincerely,

David Krug (he/him)
Environmental Scientist
Core Geoscience Services Inc.
4109 4th Ave, Whitehorse, YT Y1A 1H6

5. REFERENCES

Laberge Environmental. 2021. Technical Memo-Seeding and Erosion Control Installation at Specific Sites, Eagle Gold Project. 2021. Prepared for Victoria Gold Corp.

6. PHOTO LOG – VEGETATION MONITORING STATIONS

Photo 1: VMS-003-01 EAST- August 2022.

Photo 2: VMS-003-01 NORTH- August 2022.

Photo 3: VMS-004-01 NORTH- August 2022.

Photo 4: VMS-004-01 SOUTH- August 2022.

Photo 5: VMS-004-01 WEST- August 2022.

Photo 6: VMS-004-01 EAST- August 2022.

Photo 7: VMS-005-01 NORTH- August 2022.

Photo 8: VMS-005-01 SOUTH- August 2022.

Photo 9: VMS-005-01 EAST- August 2022.

Photo 10: VMS-005-01 WEST- August 2022.

Photo **11**: VMS-007-01 NORTH- August 2022.

Photo 12: VMS-008-01 NORTH- August 2022.

Photo 13: VMS-008-01 SOUTH- August 2022.

Photo 14: VMS-008-01 EAST- August 2022.

Photo 15**: VMS-008-01 WEST- August 2022.**

Photo 16: VMS-008-02 NORTH- August 2022.

Photo 17: VMS-008-02 SOUTH- August 2022.

Photo 18: VMS-008-02 EAST- August 2022.

Photo 19: VMS-008-02 WEST- August 2022.

Photo 20: VMS-011-01 NORTH- August 2022.

Photo 21: VMS-011-01 SOUTH- August 2022.

Photo 22: VMS-011-01 EAST- August 2022.

Photo 23: VMS-011-01 WEST- August 2022.

7. PHOTO LOG - GENERAL

Photo 24: Site 1, flat area above LDSP slope.

Photo 25: Site 1 erosion channel down to LDSP.

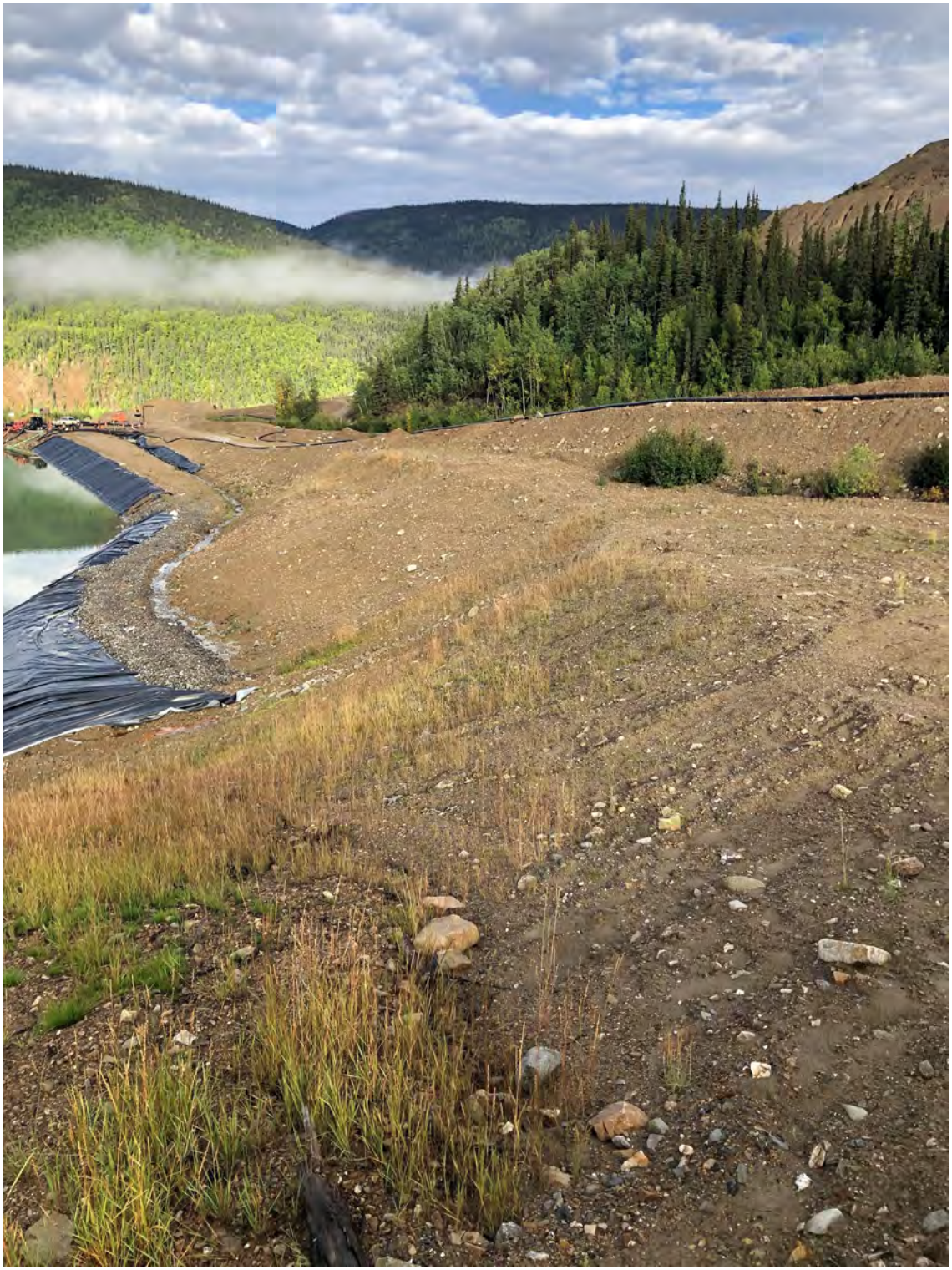


Photo 26: Site 1, slope is above LDSP.

Photo 27: Seeded area adjacent to site, very good coverage.

Photo 28: Site 2, patchy wheatgrass coverage on low grade slope.

Photo 29: Site 3, flat area with relatively low vegetation coverage.

Photo 30: Site 3, area of disturbance and new growth side by side.

Photo 31: Site 3, high plant coverage in runoff ditch.

Photo 32: Site 3, invasive white sweet-clover found and pulled.

Photo 33: Site 4, flat area with furrows and good coverage of seeded species.

Photo 34: Site 4, shallow slope with good wheatgrass coverage.

Photo 35: Site 4, change in slope angle coincides with change in vegetation cover.

Photo 36: Site 4, drainage sump.

Photo 37: Site 5, overburden stockpile.

Photo 38: Site 5, sloped area with furrows. Growth occurring mostly in furrows.

Photo 39: Site 5, more growth observed at the bottom of sloped area.

Photo 40: Site 5, flat area adjacent to forest system with lots of volunteer species.

Photo 41: Site 5, bluejoint reed grass growing in pockets of organic soil near forest.

Photo 42: Site 5, volunteer willow growing on overburden piles.

Photo 43: Site 6, steep slope above culvert and creek.

Photo 44: Site 6, runoff channels forming on slope. No vegetation growth.

Photo 45: Site 6, volunteer willow growing at base of slope.

Photo 46: Site 6, some vegetation growth at the base of slope are around culvert.

Photo 47: Site 7, steep rocky slope above culvert and creek.

Photo 48: Site 7, grass growth in mall pockets formed by coarse soil texture.

Photo 49: Site 7, volunteer willow and alder, and grass growth in finer textured soil and at base of slope.

Photo 50: Site 8, shallow slopes area on top of overburden pile. Moderate seeded species coverage.

Photo 51: Site 8, volunteer fireweed growing near bottom of shallow sloped area.

Photo 52: Site 8, grass growth near bottom of steeper slopes on the side of overburden pile.

Photo 53: Site 8, north facing slope with moderate coverage.

Photo 54: Site 9, high coverage by volunteer foxtail barley and cinquefoil spp.

Photo 55: Site 9, low angle slope with moderate coverage near roadway.

Photo 56: Site 9, moderate wheatgrass coverage on flat area.

Photo 57: Site 9, large wheatgrass plant and volunteer fireweed growing next to drainage ditch.

Photo 58: Site 10, flat section near culvert with mixture of coarse and fine substrate.

Photo 59: Site 10, wheatgrass and volunteer yarrow and foxtail barley.

Photo 60: Site 10, bank above culvert next to road.

Photo 61: Site 10, upstream culvert area. Low seeded species coverage on steep slope.

Photo 62: Site 11, coarse substrate with no seeded species coverage.

Photo 63: Site 11, seeded species coverage highest in furrow trenches.

Photo 64: Area 11, north facing slope with good seeded species coverage.

Photo 65: Site 11, volunteer willow on slope above creek.

Photo 66: Site 11, good overage over flat area with lots of surface texture.

MEMORANDUM

Date:	**March 20th, 2023**
To:	**Bill Bowden, Environmental Manager, Victoria Gold Corp, bboweden@vgcx.com**
From:	**David Krug, Core Geoscience Services Inc., david@coregeo.ca**
Subject:	**Victoria Gold Seed Trial Plot Assessment Memo – Eagle Gold Mine – 2022**

1. BACKGROUND

Victoria Gold Corp (VGC) retained Core Geoscience Services Inc. (CoreGeo) in partnership with Yukon Seed & Restoration Inc. (YSR) to conduct monitoring and assessment of the seed trial plots as part of the 2022 reclamation monitoring program. The results of the assessment are presented in this memo.

Trial plots were established and seeded in September 2020 by Laberge Environmental Services (Laberge, 2021) using three species of locally collected native plants: yarrow (*Achillea millefolium*), Altai Fescue (*Festuca altaica*) and wheatgrass (*Elymus spp.*). Plots were deployed at two locations (Site 1 & 2) (Appendix A - Map of Seeding Trial Plot Site Location from Laberge 2021) at the Eagle Gold mine, in areas that would be unlikely to be disturbed. Each individual plot is 1x1 m, the general plot layout is presented in Figure 1. Blank plots represent buffer plots established between experimental plots. Seed was applied to each respective plot at a rate of 0.3 g/plot for yarrow, 1.3 g/plot for fescue, and 2.0 g/plot for wheatgrass, to achieve planting of 500 pure live seed (PLS) per plot. Plots were first assessed in July 2021 (Laberge, 2021).

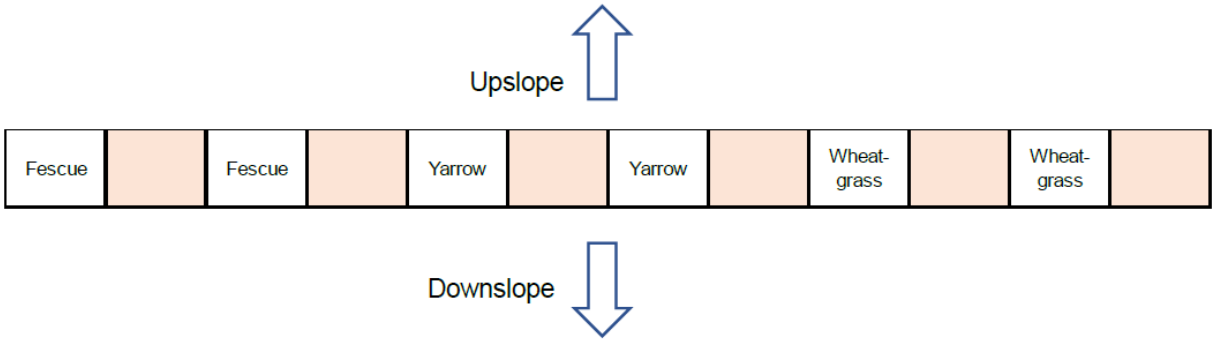


Figure 1: General seed trial plot layout.

2. TRIAL PLOT ASSESSMENT

David Krug (CoreGeo) and Andrew Thomson (YSR) assessed the trial plot during a site visit on August 24th, 2022. Results from both the 2021 and 2022 assessments are presented in Table 1. Percent cover is determined visually by observing each plot from above and estimating the vegetation cover within the plot area, including volunteer species that were not seeded. Observations and identification of volunteer plants are also presented in Table 1.

Table 1: Trial plot vegetation cover results from 2021 and 2022.

Plot Type	Site	2021	2022	
		% Cover	% Cover	Observations
Fescue 1	1	<1	2	Some small unidentifiable grass. 1 narrow leaf hawksbeard (removed).
Buffer		N/A	N/A	Mostly bare ground. Volunteer willow, foxtail barley, and bunchgrass.
Fescue 2		1	2	Mostly bare ground. Volunteer yarrow, foxtail barley, and willow.
Buffer		N/A	N/A	1 willow, 2 foxtail barley, 1 dandelion.
Yarrow 1		<1	15	4 young yarrows plus 4 small foxtail barley.
Buffer		N/A	N/A	Single volunteer willow and foxtail barley.
Yarrow 2		<1	2	Bare ground, 1 foxtail barley.
Buffer		N/A	N/A	3 volunteer willow, 1 foxtail barley.
Wheatgrass 1		2	65	High cover of immature wheatgrass, some volunteer willow.
Buffer		N/A	N/A	Some small willow, encroaching wheatgrass, and foxtail barley.
Wheatgrass 2		3-5	50	Immature wheatgrass, volunteer willow.
Fescue 1	2	5	2	Narrow leaf hawksbeard, volunteer willow and 1 yarrow.
Buffer		N/A	N/A	8 volunteer willow, narrow leaf hawksbeard and dandelion.
Fescue 2		1-2	2	Foxtail barley, narrow leaf hawksbeard and volunteer willow.
Buffer		N/A	N/A	Foxtail barley, narrow leaf hawksbeard and volunteer willow.
Yarrow 1		5	40	Approx. 10 flowering yarrow, volunteer foxtail barley and a tuft grass spp.
Buffer		N/A	N/A	Volunteer willow, foxtail barley, tuft grass spp. and dandelion.

Yarrow 2		Missing Data from 2021 Report	70	Approximately 40 flowering yarrow, volunteer willow and hawksbeard around edges.
Buffer		N/A	N/A	Dandelion and narrow leaf hawksbeard dominant, volunteer willow, foxtail barley and yarrow along edges.
Wheatgrass 1		3-5	85	Good cover of seeded species, narrow leaf hawksbeard growing around edges.
Buffer		N/A	N/A	Volunteer willow, dandelion, narrow leaf hawksbeard, hairgrass. Fireweed growing near plot.
Wheatgrass 2		3-5	75	Good coverage of seeded species. Volunteer foxtail, willow, and narrow leaf hawksbeard.

Most of the seeded plots saw a marked increase in vegetation cover between 2021 and 2022. The greatest increase was observed in those plots seeded with wheatgrass, followed by those seeded with yarrow. The plots seeded with fescue showed little to no change in cover from 2021 to 2022.

Site 2 had much higher cover of both seeded and volunteer species, compared to Site 1. The angle of the slope at Site 2 is shallower than at Site 1, which is expected to be a contributing factor in vegetation cover. Shallower slopes allow for more seed retention, as runoff is less likely to wash seeds out of the plot. It should be noted that the slope at Site 2 was contoured, and track packed in 2019.

Several volunteer species were observed growing across all plots and between both Sites, including foxtail barley and willow. Site 2 had a higher volunteer species diversity (number of individual species) as compared to Site 1. This is likely due to the proximity of a natural forested plant community to Site 2, whereas Site 1 is further from this source of volunteer species. The invasive species, narrow leaf hawksbeard was observed at both Sites, with particularly high abundance at Site 2. A few individual plants were removed from Site 1. Efforts were not made to try and remove the narrow leaf hawksbeard from Site 2 as an extensive patch was present throughout all the plots and in the surrounding area.

3. RECOMMENDATIONS

Ongoing monitoring of the trial plots should be conducted for a minimum of 5 years following plot establishment. This is necessary to observe the changes in the plant community over time and determine the viability of each of the seeded species as potential candidates for erosion control cover in other areas of the mine. Monitoring events should be conducted annually. Although not included in this monitoring event, it is important that future assessments look at the percent cover of native vs. non native species, as well as non-native species diversity. This would help inform invasive plant management strategies based on how native and non-native plants interact and colonize as plant communities establish.

CoreGeo also recommends establishment of additional trial plots to test the effect of different standard site/soil preparation techniques on seed establishment, such as scarification, soil decompaction, addition of organic material/woody debris and soil amendment such as fertilizer or biochar.

Testing these variables across multiple sites with varying slope angles would determine the most appropriate site preparation activities for different erosion prone areas. Finally, seeding trial plots could be set up with treatments that include combinations of different seed species, with some being native plant seeds collected from nearby sites.

4. CLOSURE

CoreGeo and YSR would like thank Victoria Gold for the opportunity to conduct this work. If you require any additional information or clarification, please do not hesitate to contact David Krug by phone (226) 203-1996 or by email at david@coregeo.ca.

Sincerely,

David Krug (he/him)
Environmental Scientist
Core Geoscience Services Inc.
4109 4th Ave , Whitehorse, YT Y1A 1H6

5. REFERENCES

Laberge Environmental. 2021. Technical Memo- Seeding Trials with Seeds Sourced from Yukon Seed and Restoration-Planted September 2020. Prepared for Victoria Gold Corp.

6. PHOTO LOG

Photo 1: Site 1 full view.

Photo 2: Site 1, Fescue Plot 1.

Photo 3: Site 1, Buffer Plot 1.

Photo 4: Site 1, Fescue Plot 2.

Photo 5: Site 1, Buffer Plot 2.

Photo 6: Site 1, Yarrow Plot 1.

Photo 7: Site 1, Buffer Plot 3.

Photo 8: Site 1, Yarrow Plot 2.

Photo 9: Site 1, Buffer Plot 4.

Photo 10: Site 1, Wheatgrass Plot 1.

Photo 11: Site 1, Buffer Plot 5.

Photo 12: Site 1, Wheatgrass Plot 2.

Photo 13: Site 2 full view.

Photo 14: Site 2, Fescue Plot 1.

Photo 15: Site 2, Buffer Plot 1.

Photo 16: Site 2, Fescue Plot 2.

Photo 17: Site 2, Buffer Plot 2.

Photo 18: Site 2, Yarrow Plot 1.

Photo 19: Site 2, Buffer Plot 3.

Photo 20: Site 2, Yarrow Plot 2.

Photo 21: Site 2, Buffer Plot 4.

Photo 22: Site 2, Wheatgrass Plot 1.

Photo 23: Site 2, Buffer Plot 5.

Photo 24: Site 2, Wheatgrass Plot 2.

7. APPENDIX A – MAP OF SEEDING TRIAL PLOT SITE LOCATIONS FROM LABERGE, 2021.

Memorandum

To:	Lindsay Rear, Corporate Environmental Manager, Victoria Gold, Eagle Gold Project
From:	Mike Setterington, R.P.Bio.
Date:	October 19, 2022
Project No:	22Y0328
Re:	Victoria Gold Heap Leach Bank Swallow Burrows

EDI Environmental Dynamics Inc. (EDI) was contacted by Victoria Gold Corp. (VGC) on June 3, 2022 to assist with suspected Bank Swallow nests established in a newly excavated work area in the Heap Leach Facility (HLF) of the Eagle Gold Project near Mayo, Yukon. VGC requested that a qualified individual from EDI visit the site to confirm nesting and provide guidance on protection buffers and working near the suspected active nests. This report summarizes the nest site history, site visit, nest site management suggestions, and follow-up activities.

As EDI understands from discussion with Tyler Christian (Process Superintendent/General Manager), excavation at the south-west corner of the HLF (HLF ADR Header site) was required to access a buried water pipe. The excavation was required to upgrade the water management system to accommodate higher water pressure requirements for expansion of the HLF. The initial excavation of an approximately 25 metre x 25 metre area occurred on May 26, 2022. The excavated area is adjacent to an existing HLF access road. The excavation left a vertical face on HLF material. Nesting burrows and birds were observed on June 3, 2022.

On June 3, 2022, as soon as bird activity and burrows were noted in the freshly excavated area, work was stopped, and EDI was notified as noted above. Mike Setterington (R.P.Bio., CWB), a biologist with >25 years' experience with birds, nesting, mitigation, and mining environmental assessment, visited the site on June 6 and 7, 2022 to assess activity and provide advice on protection measures.

M. Setterington was provided a site tour on the evening of June 6, 2022, by two site environmental staff (Phil Emerson and John Jackson). The tour included a visit to current and previously known swallow nesting burrows within the active mine processing area and did not include the active open pit mining area. A follow-up detailed tour of the HLF area was conducted on the morning of June 7, 2022, with Victoria Gold Environmental Technician Fiona Lazzarotto. The intent of the broader survey was to determine other locations of nesting swallows to put the current location in perspective of available habitats in the disturbed mining area. Nest burrows were observed at the following three sites (Map 1), all a result of mine-related construction — there were no natural banks suitable for Bank Swallow nesting observed in the broader area):

HLF ADR Header Site — This site is at the south-west base of the HLF and is the area that was excavated on May 26th with newly formed nest burrows observed on June 3 (Photo 1, Photo 2, Photo 3). There were 10–15 recognizable burrows near the top of an excavated slope in an established heap leach ore bench that appeared relatively tightly conglomerated, and approximately south, south-west (SSW) facing (Photo 4). The site is adjacent to the existing HLF access road, and the nests were approximately 25 m at the top of the excavation, ~35 m from the access road. Adult birds were observed entering and exiting at least three of the burrows on the evening of June 6th. The site visit on the morning of June 7 occurred early and during steady rain, at which time there was no bird activity observed.

Pregnant Leach Solution (PLS)/ Pump — Three potential burrows were observed, also in HLF material. Two adults were flying over the site during the 07 June AM visit. Routine maintenance activities (involving heavy equipment) are anticipated to occur at this site to ensure ongoing function of critical HLF infrastructure.

Bank Near Eagle Pup drainage Water Monitoring Station W9 — This is a bank in a road cut near remnant forest cover in the mine development area (Photo 7, Photo 8). Nesting swallows were previously observed at this site by environmental staff in previous years. Approximately 17 burrows and 11 adults were observed exiting the low-lying, damp and west facing burrows on June 7, 2022.

An additional active Bank Swallow nesting colony was observed at an inactive borrow source at ~km 22 on the South McQuesten Access Road to the mine site (Photo 9, Photo 10), about 18 km SSW of the HLF. At least 25 Bank Swallows were observed entering and exiting numerous burrows (of ~67 observed burrows) at the top of the borrow source excavation cuts.

Based on the facts that no further HLF bench excavation was required at the HLF ADR Header Site, and the remaining work included only placing and connecting pipe, EDI made the following verbal recommendations to Victoria Gold that included a balance of nest protection, practicality, and operational flexibility:

1. The nests cannot be physically disturbed through the nesting period.

   The full active nesting period from the start of burrow excavation through to when fledglings stop re-entering burrows can be as long as 56 days (summarized in Sinclair et al. 2021). If these birds have one clutch of eggs, the nest sites may be active through to July 28. The nesting window for the region (B8) extends through to August 11 (Environment and Climate Change Canada (ECCC) 2018).

2. A 50 m radius no disturbance buffer of the nest burrows in unnecessary in this situation.

   ECCC's suggested 50 m no-disturbance buffer (Environment and Climate Change Canada 2021) is not practical in this situation. Establishing that buffer would affect normal operations to which the swallows seemingly have adapted, and the buffer would close a long-established key access road.

   The Bank Swallows established burrows in an active disturbance area, adjacent a regularly used access road, and an area where heavy equipment is continuously active. The HLF also has infrastructure requiring seasonal maintenance, specifically water pipe modifications necessary to control water pressure. The work was started before the nests were present. The birds are apparently tolerant of the

ongoing industrial activity adjacent the burrows. Based on those behaviours, M. Setterington determined that a 50 m no-disturbance buffer, that would result in a road closure through June–mid August, would have resulted in unnecessary access restrictions for birds that are seemingly tolerant of the ongoing disturbance. The buffer was not established based on other considerations and monitoring caveats as discussed below.

As M. Setterington understood the process, completing the work at the HLF ADR Header Site will require one excavator and four people. To minimize noise and vibration, two pieces of heavy equipment can carry the pipe to the site. Six hours of work is required that can be split over multiple days. Based on a) the minimum requirements for completing the fitting work, b) the location of the burrows ~10 m above the work (at the bottom of the excavation), and c) the swallow's apparent tolerance of disturbance, additional recommendations were made:

3. Complete the pipe fitting work as described

    - Minimize daily disturbance to 3 hours x 2 days
    - No additional excavation work. The burrows themselves will not be disturbed.
    - Work at the site only on days where it is not raining — should the adults leave the burrows, the risk to eggs due to cold and damp exposure is minimized.
    - An environmental monitor observes the burrows during operation to ensure vibration does not cause physical disturbance. Should disturbance be noted, construction activities will cease.
    - Complete earth work at the end of the nesting season, and slope the grade to something less than 70 degrees (as per ECCC recommendations)

4. Where possible, delay maintenance/construction activities at the Pregnant/ Pump sites until after the nesting window, or until confirmation of no bird activity associated with those burrows.

5. Provide an alternate nesting site in an area that will be active during the 2023 or future nesting seasons. Create a near-vertical (> 70 degree) slope in similar materials.

Victoria Gold Nest Site Monitoring

Work continued at both sites with the above direction provided. VGC continued monitoring the cavities at the **HLF ADR Header** and **Pregnant Pumps** sites on June 12–14, 16, 18, 21, 25, 26–28, July 10, and September 6–8. The monitoring was coordinated on days when construction activity was occurring in the vicinity, and some days when there was no activity, but other monitoring was required at sites (e.g., totalizer reading at the Pregnant Pumps site). Monitoring duration ranged from 10 minutes to two hours, depending on construction status and bird activity. A database was maintained to record the details of each monitoring visit. The comments and observations included notes on changes to heavy equipment movements to reduce risks to the cavities. Nesting activity was observed at the sites in the June and July visits. The sites did not have active Bank Swallows during the September visits.

Heavy equipment working at each site were limited to two hours maximum each day. Workers were also asked to shut down operations for periods of time if birds were observed flying around, but not entering cavities.

There was a slump of material that destroyed some of the cavities at the HLF ADR Header site on July 19. The slump as most likely caused by a heavy rainfall on that date (Figure 1). Some potential nest cavities were clearly destroyed by the slumping material (Photo 12).

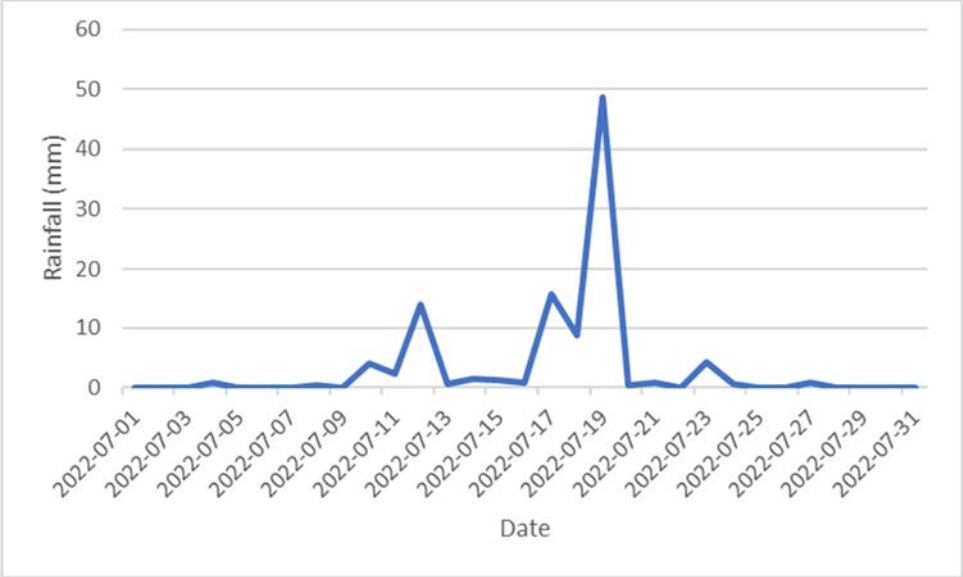


Figure 1. Daily rainfall reported by Victoria Gold, July 2022

Long-term Mitigation

1. Follow the "What Can you Do" recommendations of Environment and Climate Change Canada's Bank Swallow in Sandpits and quarries information bulletin (Environment and Climate Change Canada 2021)

    - Watch for slumps in the HLF that leave steep exposures or overhangs. If those slumps occur with a 50 m radius of where work during the breeding season is expected, and if possible, recontour to a slope less than 70 degrees
    - If possible, outside of the breeding season, and in areas where no work will occur within a 50 m radius during the breeding season, create suitable nesting habitat by leaving vertical faces > 70 degrees.
    - While working during the breeding season, daily, flatten vertical faces in work areas to prevent Bank Swallow nesting

Literature Cited

Environment and Climate Change Canada. 2021. Bank Swallow (*Riparia riparia*): in sandpits and quarries. (https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/related-information/bank-swallow-sandpits-quarries.html). Accessed August 10, 2022.

Environment and Climate Change Canada (ECCC). 2018. Nesting calendars: Regional nesting period tables in Canada, technical information for planning purposes — Nesting zone B. (https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods/nesting-periods.html#_zoneB_calendar)

Sinclair, P.H., Mossop, M.D., and Stotyn, S.A. 2021. Nesting ecology and reuse of nest burrows by Bank Swallow (*Riparia riparia*) in southern Yukon. The Canadian Field-Naturalist 134(4):329–341. DOI: 10.22621/cfn.v134i4.2427

Photo 1 Distant view of HLF BANS nest location

Photo 2 HLF BANS nest work area, view 1

Photo 3 HLF BANS swallow nest work area, view 2

Photo 4 HLF BANS burrows closeup

Photo 5 Pregnant pump BANS burrows

Photo 6 Pregnant pump BANS nest area

Photo 7 Bank Near W9 BANS colony overview

Photo 8 Bank Near W9 BANS colony burrows

Photo 9 South McQuesten Access Road km 20 borrow source BANS colony

Photo 10 km 20 borrow source BANS colony close-up

Photo 11 Active HLF BANS cavities 2022-06-25

Photo 12 HLF BANS cavities post "slump" (2022-08-07) after excessive rainfall on July 19. Photo date:

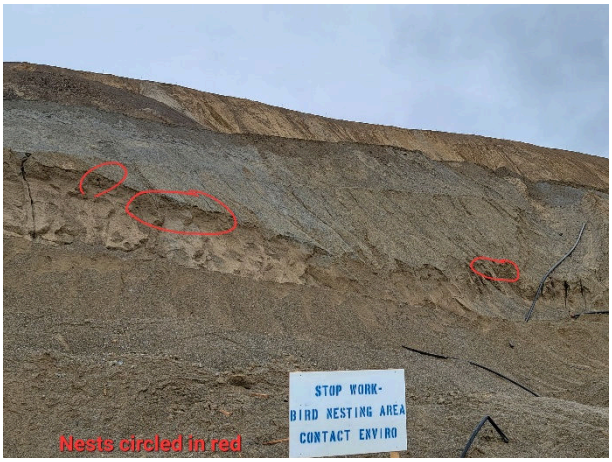
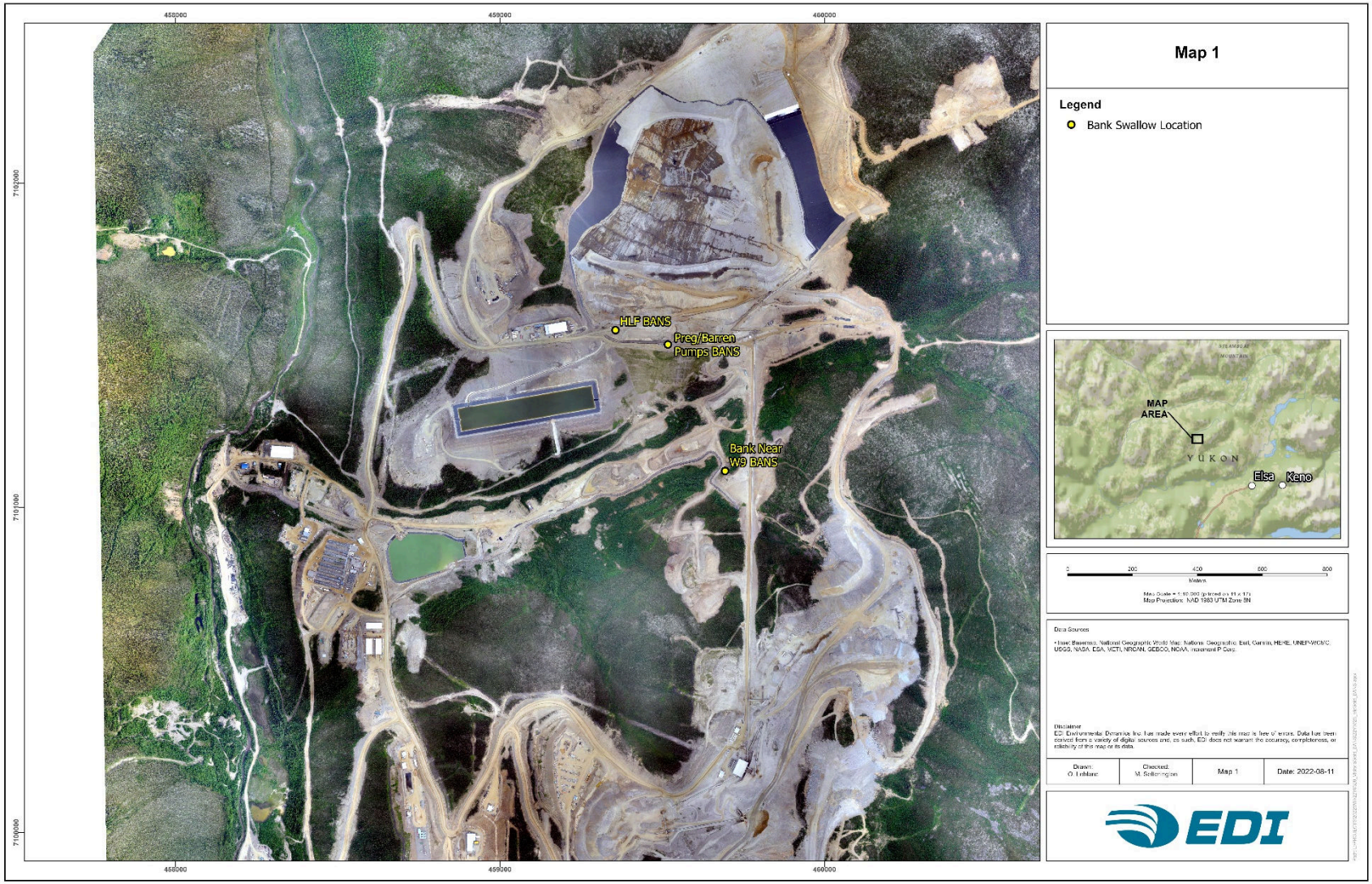


Photo 13 PLS Pump BANS cavities 2022-08-07 with "Stop Work" sign posted



Map 1 **Bank Swallow Nest Site Locations in the Heap Leach Facility Area of the Eagle Gold Mine, located on June 6 and 7, 2022**

VICTORIA GOLD CORP

Project No. 109023
2022 Annual Inspection of Eagle Gold HLF
Document No. 109023-82210-CV-PRG-2000

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REV A	10-FEB-2023	Issued for Review	J. Burke	R. Morlan	B. Carlson
REV 0	29-FEB-2023	Revision 0	J. Burke	R. Morlan	B. Carlson

STATEMENT OF REPORT

The report enclosed entitled “2022 EOR Annual Inspection Report” has been prepared for the exclusive use of Victoria Gold Corp. (VGC). No third party shall be entitled to use of this report without written consent of VGC and Forte Dynamics, Inc (Forte). The use of any and all information contained herein shall be at the sole risk of the user regardless of any fault or negligence of VGC or Forte.

This report has been prepared under the direct supervision of Barry Carlson, P. Eng. of Forte, with the assistance of Clint Green, P.E., Roy Morlan P.G., and Jackson Burke of Forte. The 2022 annual inspection was completed by Mr. Barry Carlson, P.Eng. of Forte Dynamics in October, 2022. The annual inspection was conducted in accordance with the Eagle Gold Project Heap Leach Facility Operations, Maintenance and Surveillance Manual and the findings presented in this report are accurate to the best of our knowledge.

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1. INTRODUCTION

1.1 General

Forte Dynamics Inc. (Forte) was retained by Victoria Gold Corp. (VGC) to carry out an annual geotechnical inspection of the Heap Leach Facility (HLF) at the Eagle Gold Mine located in Yukon Territory, Canada. The general site layout of the HLF is shown in Appendix A.

The 2022 inspection of the HLF was conducted in October 2022. The inspection took place on site and was in general conformance with the monitoring plan outlined in the Operations, Maintenance, and Surveillance (OMS) Manual [Ref 7]. The scope of this annual dam inspection work was limited to:

- Visual inspection of the HLF and dam by the EoR, including taking appropriate photographs of the observed conditions.
- Review of routine inspection records prepared by operating personnel in the past year.
- Review whether or not recommendations from previous year's inspection had been addressed, and any incidents or actions arising from those previous recommendations.
- Review of instrumentation and monitoring data.
- Review of the previous year's operations including reports of any incidents (and remedial measures) that may have occurred.
- Evaluation of the structural performance of the embankment and related components and identify any potential safety deficiencies or recommended items that need to be addressed in the coming year.
- Review of construction records, quality assurance and quality control (QA/QC) data and as-built information on facility construction; and
- Evaluation of the OMS Manual to assess the need for updating.

During the site reconnaissance, check list type inspection forms were completed, documenting the visible condition of each of the above noted structures at the time of the site visit. The inspection forms are included in Appendix C. In addition, several photographs were taken of each of the above-mentioned structures, a selection of which are presented in Appendix B. The approximate location of the photos taken are shown in Appendix A. The inspection record includes recommendations for follow-up actions, where required.

1.2 Background

The Eagle Gold Mine is an open pit gold mine and heap leach operation. The Eagle Gold Heap Leach Facility (HLF) consists of an embankment that lies across the Ann Gulch valley about 200m upstream of the confluence with Dublin Gulch. The ore is stacked behind an embankment within Ann Gulch. The embankment

provides confinement of the ore and creates an In-Heap Pond for temporary storage of pregnant solution, which is pumped to the recovery plant.

The major design components for the HLF include the following: the embankment; a composite liner system; the In-Heap Pond; solution recovery wells; associated piping network for solution collection and distribution; a leak detection and recovery system (LDRS); and a downstream Event Pond to contain excess solution that could result from extreme precipitation or emergency events. An overflow spillway connects the HLF In-Heap Pond to the Event Pond and an emergency spillway allows overflow from the Event Pond to environment. Appendix A presents an aerial photograph of the site provided by VGC and taken June 29, 2022.

The Eagle Gold Mine HLF will occupy an area of 106 ha and contain approximately 86 MT of crushed ore at the end of the facility life. The HLF is being developed in phases: construction of Phase 1A was completed during initial construction (pre-mining) in September 2019 with initial operations starting in July 2019. Phase 1B HLF was completed in September 2020 extending the liner from the 990m elevation to the Phase 1 interceptor ditch at approximate elevation 1,050m. Construction of Phase 2A was completed in August of 2022 extending the liner from the 1,050m elevation to the approximate elevation 1,070m.

The HLF pad consists of two liner systems, the up-gradient liner system, and the In-Heap Pond liner system. The single composite liner system in the upper portion of the pad (above the In-Heap solution storage area) is comprised of a double-side textured 80 mil linear low-density, polyethylene (LLDPE) liner over a geosynthetic clay liner (GCL) system. The double composite liner system in the lower portion of the pad (forming the In-Heap solution storage area) is comprised of two discrete layers of LLDPE liner, separated by a layer of geonet material to form the LDRS, over GCL.

The In-Heap Pond (essentially a saturated zone within the lower extent of the HLF ore pile) at the spillway invert elevation of 937.5 m) contains up to 117,141 m3 of solution within the pore spaces of the stacked ore. Typical In-Heap Pond operational volume will be about 57,763 m3. Storage of PLS in the In-Heap Pond is a cold-weather mitigation and has the added benefit that PLS will not be exposed during normal operations.

Process (barren) solution containing cyanide is applied to the ore via a drip irrigation system (buried during winter). The resultant PLS is captured in the solution collection system and flow to the In-Heap Pond. The PLS is recovered via a well system using pumps and standpipes. The PLS is transferred to the ADR plant for gold recovery.

The heap leach pad is constructed with a network of pipes that is distributed throughout the limits of the facility at the base of the ore pile. This pipe network collects and conveys PLS and any infiltrated stormwater to the In-Heap Pond area where it is pumped to the process plant via the solution collection wells. The pipe network was designed to accommodate stormwater volume from a 100-year, 24-hour storm event in addition to 150 percent of the design capacity of the anticipated PLS solution flow (150 percent PLS flow + 100-year, 24-hour storm event).

The downstream Events Pond serves as an overflow containment area that provides additional solution storage in case the In-Heap Pond capacity is exceeded. The Events Pond is sized to provide containment storage for the Probable Maximum Flood (PMF) Event which is assumed to contribute entirely over the ultimate HLF pad footprint. As designed, the Events Pond has an operational storage capacity of approximately 299,900 m3 to the spillway invert at elevation 894.5m. Additional capacity, above what is necessary to contain the full PMF, allows for seasonal accumulation of fluid and/or additional draindown

volume equivalent to 28-47 hours of operational flow [Ref 1]. As a condition of the Water Use License, QZ14-041-1, a Desired Available Storage (DAS) shall be maintained within the Event Pond and the unoccupied pore spaces in the in-heap pond. The DAS is defined as the minimum volume of Available Storage required to capture the full volume of a 1 in 100 year, 24-hour rainfall volume on the plan area of the HLF, exclusive of the Adsorption, Desorption and Recovery Plant watershed area diverted by the Adsorption, Desorption and Recovery Plant pad ditch, plus 72 hours of draindown at a rate of 2,070 cubic meters per hour, plus the volume of the Event Pond between the elevation of the Event Pond spillway invert and 0.5 m below the elevation of the Event Pond spillway invert for the HLF.

Inspection and monitoring systems are included in the HLF to assess the ongoing performance of the facility. The In-Heap Pond fluid levels are monitored using a network of vibrating wire piezometers. The Events Pond fluid levels are monitored visually with level gauges or survey.

Liner Integrity is monitored by regular inspection flows into the LDRS monitoring sumps for both the In-Heap Pond and the Events Pond. The HLF design includes an underdrain system for the collection and drainage of subsurface water beneath the lined facility to limit upward pressure on the HLF liner. The underdrain system conveys subsurface flows to a monitoring vault. Flows reporting to the monitoring vault can either be released to the environment or pumped back to the facility for make-up water.

The HLF confining embankment has been classified as a high hazard dam. A full description of the HLF design criteria and the currently defined monitoring approach is presented in the Operation, Surveillance and Maintenance (OMS) manual [Ref 7]. Embankment integrity is to be monitored using a network of survey monuments (to be installed) and inclinometers. Dam safety inspections are required annually by the EoR and more comprehensive dam safety review is required by a qualified third-party every five years.

The parameters and criteria presented in Table 1-1 below form the basis of design for the HLF taken from the OMS Manual [Ref 7].

Table 1-1: Engineering Design Criteria

General	Quantity/Criteria
Heap Ore Capacity	45,847,770 m3
Ore Processing	Estimated 10.8 Mt/a of crushed ore over p.a. Three-stage crushing - primary crushing 365 days, secondary/tertiary 275 days per year.
Leach Pad Type	Permanent, multiple lift
Stacking Rate	Approximately 40,000-45,000 tpd
Stacking Method	Conveyor-stacker or alternate
Stacked Dry Density of Ore	Initial 1.72 t/m3 (Varies)
Stack / Lift Height	Nominal 10-12 m lifts
Overall Slope Angle of Stacked Ore	2.5:1 (H:V), 22 degrees
Ore Setback	5 m from perimeter road 10 m from dam
Leach Schedule	365 days per year
Solution Application Method	Drip emitters (buried during cold weather)
Solution Application Rate	10 L/hr/m2 (7 L/hr/m2 nominal operations application rate)
Leach Cycle Time	90-day primary leach (45-day primary leach planned for operations)
Solution Application Flow	1,500 m3/hour nominal operations rate, additional capacity available for additional dynamic storage purposes
Geotechnical Stability	**Quantity/Criteria**
Design Basis Earthquake (DBE)	PGA = 0.25g (1 in 2475-year return period; applies to the operation condition of the HLF only; does not apply to the confining embankment
Maximum Design Earthquake (MDE)	PGA = 0.35g (corresponds to the Maximum Credible Earthquake or MCE event); applies to the confining embankment and long-term stability of the post-closure heap pile
Minimum Embankment and Ore Pile Factor of Safety	Static Loading - 1.5 (impounding),1.3 (non-impounding), Seismic Loading - 1.0 (pseudo-static methods) Post-Earthquake – 1.2
Permafrost	Ice-rich materials encountered in the embankment foundation will be removed; ice-rich material in the pad or pond, if thaw unstable, will be removed.
Confining Embankment	**Quantity/Criteria**
General	To provide stable confinement of the ore and create an In-Heap Pond
Overflow spillway	Sized to pass the PMF peak flow with 0.5 m of freeboard assuming heap storage is at capacity at the start of the event.
Groundwater	**Quantity/Criteria**
General	A drainage system is required beneath the liner system to control groundwater pressures. The system is to collect and monitor groundwater in a controlled manner before discharge downslope of the containment embankment if discharge criteria from permit requirements are met.

Pad Liner System	Quantity/Criteria
Overliner Drain Fill (ODF)	Crushed clean rock to provide a free draining layer under the placed ore and to protect the lining system from damage by ore placement while not impacting the conveyance of solution to the recovery wells. ODF will consist of a minimum 1.0-meter thickness (within the In-Heap Pond, minimum of 0.6 m otherwise). Hydraulic conductivity and collection pipe spacing adequate to keep phreatic surface to 0.6 m.
Geosynthetic (Geomembrane) Liner	Suitable liner material to provide required puncture resistance, elastic strain range and resistance to solution attack and chemical breakdown along with cold weather performance for the Project's climate conditions (refer to LLDPE project standard specifications).
Geosynthetic Clay Liner (GCL)	Geosynthetic clay liner below the geosynthetic liner to provide a composite liner to minimize leakage. Objective maximum permeability 1 x 10-5 cm/s or 1 x 10-6 cm/s in the absence of a leachate detection and removal system.
Leachate Collection and Recovery System	A system to collect leachate and convey it to solution recovery wells. System to comprise ODF and a network of collection pipes to convey solution to the In-Heap Pond area while limiting solution head on liner.
Leak detection and Recovery System (LDRS)	A system within the In-Heap Pond and Events Pond to collect leakage through the composite liner and convey it to monitoring points. The system to comprise geonet or similar synthetic drainage product to collect and convey any leaked solution to a gravel filled sump and pumping system.
LDRS Monitoring	Monitoring of the flow into the LDRS to ensure that allowable rates (determined by permitting authorities) are not exceeded.
Solution Recovery Wells	**Quantity/Criteria**
General	Solution is to be recovered from the heap through inclined well casings equipped with submersible pumps installed in the In-Heap Pond solution storage area along the upstream dam slope. Adequate access for installing and recovering pumps from well casings will be provided on the dam crest.
Events Pond	**Quantity/Criteria**
General	The purpose of the Events Pond (constructed downstream of the embankment) is to temporarily store excess inflows that cannot be stored in the In-Heap Pond. Any overflow into the events pond will be evacuated, and used as make-up water, as fresh ore is added to the HLF. During the initial heap operation, the Events Pond may also be used as temporary storage for make-up water. Otherwise, the Events Pond will be kept dry.
Overflow Spillway	Sized for routed PMF peak flow with 0.5 m of freeboard.
Storage Capacity	Sized to contain the runoff volume from the PMF event assuming the In-Heap Pond is full.
Liner System	Lining to comprise a double composite geosynthetic liner system with LDRS

2. 2022 Annual Inspection

2.1 Construction Follow Up Items

2.1.1 Phase 1B HLF

As part of the 2022 annual inspection, the construction follow up items listed in the 2021 annual inspection were examined by Forte Dynamics and reviewed with VGC personnel on site. The remaining PLS pipework and ODF placement in Phase 1A has now been completed. In March 2022, Forte Dynamics produced a ROC report for the remaining PLS pipework and ODF (generally above the 938m elevation) [Ref. 5] that was not included in BGC's report dated September 2019 [Ref. 2].

Phase 1B HLF construction was managed by JDS Energy and Mining (JDS) with the work completed by various contractors and sub-contractors. Tetra Tech performed on-site QA during construction of Phase 1B of the HLF. These services were performed between February 2020 and September 2020. Off-site engineering support was performed by Forte Dynamics throughout this period. All documentation related to this work was captured in a Record of Construction (ROC) report produced by Forte Dynamics in March 2021 [Ref 6]. Similar to Phase 1A, the PLS pipework and ODF was advanced ahead of the ore pile and VGC accepted the responsibility of construction oversight and quality assurance (QA). No additional construction follow-up items were identified at the time of inspection. The ROC report produced by Forte in March 2021 included the PLS pipework and ODF in Phase 1B up to approximately the 1030m elevation [Ref. 5]. Upon completion of the remaining PLS pipework and ODF placement in Phase 1B an additional ROC report will be submitted by Forte Dynamics.

2.1.2 Phase 2A HLF

Phase 1B HLF construction was managed by JDS Energy and Mining (JDS) with the work to date completed by Layfield Group (Layfield). Tetra Tech performed on-site QA during construction of Phase 2A of the HLF. These services were performed between February 2022 and September 2022. Off-site engineering support was performed by Forte Dynamics throughout this period. All documentation related to this work was captured will be presented in a ROC report produced by Forte Dynamics in 2023. At the time of this writing, subgrade preparation and geosynthetic liner has been installed. Upon completion of the remaining PLS pipework and ODF placement in Phase 2A an additional ROC report will be submitted by Forte Dynamics.

2.2 Site Reconnaissance

The 2022 annual inspection was completed by Mr. Barry Carlson, P.Eng. of Forte Dynamics in October 2022.

2.2.1 Heap Leach Facility

The HLF site inspection included walking along the embankment crest, downhill toe, and portions of the pad area, as well as observing the respective abutments, spillway, runoff interceptor ditch and outlets of the underdrain pipelines.

The downhill slope of the embankment was smooth, and the layer of growth planted in 2019 had sparse mature growth that extends from the crest to approximately 30 m from the toe of the embankment. Extending from the toe 30 m upstream, the growth is extremely sparse to barren, (Photo #2022_25). The top liner in Phase 1B was almost entirely covered with ODF (Photo #2022_27) and loading and leaching of ore had

continued on the 1041m elevation (Photo #2022_26). The Phase 2A area was fully installed by Layfield, and QAQC testing had been completed by Tetra Tech (Photo #2022_28). A crushed ore transport system consisting of mobile "grasshopper" conveyors and a radial stacker was utilized for the stacking operations. During the 2021 EoR inspection, ore encroachment on the perimeter berm was identified due to operation of the conveyers. This was especially problematic near CV-023. Restoration of this area was successful in cleaning up this boundary and developing permanent drainages. This method should be implemented going further up the pad (Photo #2022_23).

At the toe and groins of the embankment, above the monitoring vault, gullies and rills caused by stormwater runoff were observed (Photo #2022_18). The gullies were noted in last year's inspection and have since worsened. While the gullies and rills have not been remediated, VGC has constructed a channel to direct stormwater to the west of the monitoring vault foundation (Photo #2022_24). This should be maintained and monitored for effectiveness.

The PLS pipeline was observed along the HLF dam crest in the same location as noted in last year's inspection (Photo #2022_03). Currently, routine grading operations are displacing mud that abuts against the PLS pipe and restricts drainage from crest road. From discussions with VGC personnel, the plan is to implement proper drainage by installing road base above #4 aggregate (or equivalent). Crossings for trucks and other light equipment were observed in the PLS pipeline channel, creating restricted water pathways. These crossings should be removed or, at a minimum, culverts or drainage pathways need to be installed to provide adequate flow. From discussions with VGC personnel, the plan is to remediate this situation in the summer of 2023.

During Forte's inspection, there appeared to be significant damage to the In-heap Pond spillway (Photo 2022_08). The damage to the spillway occurred when an excavator attempted to remove snow from the spillway, and subsequently damaged the concrete cloth cover. The damage was incurred throughout and could lead to a breach in containment if the spillway is used before repairs have been made. VGC personnel have attempted to patch the areas with concrete mix. However, through discussions between Forte and VGC, it has been determined that a different method of repair is necessary. Additionally, other debris such as rocks, wood, and netting, have accumulated within the spillway, which could cause further damage or impede flow during large meteoric event (Photo 2022_10). Hoses to pump water into the Event Pond have also been observed in the spillway at times throughout the year. Forte recommends the removal of this material.

It is understood that two spills were reported by VGC since our previous inspection. The first spill was in May 2022 and the second was in June of 2022. Action was taken to direct solution by pumping and ditching towards the containment area and pregnant leachate pumps for recirculation into the system. Interceptor ditches and regrading of drainage surfaces was performed in the summer of 2022 to correct the issues that caused these releases.

Other than the observations indicated above, the dam, spillway, and the outlets of the discharge pipelines, based on the visual inspection, were observed to be functional and in good condition. A summary of recommended maintenance and monitoring action items is presented in Section 2.5.

2.2.2 Event Pond

The Event Pond was inspected by walking along the south embankment toe, up the emergency spillway and around the pond crest. The Event Pond is currently being used for temporary water storage. Ballasting of the Event Pond is required to prevent liner uplift. If using water as a ballast, Forte recommends a minimum of

0.6m of water depth always remain in the pond for wind ballasting. The level indicator records indicate that this minimum depth is being maintained.

In the previous year's inspection, Forte observed that the emergency spillway weir had been filled with a crushed gravel. It was observed that the crushed gravel had been removed per recommendations (Photo # 2022_16).

Based on the visual inspection, the event pond and emergency spillway were observed to be functional and in good condition.

2.3 Monitoring

2.3.1 In-Heap Pond Solution Inventory

The In-Heap Pond fluid level is tracked by a vibrating wire piezometer (VWP) installed in the inclined PLS riser pipe (Photo #2021_06). Figure 1 below illustrates the In-Heap Pond level from data provided by the site team. It was observed that the In-Heap Pond level stayed below the spillway invert and never discharged to the HLF spillway. There were several instances where the In-Heap Pond crossed the Orange Alert threshold and crossed the Red Alert threshold three times. On February 20th, 2022, the In-heap Pond nearly reached the spillway and had a free volume of 256 m^3. It appears Operations reacted appropriately by reducing the In-Heap Pond level before reaching the Spillway elevation in accordance with the OMS Manual [Ref 7].

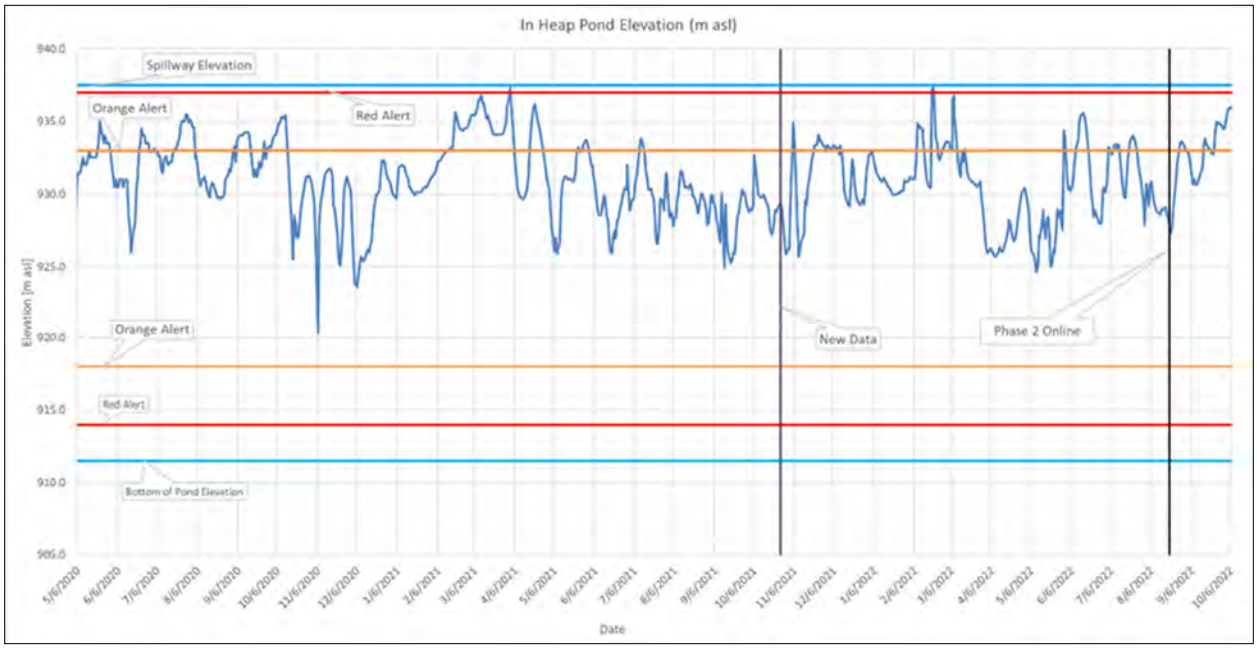

Figure 1: In-Heap Pond Elevation

2.3.2 HLF LDRS

The HLF LDRS sump level as of May 24, 2020, is being tracked via VWP in the LDRS sump and LDRS pump is activated manually to evacuate any leakage and total volume pumped recorded via a local totalizer. Figure

2 below shows the recorded leakage rates compared to the allowable leakage rates which affirms that the HLF liner system is functioning as designed.

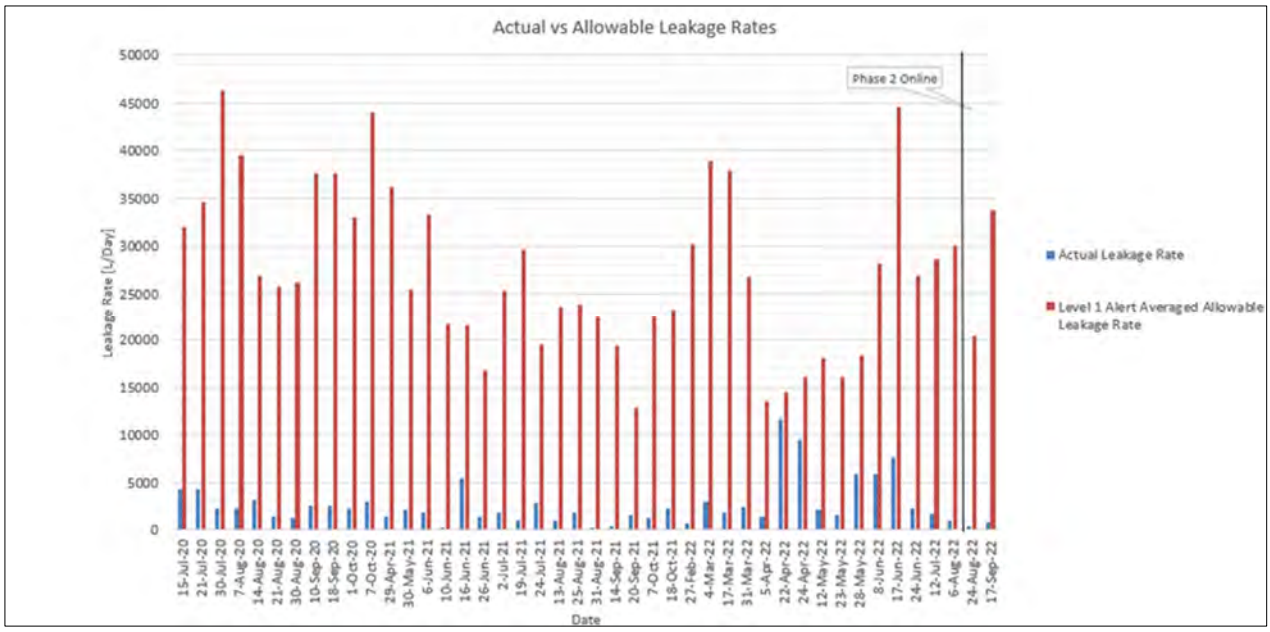

Figure 2: HLF LDRS Actual vs Allowable Leakage Rates

Forte recommends the HLF LDRS sump be evacuated by a level-actuated pumping system to automate the evacuation of the LDRS sump. Generally, sumps should be pumped prior to the water level reaching 0.5 m above the bottom of the LDRS end of pipe elevation. This will limit the hydraulic head on the bottom liner. Pumped flow volumes and water level readings should be recorded per the OMS manual [Ref 7].

2.3.3 Underdrain Monitoring Vault

The underdrain monitoring vault seepage and flow pumped back to the process circuit is being tracked daily by VGC site personnel. Figure 3 below illustrates the groundwater seepage that was pumped from the UMV to the Event Pond (Photo # 2021_04). Groundwater seepage is typically greater in the Springtime during freshet and lower in the Fall.

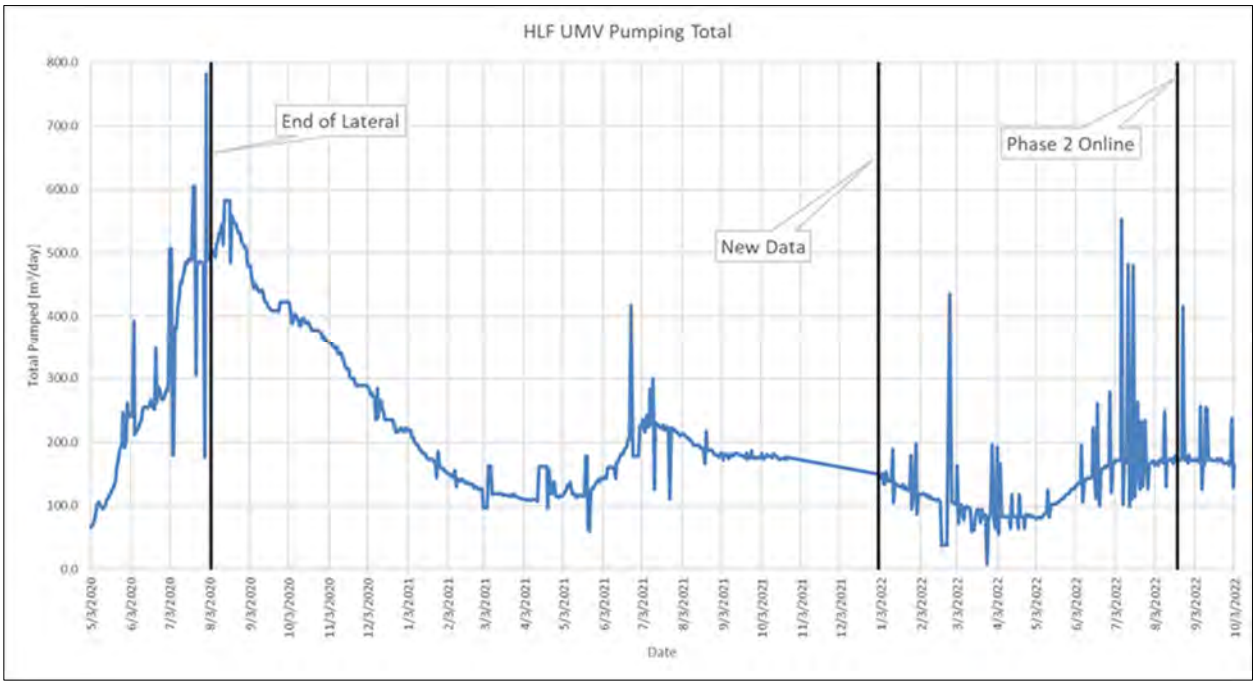

Figure 3: HLF UMV Pumped Daily

Figure 4 below shows the UMV average daily pumping rate to the Event Pond which ranged between 0.34 m^3/hr and 32.8 m^3/hr. The pump data provided showed the pump has a maximum pumping capacity of 150 m^3/hr putting the operating point outside recommended operating envelope and explains why the pump was observed turning on and off frequently during the inspection. As a near term solution, Forte recommends procuring a spare pump to reduce downtime if the UMV pump were to fail. As a long-term solution, Forte recommends implementing a surge tank or other means of reducing the pumps cycling is needed, or procuring a new pump better suited for the application.

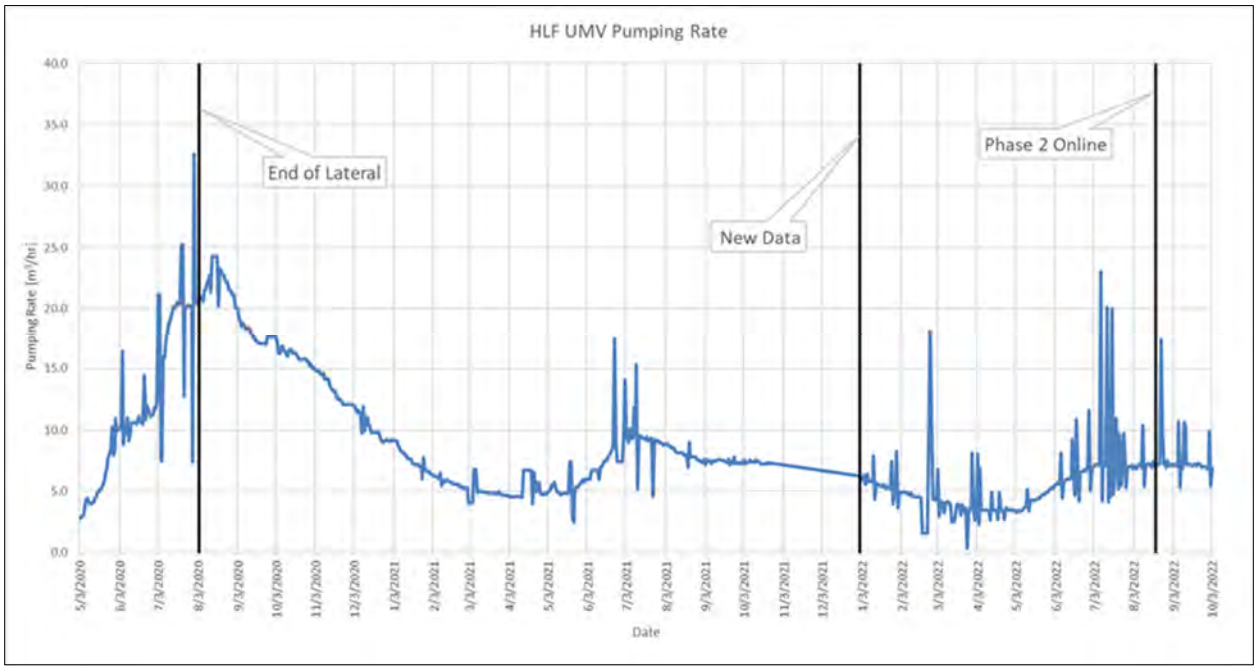

Figure 4: UMV Pumping Rate

2.3.4 Event Pond Storage

The Event Pond level was at an approximate elevation of 887.6m, based on data provided by VGC at the time of the inspection (Photo # 2022_29). This elevation is approximately 6.9m below the Event Pond emergency spillway invert. Event Pond level monitoring data collected from the site team was analyzed and Figure 5 presents the Event Pond and In-Heap Pond available storage compared to the DAS that is required to be maintained. The actual available storage was less than the DAS for some time during mid-late summer of 2020, 2021, and 2022. The volume stored in the Event Pond is non-contact water that was either collected from precipitation or a small amount pumped from the underdrain monitoring vault or contact water pumped from the Lower Dublin South Pond (LDSP). Figure 5 below shows that the In-Heap Pond level never reached the elevation of the spillway invert and therefore no PLS solution was conveyed to the Event Pond. Forte recommends utilizing the available water for HLF make-up water demands and maintain the desired available storage.

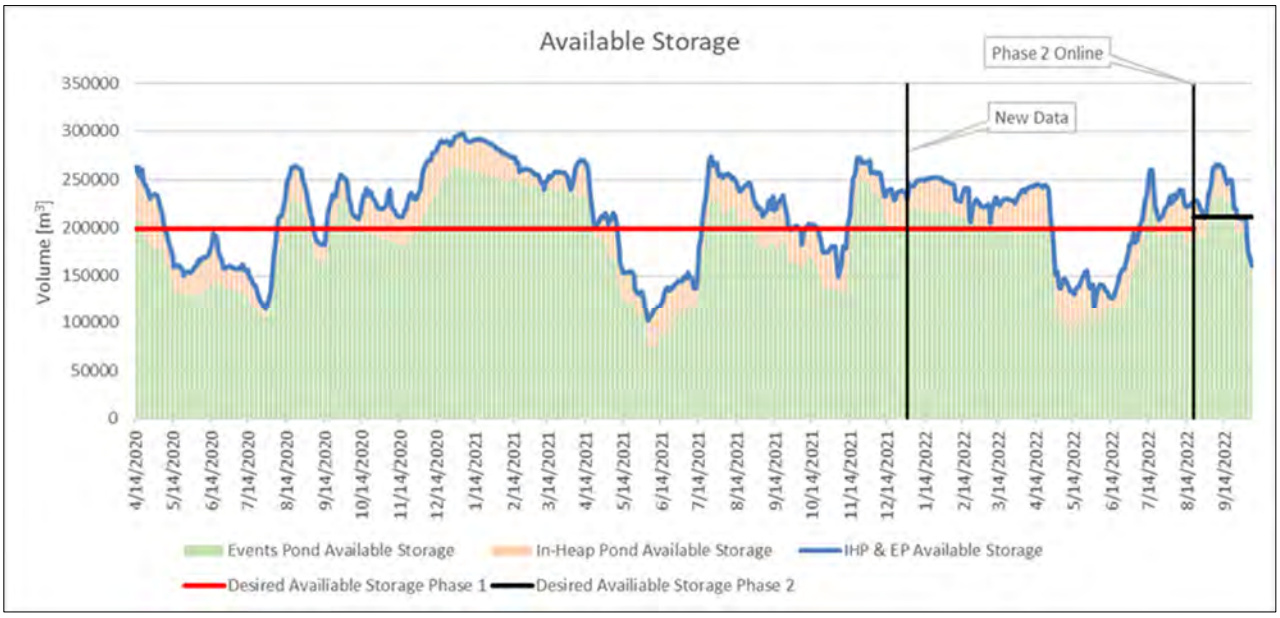

Figure 5: Events Pond and In-Heap Pond Available Storage

2.3.5 Event Pond LDRS

The water level in the Event Pond LDRS sump was approximately 879.3m at the time of inspection. It is understood that the level was not being actively tracked, however, hydraulic head inside the LDRS sump is being monitored using a VWP. Between September 20, 2019, and June 24, 2020, the VWP shows no data for the Events Pond LDRS, and the entire data sample collected from the VWP has not been calibrated. Therefore, some conservative assumptions were made to identify when the sump was empty (minimum data point in the dataset) and when the sump was full (maximum data point in the data set). Using these assumptions, the data was analysed after each pumping event to determine the rate at which the sump recharged from potential liner leakage and compared to the allowable leakage rates for Alert Level 1 (the lowest alert level stage) as stated in the Operations, Maintenance & Surveillance (OMS) manual [Ref 7]. Like the HLF LDRS, Forte recommends the Event Pond LDRS sump be evacuated based on observation of LDRS sump water level readings with a level switch installed that turns the pump on and off. Pumped flow volumes and water level readings should be recorded per the OMS manual.

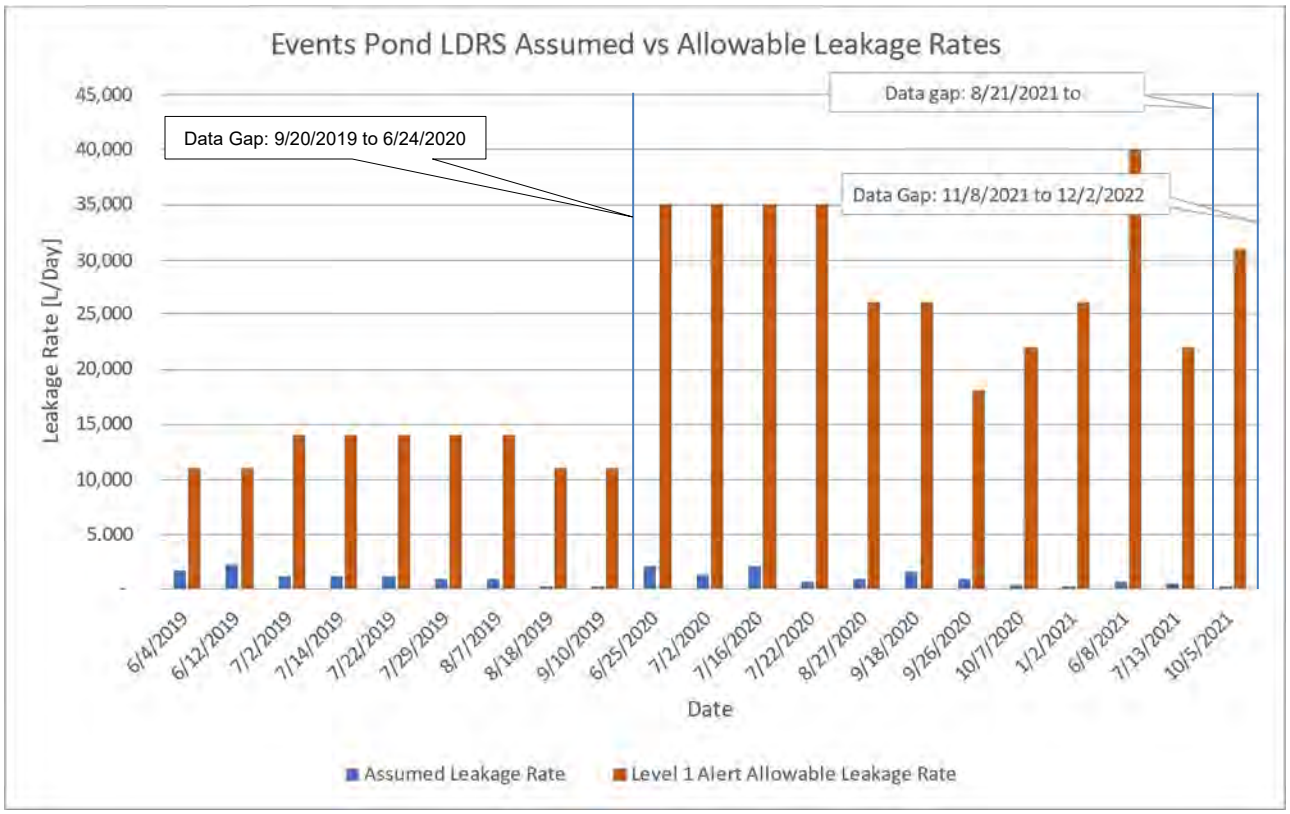

Figure 6: Event Pond LDRS Level

2.3.6 HLF Embankment Integrity

Three standpipes with VWPs are installed through the HLF dam crest. Piezometer P1 was installed into the dam foundation bedrock and Piezometers P2 and P3 were installed in the dam fill just above the western and eastern underdrains, respectively. The piezometer readings for P1, P2, and P3 are provided in Figure 7, Figure 8, and Figure 9 respectively. The P1 level data appears to have remained relatively static when compared to previous readings taken during the 2021 annual inspection. The P2 and P3 sensors still appear to be dry and small fluctuations are likely attributed to the changes in barometric pressure. The reported P2 VWP sensor elevation may be incorrect as the water level measured is below the reported sensor elevation. All three vibrating wire piezometers were installed by hanging them in 2-inch PVC standpipes. The depth of P2 should be verified and its tip elevation updated for future readings. If water level readings continue to report below the P2 tip the VWP may require repair, calibration, or replacement. Additionally, the P3 VWP hole may have a small amount of mud that has collected at bottom where sensor is installed. Both sensors should be further investigated by the site team.

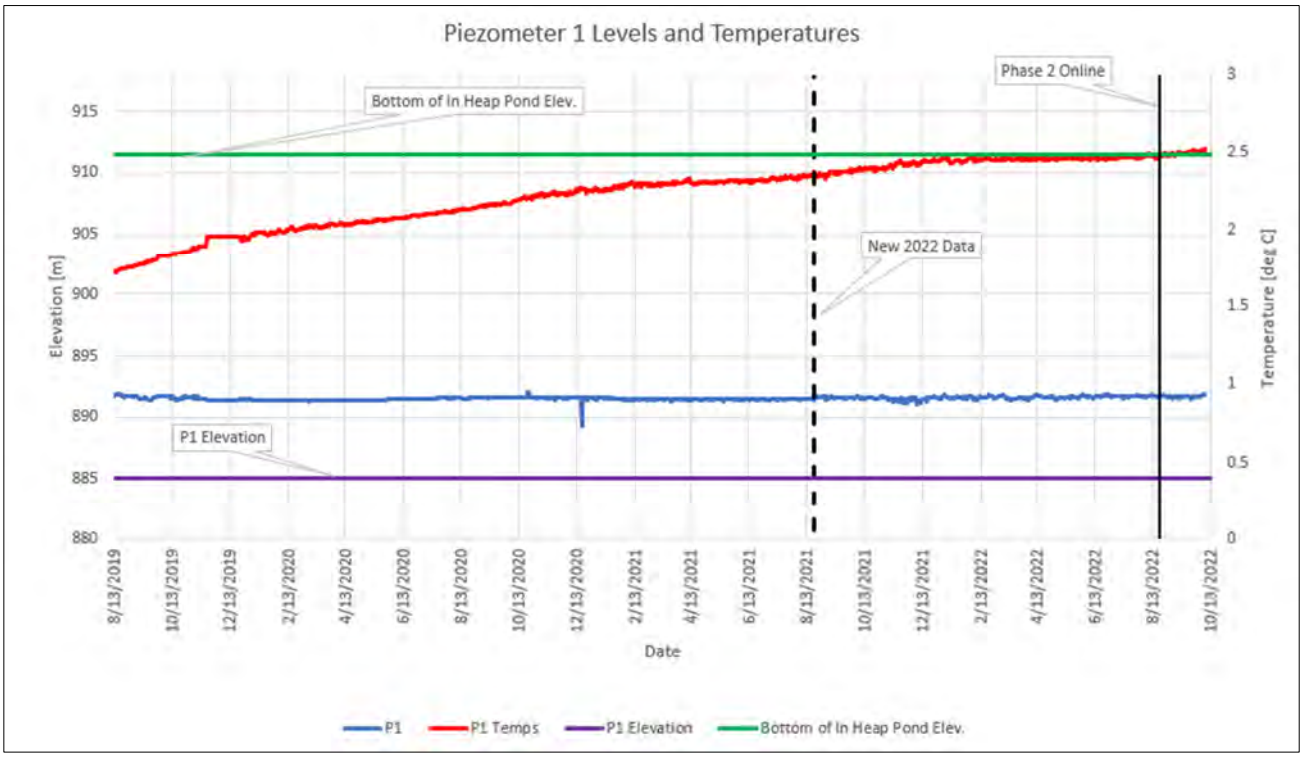

Figure 7: P1 Piezometer Level and Temperatures

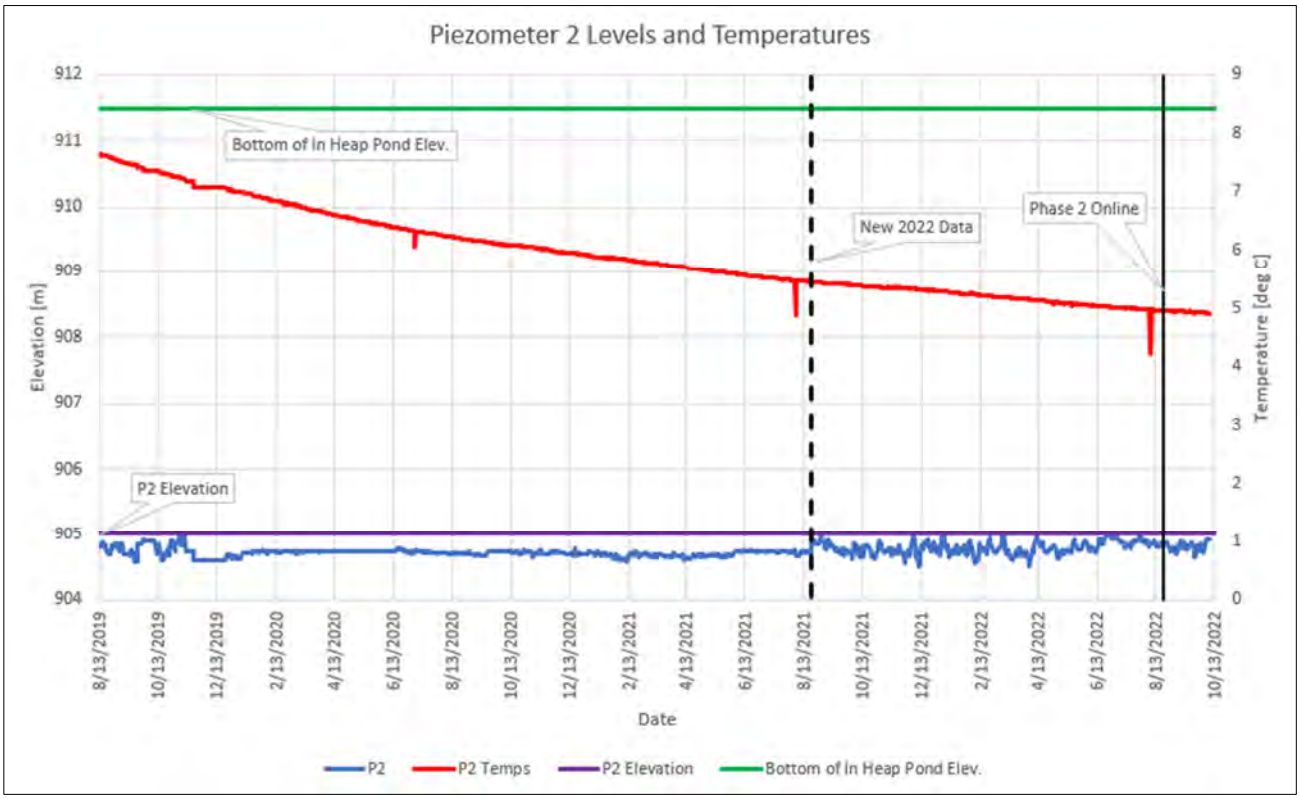

Figure 8: P2 Piezometer Level and Temperatures

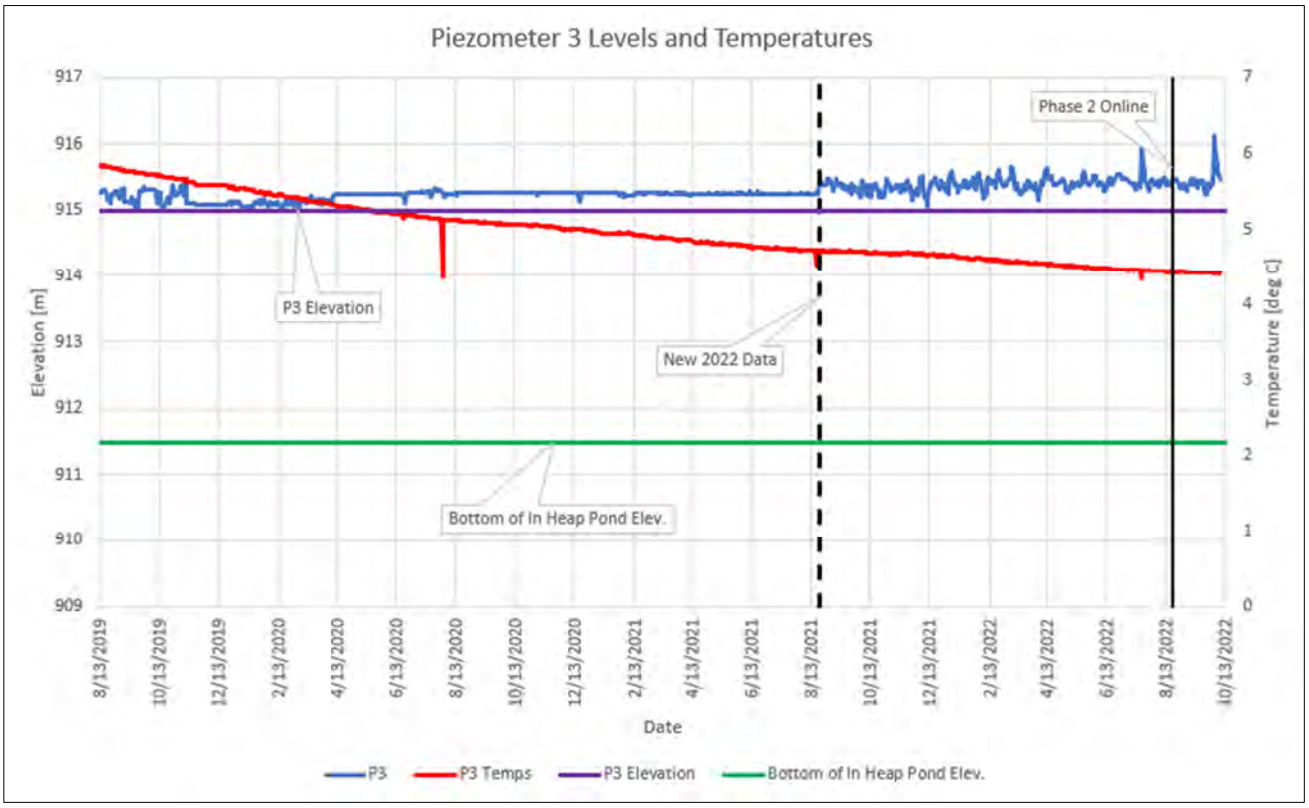

Figure 9: P3 Piezometer Level and Temperatures

An RST MEMS Digital Inclinometer system was procured by VGC to measure lateral movements of the HLF embankment dam. This probe has been used for all reading taken in this inclinometer since its installation. The initial readings taken on the embankment began on June 26, 2020, with additional readings taken quarterly up until September 29, 2022. The inclinometer takes measurements along two different axes; the A axis which is oriented perpendicular to the embankment alignment and the B axis in parallel to the embankment alignment. The inclinometer casing was completed to a depth of 54m within the embankment and measurements were taken every 0.5m from the bottom of the hole back to the surface.

The cumulative displacement plots show a maximum of approximately 17mm of movement along the A axis. Displacement observed on the A axis has accelerated between the June 2021 reading and September 2022 reading, reporting an approximately 13mm of displacement in that period. The cumulative displacement plots show a maximum of approximately 10mm of movement along the B axis. Displacement observed on the B axis has also accelerated slightly between the June 2021 reading and the September 2022 reading, reporting an approximately 8mm of displacement in that period. The acceleration of deformation within this period is considered typical settlement of a lined embankment, as settlement will be slightly delayed and more prolonged in comparison to an unlined embankment. Overall, the signature of the deformation shows movement typical of an embankment of this nature and is considered minor. It should be noted that larger displacement towards the top of the inclinometer casing is normal and is not representative of the embankment stability as a whole. Minor shearing was also observed in the contact between bedrock and fill along both the A and B axis. Minor shearing is also typical for embankment dams at the bedrock contact. Cumulative displacement plots are included in Figure 12.

Quality assurance checks performed for the inclinometers included checksum calculations between the axis^{+} and axis^{-} readings. The mean deviation reported for the September 2022 readings was consistent with all other post-initial readings and showed a deviation of up to 20mm. Consistent deviations may be the results of deformation of the inclinometer at couplings. Checksum readings should also be provided by Eagle Gold to determine if and where issues exist with the inclinometer, probe, or reading method. Mean deviation plots are included in Figure 10.

Plots showing incremental displacement are included in Figure 11 and maximum displacement per axis over time is included in Figure 13.

The inclinometer provides the ability to provide the horizontal (X and Z components) of deformation tracking. Vertical deformation (settlement along the Y axis) tracking is required to fully understand the deformation pattern of the embankment as vertical settlement is typically larger in magnitude comparted to horizontal movement. Inclinometer readings will be required per the OMS and Forte and should be monitored every quarter.

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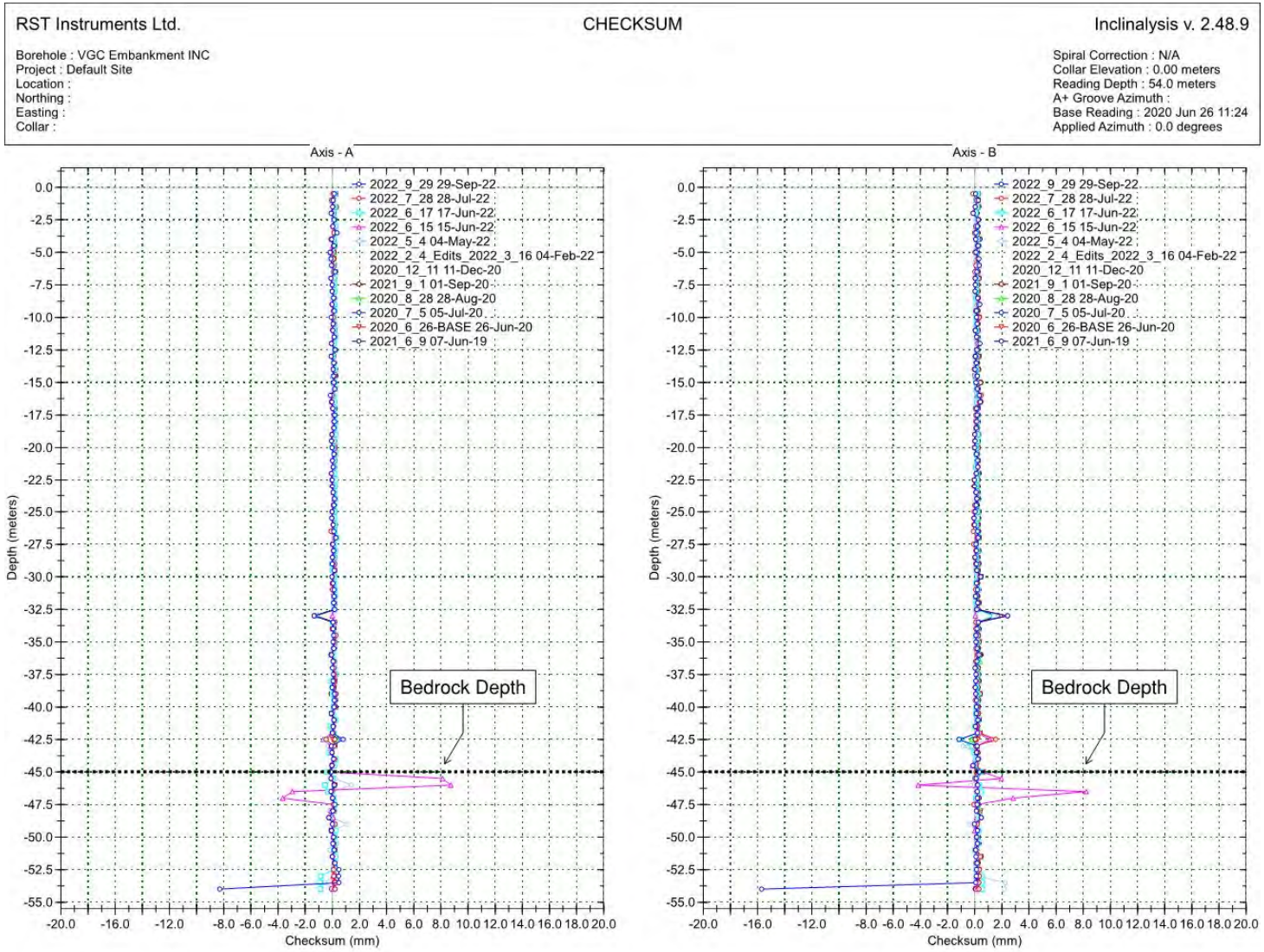


Figure 10: Inclinometer Checksum Plot

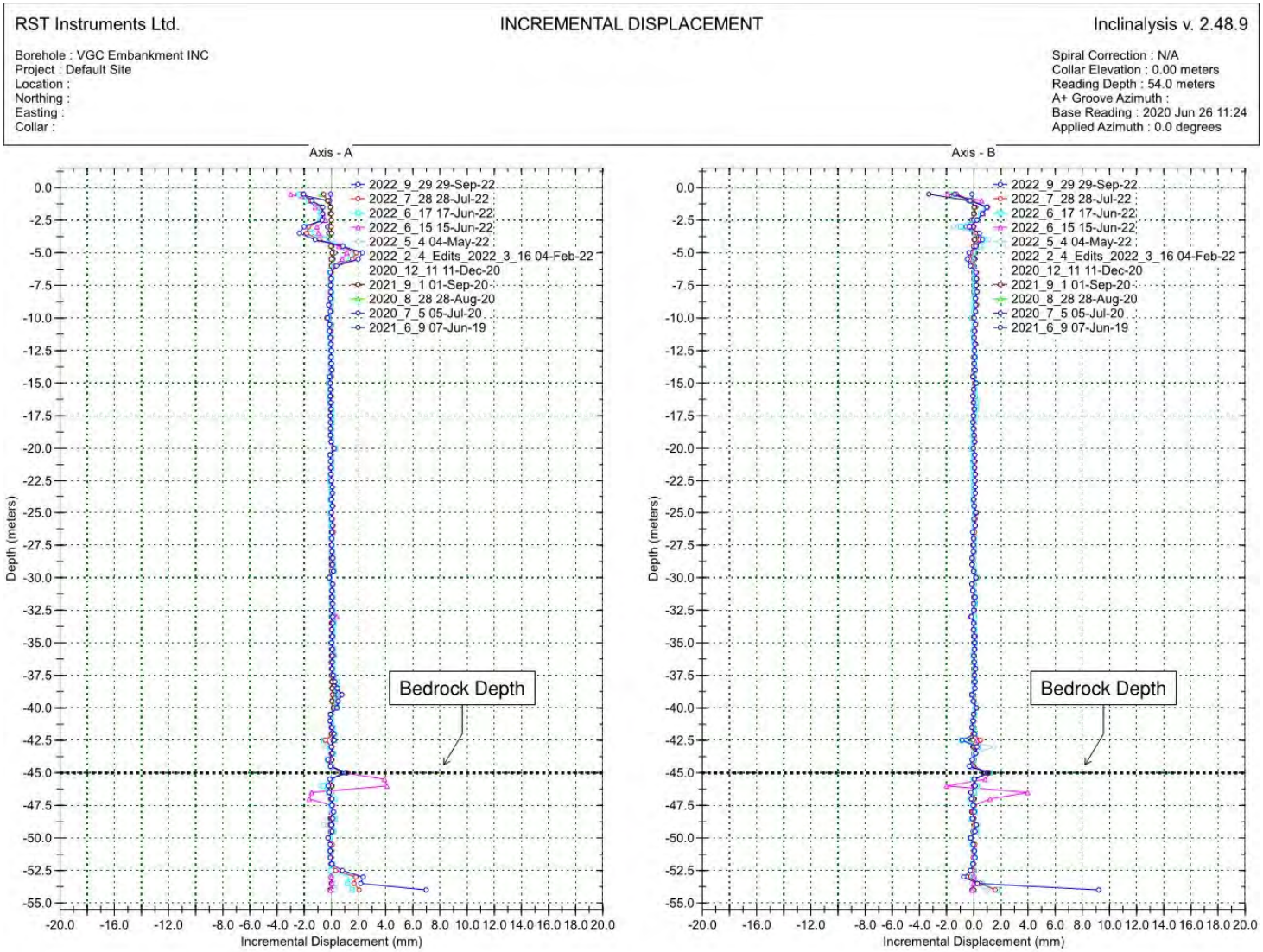


Figure 11: Inclinometer Incremental Displacement Plot

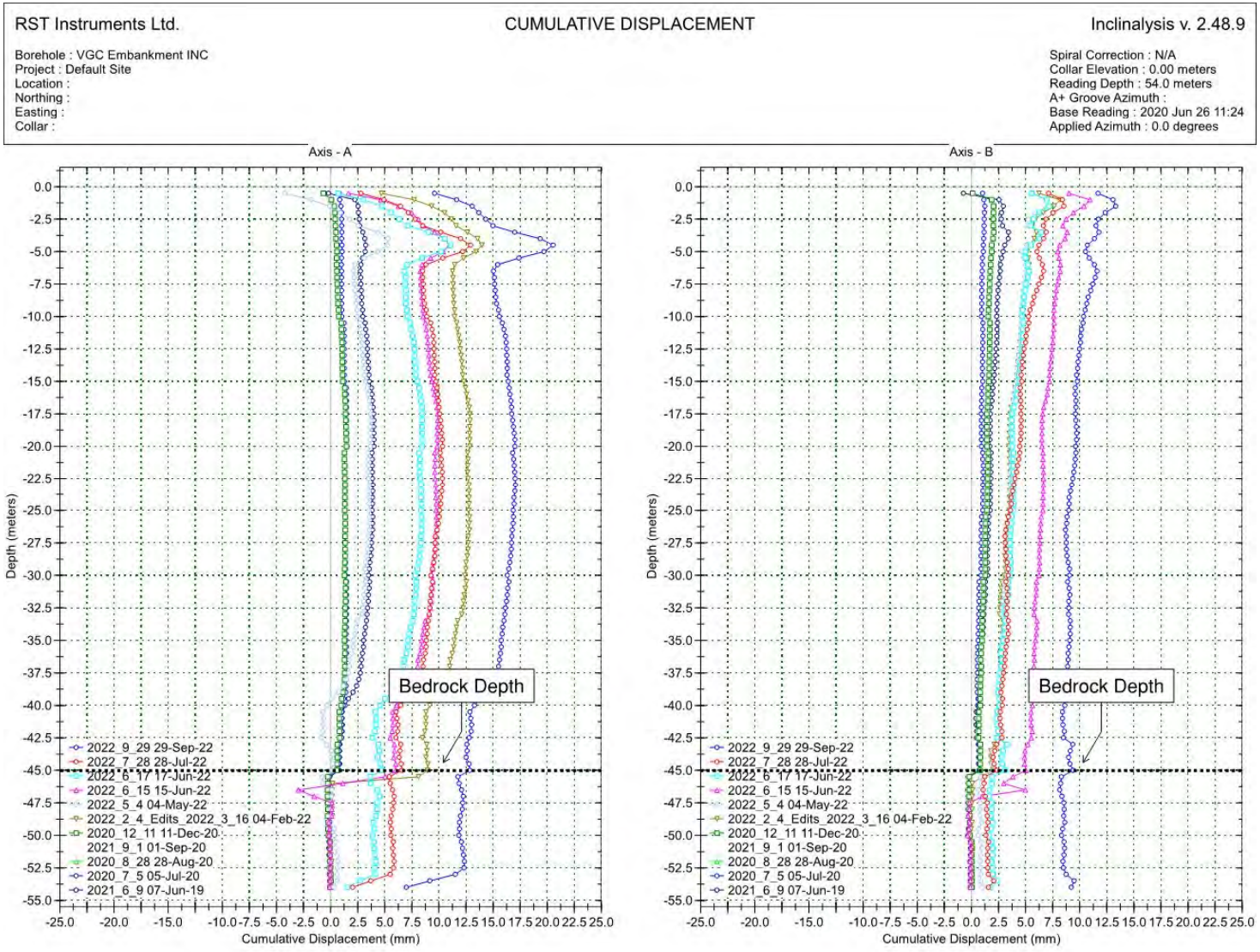


Figure 12: Inclinometer Cumulative Displacement Plot

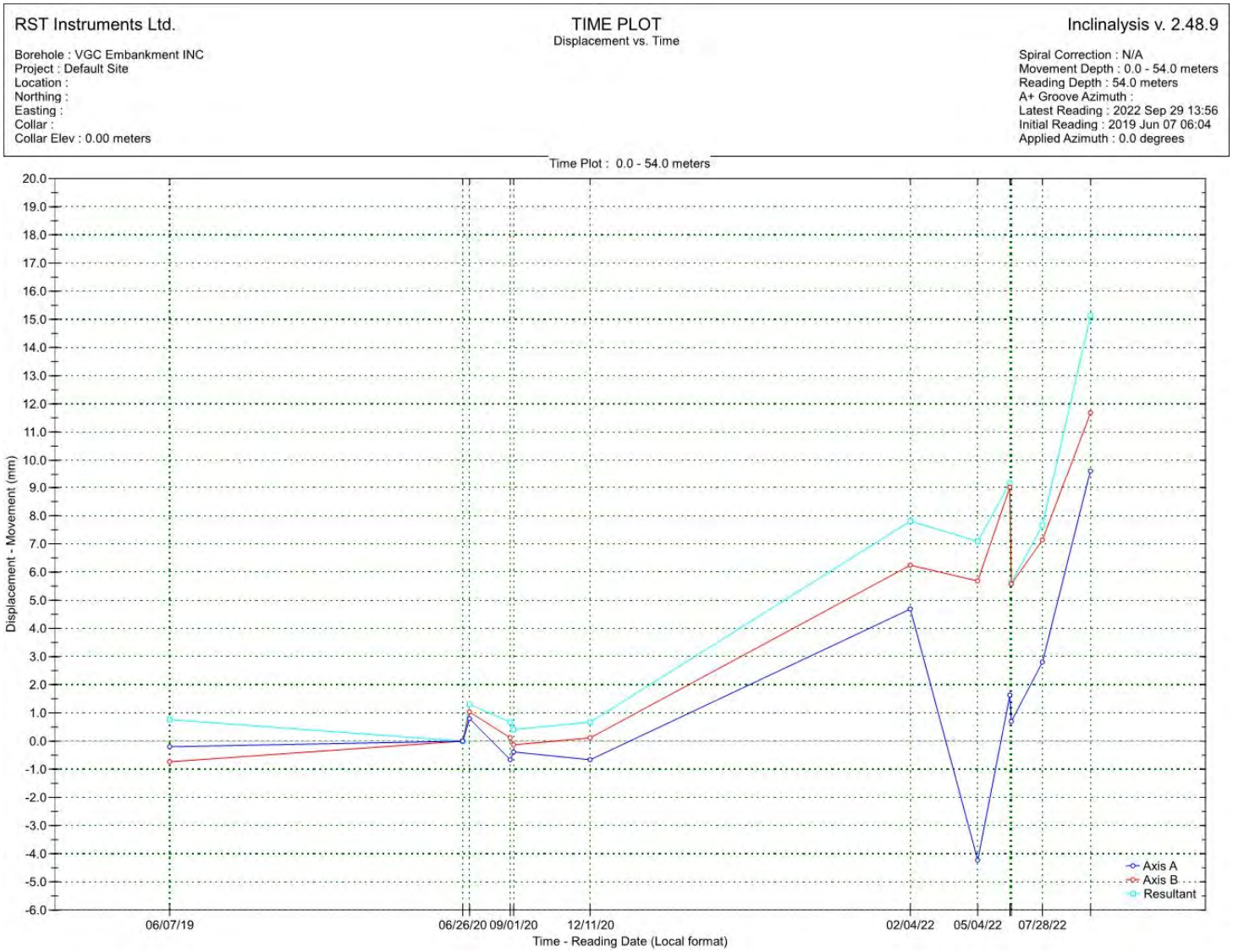


Figure 13: Inclinometer Time Plot

2.3.7 Horizontal ODF Piezometers

Three VWPs are installed in conduit pipes through the phase 1 leach pad overliner layer upgradient of the In-Heap Pond. These three piezometers were installed horizontally atop the pad geomembrane and extend 25 m, 50 m, and 100 m from the heap toe limit. The purpose of these piezometers is to monitor phreatic head above liner. The phreatic head levels of all three piezometers had correlating levels and fluctuations throughout the monitoring period, showing a maximum phreatic head level of 0.46 m and a minimum of -0.16 m. Thermistor data shows that temperatures never dipped below 4 degrees Celsius during the monitoring period. Thermistor data was not provided by VGC after October 14th, 2021. It should be noted that piezometer data was not recorded from October 14th, 2021, to December 18th, 2021, and thermistor data was not recorded after December 18th, 2021. At this moment it is unclear why this data was not reported. Aside from the apparent data gap, it appears that the piezometers are functioning properly, and the measured phreatic head level is within the design criteria.

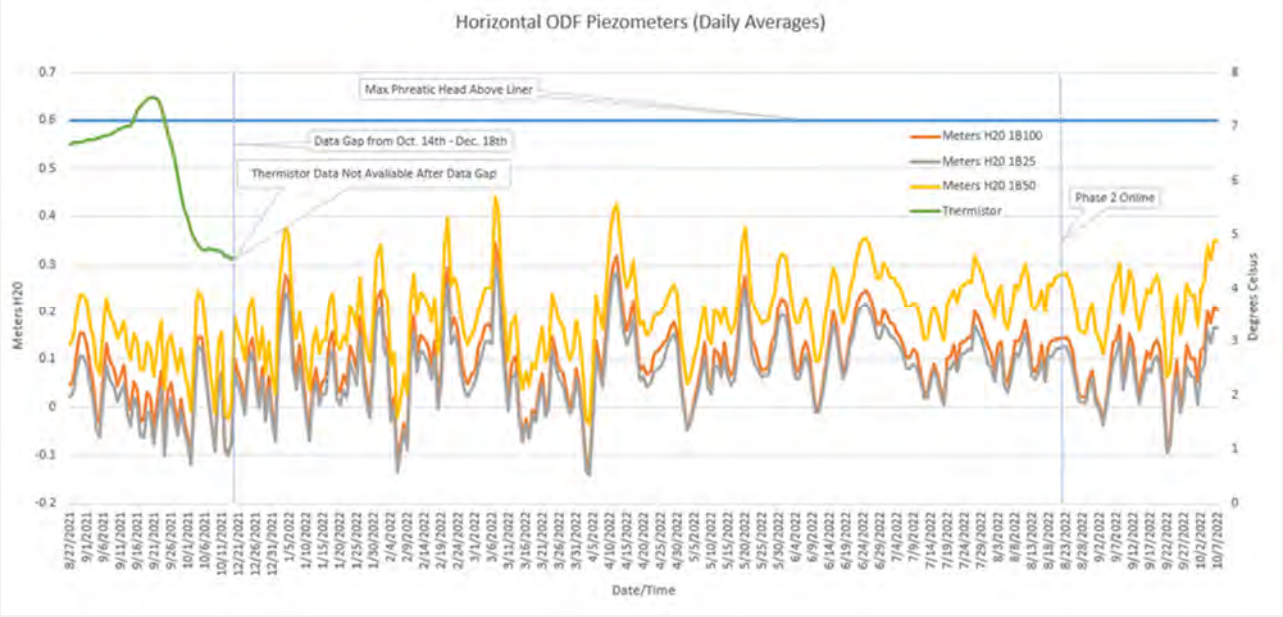


Figure 14: Phase 1B Horizontal ODF Piezometer Levels

2.4 HLF Operations, Maintenance and Surveillance Manual

An updated Operation, Maintenance and Surveillance (OMS) Manual dated January 2020 was prepared by VGC and presents roles and responsibilities, reference documents and reports, HLF description, operation, design basis, maintenance, dam surveillance program, emergency identification and evaluation, and emergency planning and response [Ref 2]. The OMS Manual accounts for the initial construction phase and start-up operations and includes the details of the facility layout, current VGC personnel, and the HLF operational plan. Forte reviewed the OMS Manual and have provided our required actions and recommendations in Table 2-1 below.

Table 2-1: OMS Manual Review Items

Item	Description	Action or Recommendation
Table 2.1-3	Update Contact Info for Process Manager	Action Required
Figure 4.3-1	Update Heap Leach Facility Cross-Section to Remove 55m bench at EL. 985.0m	Action Required
Table 6.3-1	Update Heap Ore Capacity based on volumetric capacity rather than tonnage	Recommendation
Table 6.3-1	Stacked dry density of ore – note that this parameter is variable	Recommendation
Table 6.3-1	Overliner Drain Fill (ODF) – update spec based on criteria used on Phase 1B construction	Action Required
Section 7.3.3	Update In-Heap Pond available storage capacity, operational volume, and combined storage volume of In-Heap Pond and Event Pond	Action Required
Table 7.3-1	Update Table based on Forte modeling input	Action Required
Table 7.4-1	Remove Table from OMS as the leaching plan should be updated with each mine plan update	Recommendation
Table 9.1-1	Revise frequency of inclinometer and survey monuments to quarterly	Action Required
Section 9.1	Revise LDRS monitoring verbiage to include that the LDRS sump should be evacuated based on water level readings (no greater than 0.5 m above the bottom end of the LDRS pipe should be allowed).	Recommendation

2.5 2022 Recommendations

The items below provide a summary of our recommended maintenance and monitoring action items for the HLF. Each action item has been assigned a priority ranking level from 1 to 3. 1 indicating highest priority and 3 indicating lowest priority. A ranking of 3 was generally assigned to items that would be considered routine inspection or monitoring.

These recommendations are based on a review of the pending construction items, outstanding action items from previous inspection completed in 2020-2021, and new action items from Forte's August 2022 site inspection.

As discussed in Section 2.1.2, Forte recommends as a priority the remediation and engineering review of the following nine (9) areas:

1. Install signage to clearly mark the HLF east underdrain outlet - Not primary outlet for underdrain seepage as water is pumped back to process, however the underdrain outlet still requires marking.

2. Continue to monitor the stormwater management infrastructure that has been completed at toe of the embankment (upstream of the UMV area), and in the groins of the embankment to assure effectiveness (Photo #2022_24).

3. Install wireless relays for data collection and source from ADR waterline to event pond (Photo #2021_03).

4. Barren pipe, PLS pipe, and ore creates impasse for flows along west side to reach spillway. The current culvert under the crossing is insufficient to accommodate large meteoric events. At a minimum a drainage pathway/larger culvert required under crossing (Photo #2022_31).

5. Extend vegetation to the toe of the embankment where currently barren (Photo #2022_25).

6. PLS pipe on the upstream side of the embankment crest provides a barrier area where material from grading operations collects and prevents surface drainage. Placement of road base material, proper grading, and potential relocation of the PLS pipe should be completed to promote proper drainage (Photo #2022_12).

7. Additional secondary containment around process area is recommended to protect carbon supersack storage (Photo #2021_01).

8. Remediate erosion on Heap face. Solutions can include a combination of periodic ripping of the compacted road surface, sloping of benches back into the heap and excavation of channels to direct water away from access roadways, and installation of sumps periodically to allow exfiltration of water into the ore pile (Photo #2022_03).

9. Minor damage has occurred to the HLF spillway due to material cleanouts and snow removal. Remediation of the damage should be completed and documented once complete (Photo #2022_08).

Other action items listed on the inspection forms in Appendix B indicate areas that should continue to be monitored, but do not require specific action at this time.

Table 2-2:Recommended Maintenance and Monitoring Action Items – 2022 Annual HLF Inspection

Maintenance/Monitoring Actions Required						
Name of Structures	**Routine Monitoring/ Maintenance**	**Increased Monitoring/ Maintenance**	**Remediation and Engineering Review Necessary**	**Priority Level**	**Recommendations**	**Photo Included? / Photo #**
Heap Leach Facility (HLF)	Yes	Yes	Yes	3	Continue documentation using routine **inspection forms** all unusual/adverse conditions observed, as well as maintenance work undertaken as per the current OMS manual.	No
				3	Continue the inspection and documentation of the embankment erosion, cracking, settlement or subsidence, bulging, vegetation, and animal burrows **weekly** as per the current OMS manual.	No
				3	Continue the inspection and monitoring of embankment geotechnical instrumentation that has been set up for **continuous** wireless relays including: in-heap pond piezometers, ODF piezometers, and LDRS piezometer as per the current OMS manual. **Note:** Currently, the In-heap pond piezometer relays data **daily (manual readings)**, ODF piezometers relay data approximately every **20 minutes (continuous readings)**, LDRS piezometer relays data **daily (manual readings)**. Forte recommends the implementation of continuous relay for the ODF and LDRS piezometers as per the OMS manual.	No
				3	Recommend taking out piezometer 2 and 3, cleaning them, and hanging both about 0.25 m from the bottom. Verify the tip depth when lowering it back down and updated the depth of subsequent readings.	No
				3	Evacuate the LDRS sump based on water level readings (no greater than 0.5m above bottom end of LDRS pipe should be allowed). **Note:** As per the current OMS manual, the LDRS sump should be checked **daily** for the presence of solution. If solutions are present, they will be sampled an analyzed. Solutions contained will be evacuated, measured for volume, and recorded. As per Forte discussion with VGC, this requirement is unfeasible. Forte recommends an update to the OMS manual to reflect the operating procedure currently in place.	No
				3	Continue the inspection and collection of inclinometer readings **quarterly** as per the current OMS manual.	No
				3	Continue the inspection and collection of measured pumped seepage at monitoring vault **weekly** as per the current OMS manual. **Note:** Currently, the measured pumped seepage is being relayed **daily**.	No
				3	Inspection and survey of embankment survey monuments **monthly** (until November, 2023) per Forte recommendations to provide a baseline. Survey of the monuments after November, 2023 can revert back to **quarterly** readings as per the current OMS manual.	No
				3	Continue the routine inspection and monitoring of pad liner, PLS and barren pipes, and spillway **weekly** as per the current OMS manual.	No
				3	Buttress toe recommended to prevent ODF washout. Do not extend ODF up slope higher than 1 lift height in advance of ore being stacked on steep slopes. Have spotters visually observing haul trucks as they dump ODF to prevent damage to the liner.	Yes / 2021_02
				3	Continue monitoring on the improvements made to area near CV-023. Ongoing maintenance will be required for the continued performance of the stormwater control, and to maintain setback from perimeter berm to toe of ore. VGC should continue this approach as the heap advances further up the hillside.	Yes / #2022_23
				3	Install signage to clearly mark the HLF east underdrain outlet. – Primary outlet for underdrain seepage as water is pumped back to process, however the underdrain outlet still requires marking.	No
				3	Continue to monitor the stormwater management infrastructure that has been completed at toe of the embankment (upstream of the UMV area), and in the groins of the embankment to assure effectiveness.	Yes / #2022_24
				3	Install wireless relays for data collection and source from ADR waterline to event pond.	Yes / #2021_03

				1	Barren pipe, PLS pipe, and ore creates impasse for flows along west side to reach spillway. The current culvert under the crossing is insufficient to accommodate large meteoric events. At a minimum a drainage pathway/larger culvert required under crossing.	Yes / #2022_31
				3	Extend vegetation to toe of embankment where currently barren.	Yes / #2022_25
				2	PLS pipe on the upstream side of the embankment crest provides a barrier area where material from grading operations collects and prevents surface drainage. Placement of road base material, proper grading, and potential relocation of the PLS pipe should be completed to promote proper drainage.	Yes / #2022_12
				2	Additional secondary containment around process area is recommended to protect carbon supersack storage.	Yes / #2021_01
				2	Remediate erosion on Heap face. Solutions can include a combination of periodic ripping of the compacted road surface, sloping of benches back into the heap and excavation of channels to direct water away from access roadways, and installation of sumps periodically to allow exfiltration of water into the ore pile.	Yes / #2022_04
Event Pond (EP)	Yes	Yes	-	3	Continue documentation using routine **inspection forms** all unusual/adverse conditions observed, as well as maintenance work undertaken as per the current OMS manual.	No
				3	Continue the measurement of event pond fluid levels **daily** if the desired available storage level has been reached, and **weekly** otherwise as per the current OMS manual.	No
				3	Continue the inspection and monitoring of the event pond LDRS that has been set up for **continuous** wireless relays as per the current OMS manual. Note: Currently, the event pond LDRS is set up for data relays every **20 minutes**. However, from November 2021 to December 2022, the battery for the LDRS piezometer was dead. Forte recommends inspection of the event pond LDRS piezometer's functionality **weekly**.	No
				3	Evacuate the event pond LDRS sump based on water level readings (no greater than 0.5m above bottom end of LDRS pipe should be allowed). **Note:** As per the current OMS manual, the event pond LDRS sump should be checked **daily** for the presence of solution. If solutions are present, they will be sampled an analyzed. Solutions contained will be evacuated, measured for volume, and recorded. As per Forte discussion with VGC, this requirement is unfeasible. Forte recommends an update to the OMS manual to reflect the operating procedure currently in place.	No
				3	Routine inspection and monitoring of event pond liner, and emergency spillway **weekly** as per the current OMS manual.	No
HLF Spillway	Yes	Yes	Yes	3	Continue documentation using routine **inspection forms** all unusual/adverse conditions observed, as well as maintenance work undertaken as per the current OMS manual.	No
				3	Continue the routine inspection and monitoring of the spillway armoring, adjacent access road, and seepage collection pipe outlet as per the current OMS manual.	No
				1	A significant amount of debris has accumulated within the HLF spillway. Cleanout of the the debris is required to prevent further damage. Cleanout should be completed an documented once complete.	Yes / #2022_10
				1	Minor damage has occurred to the HLF spillway due to material cleanouts and snow removal. Remediation of the damage should be completed and documented once complete.	Yes / #2022_08
Emergency Spillway	Yes	No	Yes	3	Continue documentation using routine **inspection forms** all unusual/adverse conditions observed, as well as maintenance work undertaken as per the current OMS manual.	No
				3	Continue the routine inspection and monitoring of the spillway armoring, adjacent access road, seepage collection pipe outlet as per the **weekly** current OMS manual.	No

3. Closure

Forte Dynamics Inc. (Forte) prepared this document for the account of Victoria Gold Corp. The material in it reflects the judgment of Forte staff considering the information available to Forte at the time of document preparation. Any use which a third party makes of this document or any reliance on decisions to be based on it is the responsibility of such third parties. Forte accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this document.

As a mutual protection to our client, the public, and ourselves, all documents and drawings are submitted for the confidential information of our client for a specific project. This document has been authorized for use as part of VGC's publicly available annual permit reports. A record copy of this document is on file at Forte. That copy takes precedence over any other copy or reproduction of this document.

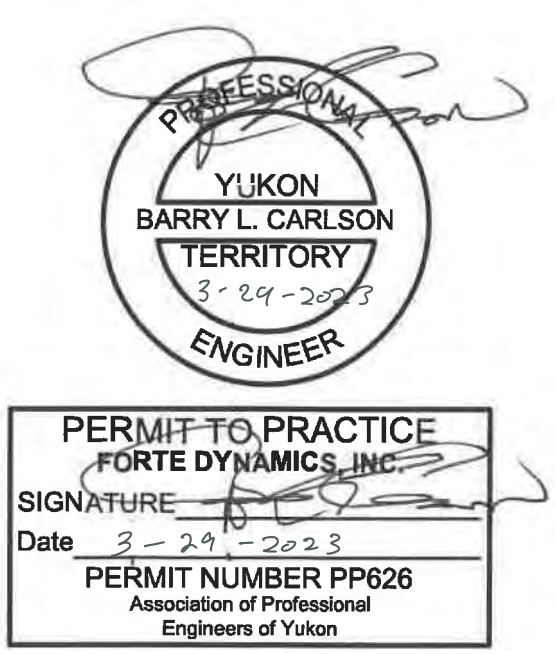
Note the conclusions provided herein will change as the recommended maintenance measures are undertaken.

We trust the above satisfies your requirements at this time. Should you have any questions or comments, please do not hesitate to contact us.

Yours sincerely,

Forte Dynamics Inc.

per:



Barry Carlson, P.Eng.

Principal Engineer

4. References

[1] BGC Engineering, Inc. (2018). Eagle Gold Project Heap Leach Facility Detailed Design Report. January 8, 2018.

[2] BGC Engineering, Inc. (2019a). Eagle Gold Project Heap Leach Facility Construction Summary Report for Phase 1A. September 24, 2019.

[3] BGC Engineering, Inc. (2019b). Eagle Gold Project Heap Leach Facility – Annual Inspection. November 19, 2019.

[4] Forte Dynamics, Inc. (2021a). 2020 Annual Inspection of Eagle Gold HLF. Document No. 109005-51100-01-EDR-F002. March 19, 2021.

[5] Forte Dynamics, Inc. (2021b). Eagle Gold HLF Phase 1B Record of Construction. Document No. 109005-51100-03-ROC-F002. March 19, 2021.

[6] Forte Dynamics, Inc. (2022). Eagle HLF Phase 1A,1B and 2A Record of Construction. Document No. 109018-51010-CV-ROC-2000. March 2022.

[7] Victoria Gold Corp. (2020). Eagle Gold Project Heap Leach Facility Operation, Maintenance and Surveillance Manual. Version 2020-01. January 2020.

[8] Victoria Gold Corp. (2021a). Additional Spill Information. VGC Spill # VGC22-010. Yukon Government # 22-030. Heap Leach Pad. May 7, 2022.

[9] Victoria Gold Corp. (2021c). Additional Spill Information. VGC Spill # VGC22-013. Yukon Government # 22-042. Heap Leach Pad. June 5, 2022.

APPENDIX A

SITE LAYOUT - AERIAL PHOTOGRAPH FIGURES

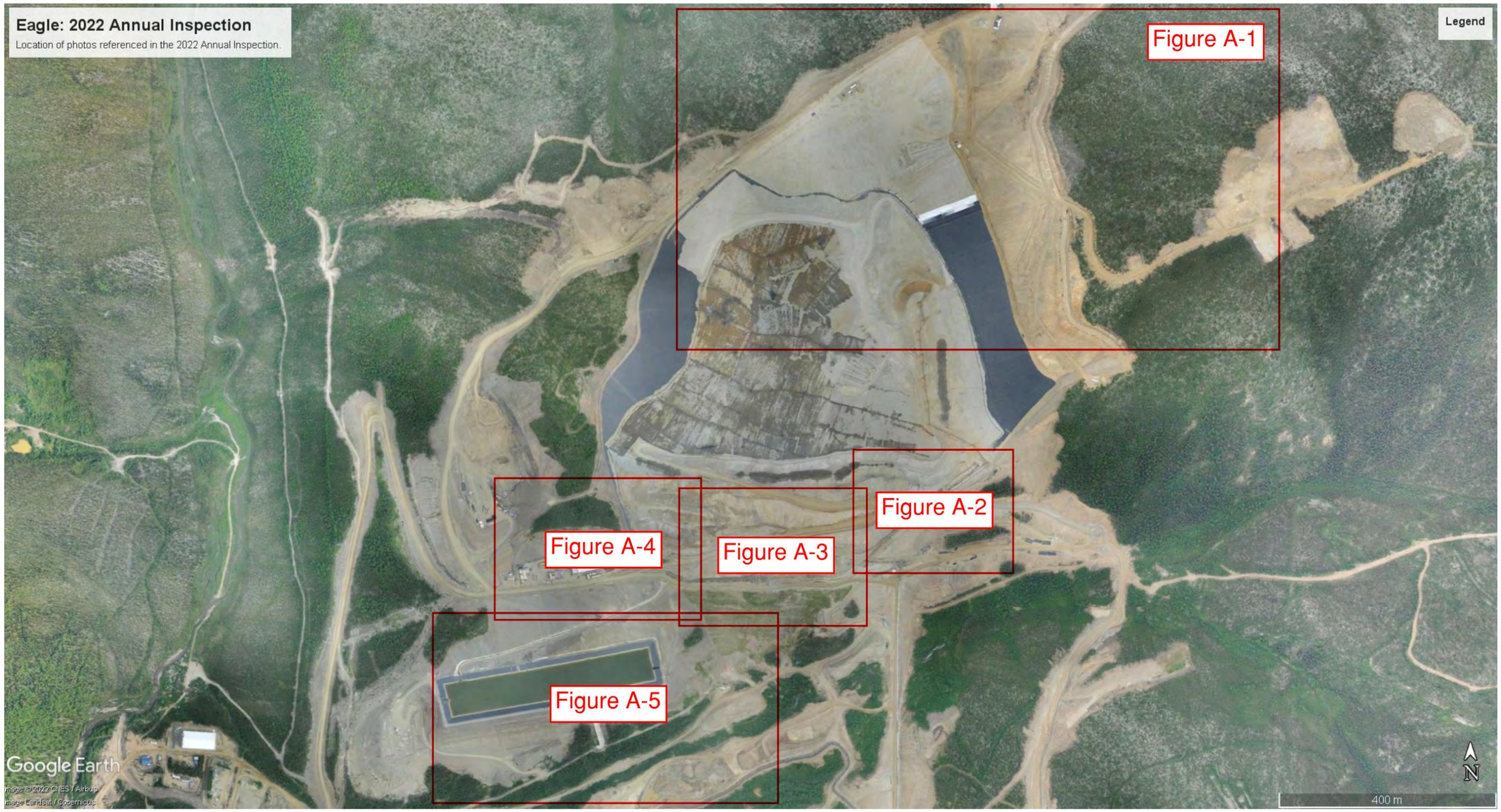

Eagle: 2022 Annual Inspection
Location of photos referenced in the 2022 Annual Inspection.
Legend
Figure A-1
Figure A-2
Figure A-3
Figure A-4
Figure A-5
Google Earth
400 m
N

Figure A

Eagle: 2022 Annual Inspection
Location of Photos referenced in the 2022 Annual Inspection
Legend
2022_21
2022_22
2022_27
2022_28
2022_26
2021_02
Google Earth
Image © 2022 CNES / Airbus
100 m
N

Figure A-1

Eagle: 2022 Annual Inspection
Location of Photos referenced in the 2022 Annual Inspection
Legend
2022_23
2022_15
2022_14
2022_17
2022_13
2022_04
Google Earth
Image © 2022 CNES / Airbus
N
70 m

Figure A-2

Eagle: 2022 Annual Inspection
Location of Photos referenced in the 2022 Annual Inspection
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2022_11
2022_01
2022_12
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2022_06
2022_05
2022_03
2022_02
2022_13
2022_04
Google Earth
Image © 2022 CNES / Airbus
80 m
N

Figure A-3

Eagle: 2022 Annual Inspection
Location of Photos referenced in the 2022 Annual Inspection
Legend
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2022_31
2022_11
2022_01
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2022_29
2022_08
Google Earth
Image © 2022 CNES / Airbus
N
90 m

Figure A-4

Eagle: 2022 Annual Inspection
Location of Photos referenced in the 2022 Annual Inspection
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2022_07
2021_03
2022_25
2022_24
2022_18
2022_20
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Figure A-5

APPENDIX B

PHOTOGRAPHS

Photo #2021_01

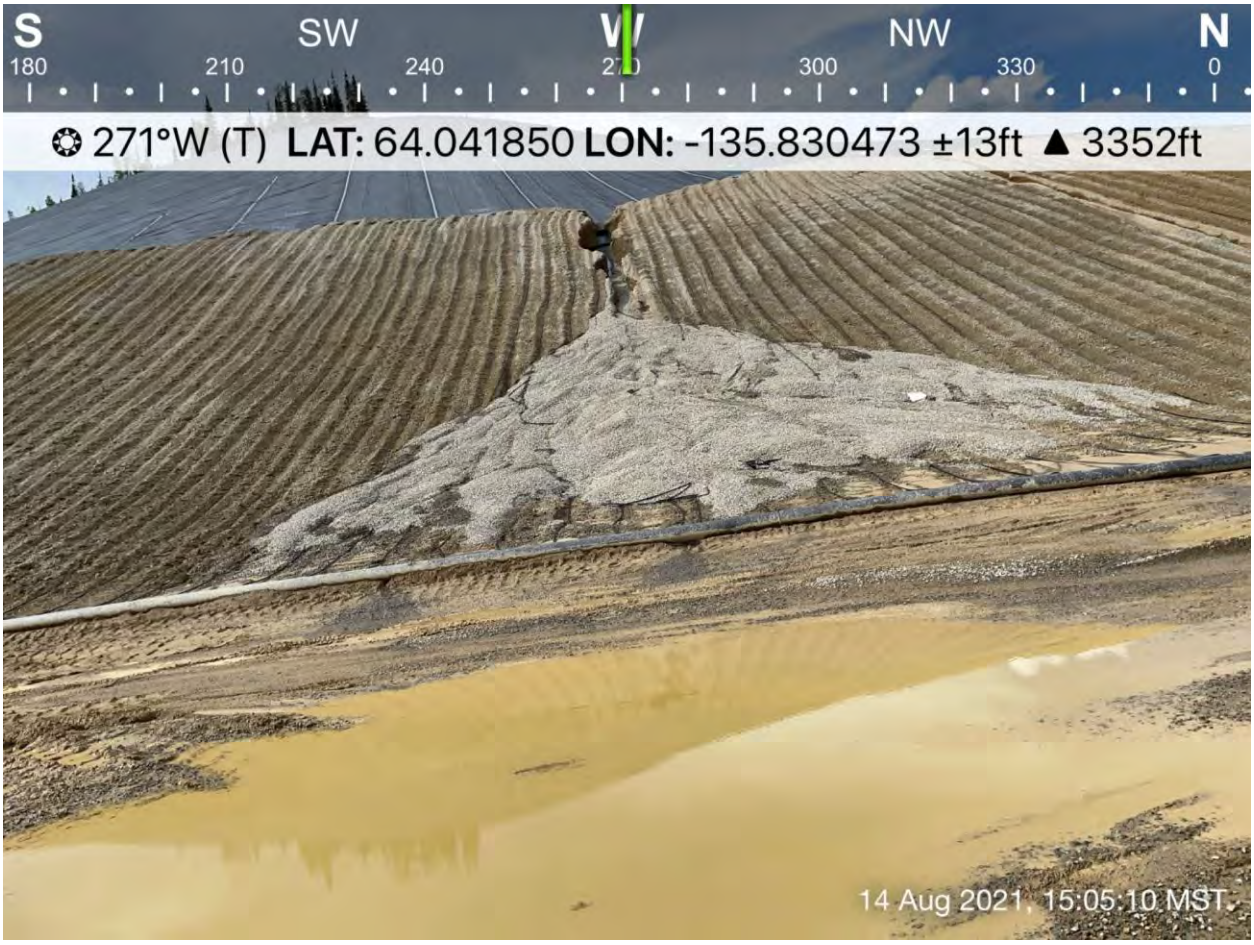

Photo #2021_02

Photo #2021_03

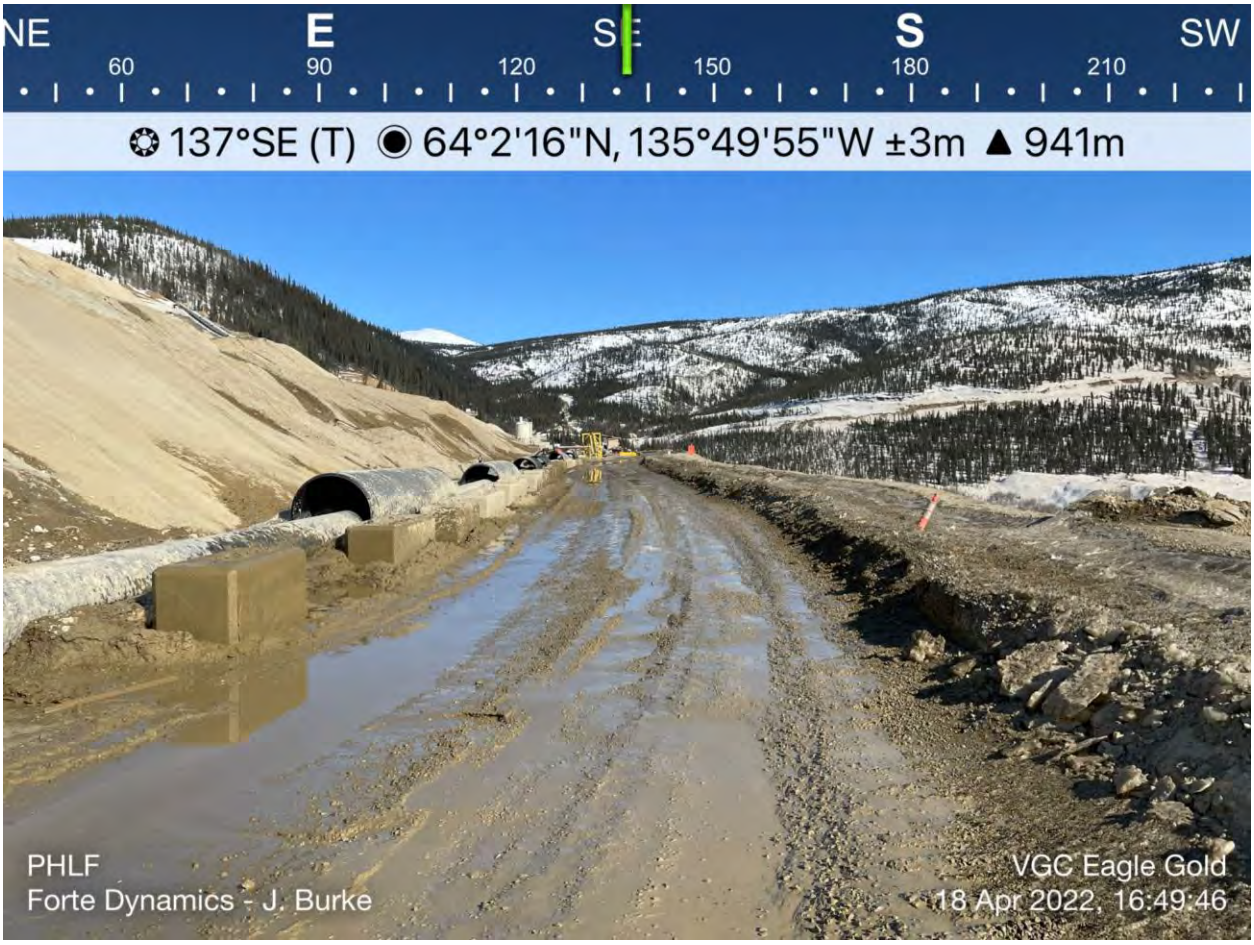

Photo #2022_01

Photo #2022_02

Photo #2022_03

Photo #2022_04

Photo #2022_05

Photo #2022_06

Photo #2022_07

Photo #2022_08

Photo #2022_09

Photo #2022_10

Photo #2022_11

Photo #2022_12

Photo #2022_13

Photo #2022_14

Photo #2022_15

Photo #2022_16

Photo #2022_17

Photo #2022_18

Photo #2022_19

Photo #2022_20

Photo #2022_21

Photo #2022_22

Photo #2022_23

Photo #2022_24

Photo #2022_25

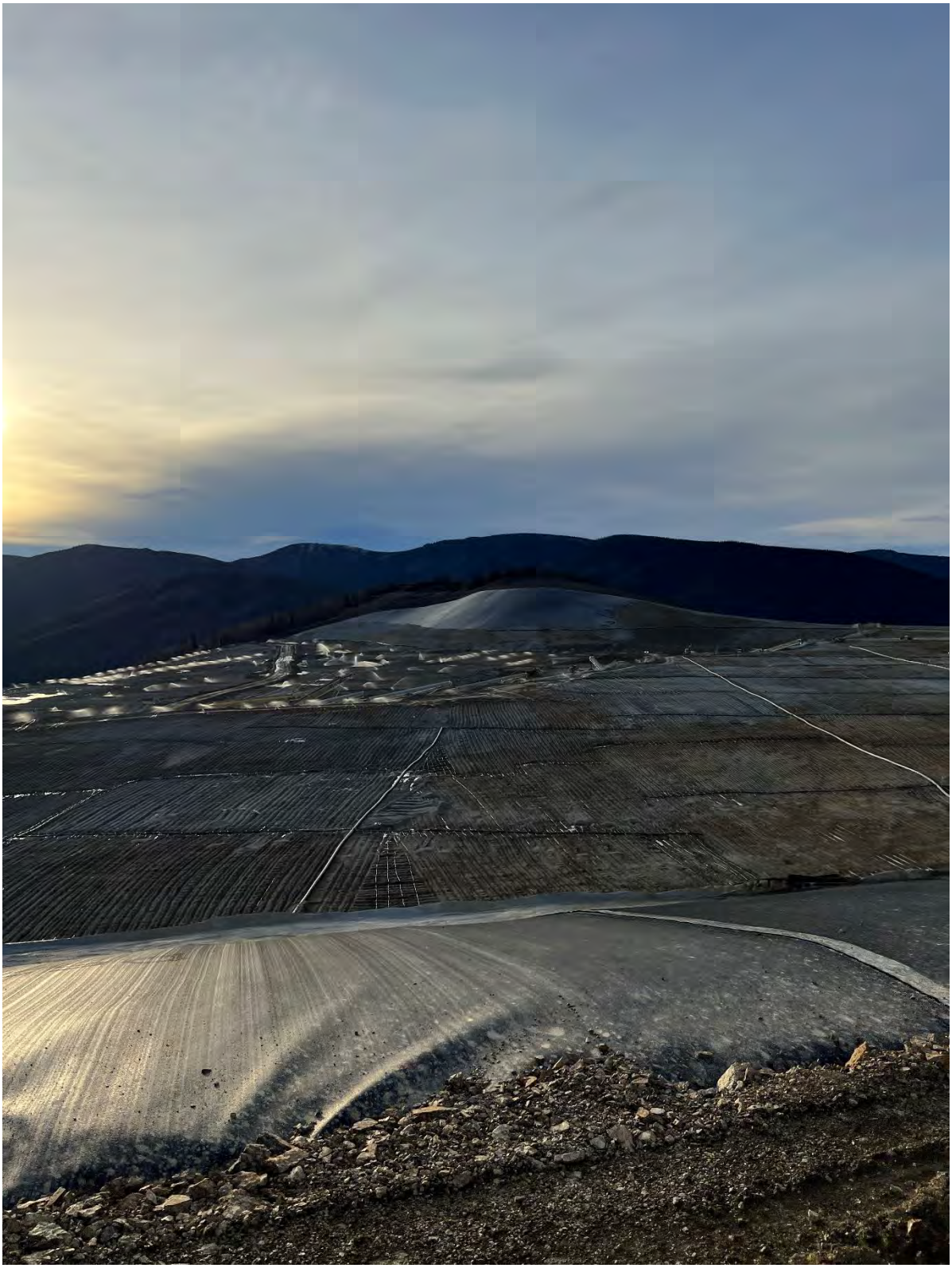

Photo #2022_26

Photo #2022_27

Photo #2022_28

Photo #2022_29

Photo #2022_30

Photo #2022_31

APPENDIX C

INSPECTION FORMS

2022 Annual Inspection
Eagle Gold Mine Heap Leach Facility
Victoria Gold Corporation

Project Number: 109023

Forte Representative: Barry Carlson
Date: October 8, 2022
Structure Designation: Event Pond
Crest Elevation: 895.5 m
Pond Bottom (Sump): 886.5 m
Spillway Invert El: 894.5 m
Downstream Pond Elevation: -
Notes:

OBSERVATIONS

						Action Required
CREST						
Cracking:	X not apparent		apparent	Notes:		N
Settlement/Uneven:	X not apparent		apparent	Notes:		N
Erosion:	X not apparent		apparent	Notes:		N
Sinkholes:	X not apparent		apparent	Notes:		N
Other Movement:	X not apparent		apparent	Notes:		N
Crest Vegetation:	X not apparent		apparent	Notes:		N
Comments:						N
DOWNSTREAM SLOPE AND TOE AREA				Approximate Slope Angle: 2H:1V		N
Slope Visually Uniform	X yes		no	Notes:		N
Erosion:	X not apparent		apparent	Notes:		N
Settlement/Uneven:	X not apparent		apparent	Notes:		N
Bulging/Cracking:	X not apparent		apparent	Notes:		N
Sloughing:	X not apparent		apparent	Notes:		N
Slope Protection:	X not apparent		apparent	Notes:		N
Animal Burrows:	X not apparent		apparent	Notes:		N
Slope Vegetation:	not apparent	X	apparent	X sparse	moderate heavy	N
				Notes: Growth of more vegetation will naturally reduce erosion and rilling.		
Seepage:	X not apparent		apparent			N
Location of Seepage:	**1**			Notes:		
Estimated Rate:	damp		trickle	steady	estimated flow l/s	
Apparent Clarity:	clear		muddy	Sample taken: yes	no	
Location of Seepage:	**2**			Notes:		
Estimated Rate:	damp		trickle	steady	estimated flow l/s	
Apparent Clarity:	clear		muddy	Sample taken: yes	no	
Location of Seepage:	**3**			Notes:		
Estimated Rate:	damp		trickle	steady	estimated flow l/s	
Apparent Clarity:	clear		muddy	Sample taken: yes	no	

Project Number: 109023
Structure Designation: Event Pond Date: October 8, 2022

Apparent Clarity: [ ] clear [ ] muddy Sample taken: [ ] yes [ ] no

Toe Vegetation: [ ] not apparent [X] apparent [X] sparse [ ] moderate [ ] heavy N

Soft Ground at Toe: [X] not apparent [ ] apparent Notes: N

Comments:

UPSTREAM AREA Approximate Slope Angle: 2H:1V N

Erosion: [ ] not apparent [X] apparent Notes: Rilling on upstream ADR embankment Y

Degree: [X] minor [ ] severe Type: [ ] waves [X] runoff [ ] flow from discharge
Slope Visually Uniform [X] yes [ ] no Notes: Y

Settlement/Uneven: [X] not apparent [ ] apparent Notes: Y

Bulging/Cracking: [X] not apparent [ ] apparent Notes: N
Sloughing: [X] not apparent [ ] apparent Notes: N
Slope Protection: [X] not apparent [ ] apparent Notes: N
Slope Vegetation: [X] not apparent [ ] apparent [ ] sparse [ ] moderate [ ] heavy N
Notes:
Animal Burrows: [X] not apparent [ ] apparent Notes: N
Sinkholes: [X] not apparent [ ] apparent Notes: N
Upstream Surface: [ ] Tailings [ ] Water Notes: N

Comments: Monitoring of access Event Pond & LDRS volumes should continue. Event Pond should maintain a minimum water depth of 0.6 meters per updated ballast design. Y

SPILLWAY/FLOW CONTROL STRUCTURE

Type: [ ] none [X] spillway dimensions 2.0m x 0.5m (2:1)
[ ] decant [ ] weir invert 894.5 m
[ ] wing walls

Notes: Event Pond emergency spillway invert had been filled in by crushed gravel to serve as access road. This material was reported as removed.

Flow: Estimated Rate: [ ] L/s [ ] Measured [ ] Estimated [X] None
Apparent Clarity: [ ] Clear [ ] Muddy [ ] Ice
Gauge in Place: [ ] Reading [ ] Apparent [X] Not Apparent

Comments: Y

Project Number: 109023
Structure Designation: Event Pond Date: October 8, 2022

DIVERSION/DISCHARGE STRUCTURE

Type: [X] None [ ] Diversion [ ] Discharge Notes:

Blockage: [X] not apparent [ ] apparent N
Location: **1** Notes:
Type: [ ] Debris [ ] Beaver Activity [ ] Siltation
Degree: [ ] Minor [ ] Severe
Location: **2** Notes: N
Type: [ ] Debris [ ] Beaver Activity [ ] Siltation
Degree: [ ] Minor [ ] Severe

Erosion: [X] not apparent [ ] apparent
Location: **1** Notes: N
Degree: [ ] Minor [ ] Severe
Location: **2** Notes: N
Degree: [ ] Minor [ ] Severe

Comments: N

INSTRUMENTATION

None	[ ]		Notes:	
Piezometers	[ ] not apparent	[X] apparent	Notes:	VWP installed in inclined riser pipe to monitor LDRS in lined pond — Y
Monitoring Wells	[X] not apparent	[ ] apparent	Notes:	— Y
Inclinometers	[X] not apparent	[ ] apparent	Notes:	— Y
Survery Stakes	[X] not apparent	[ ] apparent	Notes:	Installation and monitoring of these are required — Y
Other	[X] not apparent	[ ] apparent	Notes:	— Y

Were readings taken while on site? [ ] Yes [X] No

Comments: Continue routine monitoring of VWPs. See above comments on automation of LDRS sump

CHANGES FROM PREVIOUS YEAR [X] Not Applicable [ ] Applicable

[ ] Repairs [ ] Construction [ ] Maintenance [ ] Seepage [ ] Other

Comments: See above comments

Project Number: 109023

Structure Designation: Event Pond Date: October 8, 2022

RECOMMENDATIONS

The Event Pond LDRS sump should be monitored. Automation of pumping and metering of the LDRS is required to be implemented. Continue to monitor the Event Pond per the latest OMS plan. Document all unusual / adverse conditions observed, as well as maintenance work undertaken. Engineering review of the LDRS sump performance should continue to be performed on an annual basis.

MONITORING/ACTIONS REQUIRED

- [ ] None Required
- [X] Routine Monitoring/Maintenance
- [ ] Increased Monitoring/Maintenance
- [ ] Remediation
- [X] Engineering Review Required

ATTACHMENTS

Plan or Sketch Attached: No

Photographs Taken: April 2022 - October 2022

Photographs: Yes

Forte Representative: Barry Carlson, P. Eng. Date: October 8, 2022

2022 Annual Inspection
Eagle Gold Mine Heap Leach Facility
Victoria Gold Corporation

Project Number: 109023

Forte Representative: Barry Carlson
Date: October 8, 2022
Structure Designation: Heap Leach Facility
Crest Elevation: 940 m
Pond Bottom (Sump): 911.5
Spillway Invert El: 937.5 m
Downstream Pond Elevation: 894.5
Notes:

OBSERVATIONS

					Action Required
CREST					
Cracking:	X not apparent	apparent	Notes:		N
Settlement/Uneven:	X not apparent	apparent	Notes:		N
Erosion:	not apparent	X apparent	Notes:	No road wearing course remaining on crest	Y
Sinkholes:	X not apparent	apparent	Notes:		N
Movement:	X not apparent	apparent	Notes:		N
Drainage Impedement	not apparent	X apparent	Notes:	Mud scraped and piled to the sides of the crest road resulting in pooling and erosion	Y
Crest Vegetation:	X not apparent	apparent	Notes:		N

Comments: Forte recommends surface improvements to the crest road that are detailed in Forte Technical Memorandum: October 2022 Site Visit Summary. — Y

					Action Required
DOWNSTREAM SLOPE AND TOE AREA			Approximate Slope Angle: 2.5H:1V		N
Slope Visually Uniform	X yes	no	Notes:		N
Erosion:	not apparent	X apparent	Notes:	Rilling/gully erosion at embankment groins and toe of embankment	Y
Settlement/Uneven:	X not apparent	apparent	Notes:		N
Bulging/Cracking:	X not apparent	apparent	Notes:		N
Sloughing:	X not apparent	apparent	Notes:		N
Slope Protection:	X not apparent	apparent	Notes:		N
Animal Burrows:	X not apparent	apparent	Notes:		N
Slope Vegetation:	not apparent	X apparent	sparse / X moderate / heavy		N
			Notes:	No vegitation on slope towards toe of embankment	
Seepage:	X not apparent	apparent			N

Location of Seepage: **1** — Notes:
Estimated Rate: damp / trickle / steady — estimated flow ____ l/s
Apparent Clarity: clear / muddy — Sample taken: yes / no

Location of Seepage: **2** — Notes:
Estimated Rate: damp / trickle / steady — estimated flow ____ l/s
Apparent Clarity: clear / muddy — Sample taken: yes / no

Project Number: 109023
Structure Designation: Heap Leach Facility Date: October 8, 2022

Location of Seepage:	**3**			Notes:				
Estimated Rate:	[ ] damp	[ ] trickle	[ ] steady	estimated flow		l/s		
Apparent Clarity:	[ ] clear	[ ] muddy	Sample taken:	[ ] yes	[ ] no			
Location of Seepage:	**4**			Notes:				
Estimated Rate:	[ ] damp	[ ] trickle	[ ] steady	estimated flow		l/s		
Apparent Clarity:	[ ] clear	[ ] muddy	Sample taken:	[ ] yes	[ ] no			
Toe Vegetation:	[X] not apparent	[ ] apparent	[ ] sparse	[ ] moderate	[ ] heavy			N
Soft Ground at Toe:	[X] not apparent	[ ] apparent	Notes:					N

Comments: As noted in Forte's 2021 annual inspection, gullies are forming upstream of the UMV and have since worsened. VGC has constructed a channel to direct stormwater to the west of the monitoring vault foundation. This should be maintained and monitored for effectiveness.

UPSTREAM AREA

Erosion:	[ ] not apparent	[X] apparent	Notes:	Rills forming upstream of crest. Runout of ore into containment setback				Y
Degree:	[X] minor	[ ] severe	Type:	[ ] waves	[X] runoff	[ ] flow from discharge		
Slope Visually Uniform	[ ] yes	[X] no	Notes:					Y
Settlement/Uneven:	[X] not apparent	[ ] apparent	Notes:					N
Bulging/Cracking:	[X] not apparent	[ ] apparent	Notes:					N
Sloughing:	[X] not apparent	[ ] apparent	Notes:					N
Slope Protection:	[X] not apparent	apparent	Notes:					N
Slope Vegetation:	[X] not apparent	[ ] apparent	[ ] sparse	[ ] moderate	[ ] heavy			N
			Notes:					
Animal Burrows:	[X] not apparent	[ ] apparent	Notes:					N
Sinkholes:	[X] not apparent	[ ] apparent	Notes:					N
Upstream Surface:	[X] ore	[ ] apparent	Notes:	Ore has been stacked to within 2.5m of the crest elevation.				N

Comments: Erosion is heavily influenced by the road on the bench directly upstream from crest. Forte recommends sloping each bench back into the internal side of the heap,and splitting the bench runoff to either side of the PHLF, and additional rock protection be installed in each groin area. Y

Project Number: 109023
Structure Designation: Heap Leach Facility Date: October 8, 2022

SPILLWAY/FLOW CONTROL STRUCTURE

Type: [ ] none [X] spillway dimensions 4.7m x 0.5m (2:1)
[ ] decant [ ] weir invert 937.5 m
[ ] wing walls

Notes: Concrete-cloth lined channel damaged throughout reach. Replacement or intensive rehabilitation needed. Material also in spillway blocking flow.

Flow: Estimated Rate: 0.13 L/s [ ] Measured [X] Estimated [ ] None
Apparent Clarity: [X] Clear [ ] Muddy [ ] Ice
Gauge in Place: [ ] Reading [ ] Apparent [ ] Not Apparent
Notes: Flow in HLF spillway is runoff/pumped water from ADR, not PLS.

Comments: The concrete liner of the HLF spillway shows considerable damage throughout. Routine maintenance and clearing of debris are recommended. Y

DIVERSION/DISCHARGE STRUCTURE

Type: [ ] None [X] Diversion Notes:
[ ] Discharge

Blockage: [X] not apparent [ ] apparent N
Location: **1** Notes:
Type: [ ] Debris [ ] Beaver Activity [ ] Siltation
Degree: [ ] Minor [ ] Severe
Location: **2** Notes: N
Type: [ ] Debris [ ] Beaver Activity [ ] Siltation
Degree: [ ] Minor [ ] Severe

Erosion: [X] not apparent [ ] apparent N
Location: **1** Notes:
Degree: [ ] Minor [ ] Severe
Location: **2** Notes:
Degree: [ ] Minor [ ] Severe
Location: **3** Notes:
Degree: [ ] Minor [ ] Severe

Comments: Continue routine monitoring of the diversion ditch Y

Project Number: 109023
Structure Designation: Heap Leach Facility Date: October 8, 2022

PIPELINES

[X] In Use [ ] Not in Use

Comments: Barren solution pipe installed along western perimeter berm and PLS pipe on dam crest

INSTRUMENTATION

None	[ ]			Notes:	
Piezometers	[ ] not apparent	[X] apparent	Notes:	P1, P2, and P3 VWPs in standpipes through dam	Y
Monitoring Wells	[X] not apparent	[ ] apparent	Notes:		N
Inclinometers	[ ] not apparent	[X] apparent	Notes:	Probe installed and data collected per recommendations	Y
Survery Stakes	[X] not apparent	[ ] apparent	Notes:	Installation and monitoring of these are required	Y
Other	[ ] not apparent	[X] apparent	Notes:	LDRS is being read manually. Automation of pumping and metering of the LDRS is required to be implemented	Y

Were readings taken while on site? [ ] Yes [X] No

Comments: Continue routing monitoring of VWPs. See above comments on installation of survey monuments and automation of LDRS pump. Y

CHANGES FROM PREVIOUS YEAR [X] Not Applicable [ ] Applicable

[ ] Repairs [ ] Construction [ ] Maintenance [ ] Seepage [ ] Other

Comments:

Project Number: 109023

Structure Designation: Heap Leach Facility Date: October 8, 2022

RECOMMENDATIONS

Continue routine inspection and monitoring of the dam, diversion ditch, instrumentation and pond level as per the current HLF management plan and OMS manual. See above comments.

MONITORING/ACTIONS REQUIRED

- [ ] None Required
- [X] Routine Monitoring/Maintenance
- [ ] Increased Monitoring/Maintenance
- [X] Remediation and Engineering Review Necessary

ATTACHMENTS

Plan or Sketch Attached: No

Photographs Taken: April 2022 - October 2022

Photographs: Yes

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EAGLE GOLD PROJECT
SPILL RESPONSE FORM

VICTORIA GOLD CORP

FIRST OBSERVER			
Name & Company:	Victoria Gold		
Date Observed:	April 8,2022	**Time Observed:** 15:00	
Location of Spill:	Laydown 1	**VGC Tracking Number:** VGC22-07	
Distance to Waterbody:	390 m	**Photos Taken?**	☑ Yes ☐ No
Estimated Spill Volume:	300L	**Reported to:** ENV	
PERSON/DEPT. RESPONSIBLE FOR SPILL			
Supervisor/Investigator:	Shawn Smith		
Date of Spill:	April 8, 2022		
Substance Spilled:	Hydraulic Oil		
Equipment Involved:	Loader		
Volume of Contaminated Material:	0.75 M3 of snow and ice		
Personnel Contacted for Disposal (Name):	Scott Arcand (Site Services)		
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	While an operator was moving totes of Hydraulic oil at Laydown 1 situated below the warehouse, the forks of the loader punctured the side of a new tote of Hydraulic oil, causing a release of oil to the immediate ground. No migration occurred from the incident area.		
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	Operator immediately noticed the puncture in the side of the tote, and used his loader to turn the tote upside down, which stopped the oil release. Operator reported the incident to Supervision. Berms and absorbents were used to contain the spill, the tote was pumped down and contaminated snow was removed.		
ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number	22-012	**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:			
Disposal Container Labelled?	☑ Yes ☐ No	**Samples taken?**	☐ Yes ☑ No
Environmental areas affected: (Watercourse, soil, etc.):	0.75 m of snow/ice. No material		
Method of Disposal & Further Remediation Required:	Bags labeled and moved to the LTF.		
Follow Up Required?	☐ Yes ☑ No	**Follow Up Date:**	
SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Christian Brown	**Signature:** S. Arcand	[signature]
Safety:		**Signature:**	
Environment:	Benjamin Widdowson	**Signature:** ~~B. Widdowson~~	B. Widdowson

Final Report
Spill Closed

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	April 8,2022	VGC Spill #	VGC22-07
Volume (L):	300 L	Yukon Government #	22-012
Substance	Hydraulic Oil	Location	Laydown 1, Warehouse

Photos:

Photo 1: Loader being used to position the tote of new hydraulic oil to stop further release. Remaining unused oil pumped out by the Lube truck and repurposed.

Final Copy

VICTORIA GOLD CORP	Additional Spill Information

Spill Date:	April 8,2022	VGC Spill #	VGC22-07
Volume (L):	300 L	Yukon Government #	22-012
Substance	Hydraulic Oil	Location	Laydown 1, Warehouse

Final Report
Spill Closed

Photo 2: Site after loader removed contaminated snow and Ice. All contaminated snow/ice placed in KBL bags and placed at the LTF.

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

VICTORIA GOLD CORP

FIRST OBSERVER			
Name & Company:	Victoria Gold Corp		
Date Observed:	May 7, 2022	**Time Observed:** 6:45am	
Location of Spill:	Heap Leach Pad	**VGC Tracking Number:** VGC22-10	
Distance to Waterbody:	~500m	**Photos Taken?**	☑ Yes ☐ No
Estimated Spill Volume:	1.2 m3	**Reported to:** Supervisor	

PERSON/DEPT. RESPONSIBLE FOR SPILL	
Supervisor/Investigator:	Tyler Christian
Date of Spill:	May 7, 2022
Substance Spilled:	Process Solution
Equipment Involved:	
Volume of Contaminated Material:	TBD - Pending soil samples of potentially impacted area
Personnel Contacted for Disposal (Name):	Tyler Christian
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	Approximately 1.2 m3 of process solution and runoff water migrated over surficial frozen material along the eastern edge of the Heap Leach liner. Frozen conditions characterized the material below the surface flow which impacted engineered drainage at the location. The surficial flow built up in a portion of the ore pile that is utilized for access to the conveyor system and migrated outside of containment.
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	Solution flow to the area was shut down which halted the release. Two interceptor ditches were immediately cut in the ore pile to prevent further flow outside of containment. An excavated ditching system was installed to maintain intended drainage. A vacuum truck was used to remove solution outside of containment.

ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number	YG22-030	**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:			
Disposal Container Labelled?	☐ Yes ☐ No	**Samples taken?**	☑ Yes ☐ No
Environmental areas affected: (Watercourse, soil, etc.):	Soil in area directly below heap embankment in between pad and embankment road. No solution migrated beyond the road to potential receiving environments.		
Method of Disposal & Further Remediation Required:	Liquids vacuumed back to HLP. Waiting for lab data for soil removal extent (onto pad)		
Follow Up Required?	☑ Yes ☐ No	**Follow Up Date:** COA arrival	

SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Jeff Winterton	**Signature:**	
Safety:		**Signature:**	
Environment:	Bill Bowden	**Signature:**	

Interim Report
Laboratory Results Pending

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	May 7,2022	VGC Spill #	VGC22-10
Volume (L):	1.2 m3	Yukon Government #	22-030
Substance	Process Solution	Location	Heap Leach Pad

Additional information:

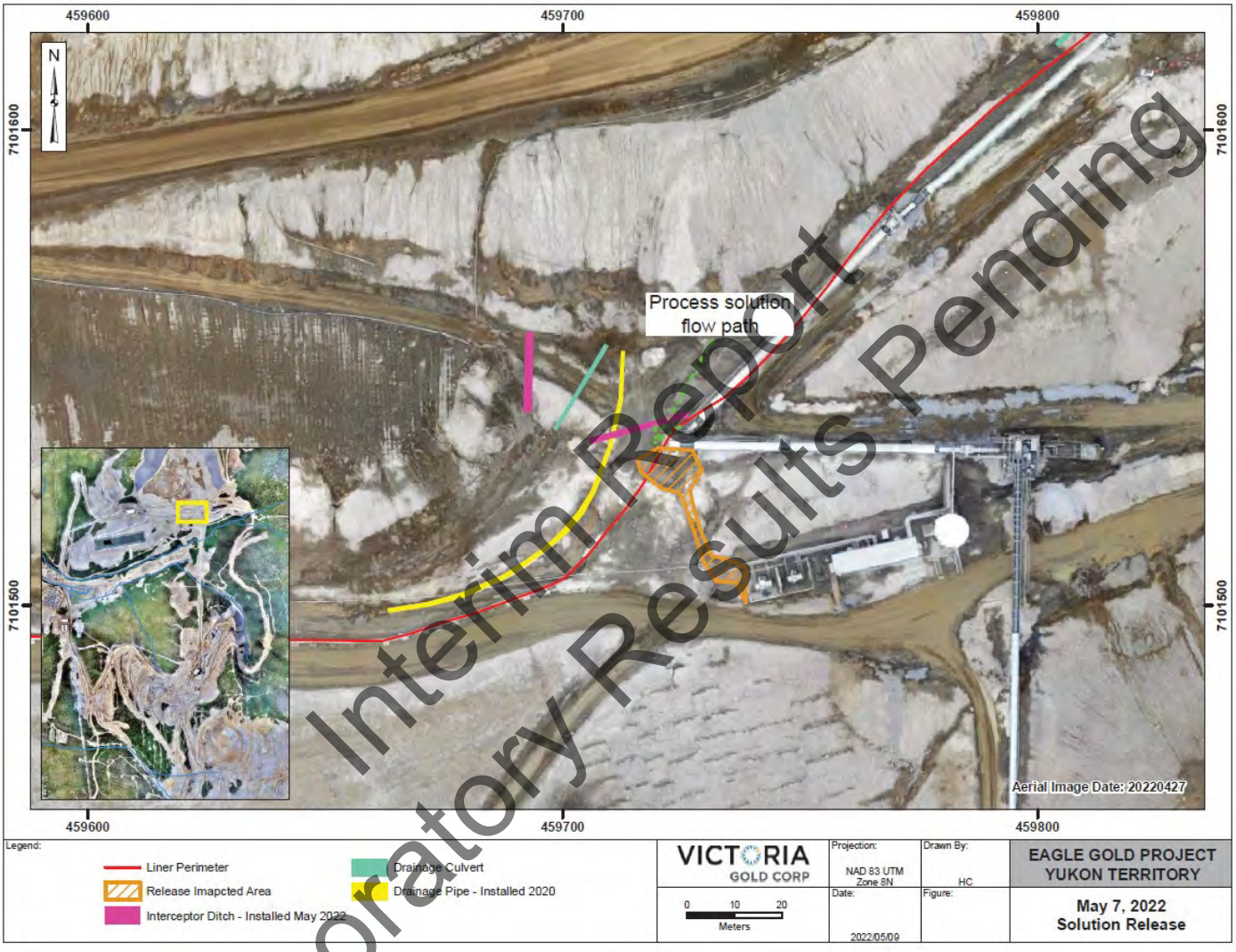
Following the process solution and surficial runoff release that occurred on the morning of May 7, immediate action was taken to mitigate and arrest the release. Solution flow was shut down and two temporary surficial interceptor ditches were immediately excavated into the crushed ore stack to cut off any potential further runoff so that it remained within the lined engineered containment of the pad (Figure 1). Following the installation of the two surficial interceptor ditches, work was scheduled to excavate permanent ditch that is intended to convey potential process solution not draining properly to the in-heap pond high permeability zone (Figure 1). The ore stack on the east side of the pad was excavated down to the liner and across to the permanent ditch to allow for regular observations of potential surficial or subsurface solution flow that may bypass the permanent drainage culvert installed in 2020.

The process solution release from containment was minor in nature and solely migrated to the area directly below the heap embankment in between the pad and embankment road. In response, surface water monitoring, ground water monitoring and soil sampling was initiated to evaluate potential impacts of the release. Results have not been received from the lab to date.

Surface water samples were taken on May 7 from Dublin Gulch (W1 and W21), Haggart Creek (W4 and W22) and the HLF underdrain monitoring vault to evaluate potential influence from the release. A ground water sample was taken on May 7 from MW19-HLF1b, a groundwater well that monitors below the Heap embankment. Five soil samples, following Contaminated Sites Regulations (CSR) requirements, were taken on May 7 from the potentially impacted area directly below the heap embankment in between the pad and embankment road adjacent to the electrical station denoted by the orange flow path in Figure 1. Excavation of the area will occur if results exceed the applicable CSR standards for WAD and/or SAD cyanide.

Interim Report
Laboratory Results Pending

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	May 7,2022	VGC Spill #	VGC22-10
Volume (L):	1.2 m3	Yukon Government #	22-030
Substance	Process Solution	Location	Heap Leach Pad



Interim Report
Laboratory Results Pending

Figure 1: Map of surficial runoff and process solution flow path that occurred on May 7. Temporary Interceptor ditches and permanent excavated ditch corrective actions denoted.

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	May 7,2022	VGC Spill #	VGC22-10
Volume (L):	1.2 m3	Yukon Government #	22-030
Substance	Process Solution	Location	Heap Leach Pad

Photos:

Photo 1 - May 7: Process Solution flow path looking down from stacker pad towards E-house. No solution migrated onto the embankment road.

Laboratory Results Pending Interim Report

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	May 7,2022	VGC Spill #	VGC22-10
Volume (L):	1.2 m3	Yukon Government #	22-030
Substance	Process Solution	Location	Heap Leach Pad

Interim Report
Laboratory Results Pending

Photo 2 - May 17: Permanent excavated Ditch being established in ore stack along east perimeter of the Heap Leach Pad liner.

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	May 7,2022	VGC Spill #	VGC22-10
Volume (L):	1.2 m3	Yukon Government #	22-030
Substance	Process Solution	Location	Heap Leach Pad

Interim Report
Laboratory Results Pending

Photo 3 - May 17: Excavation of permanent ditch to the previously installed drainage culvert. Material being relocated from along the east perimeter to expose the liner to allow for future monitoring/observation of the perimeter.

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	May 7,2022	VGC Spill #	VGC22-10
Volume (L):	1.2 m3	Yukon Government #	22-030
Substance	Process Solution	Location	Heap Leach Pad

Interim Report
Laboratory Results Pending

Photo 5 - May 17: Area of potential impact beside the Ehouse directly below the heap embankment in between the pad and embankment road where soil samples were taken. Excavation will occur as necessary based on soil sample results comparison to applicable CSR Standards.

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

VICTORIA GOLD CORP

FIRST OBSERVER			
Name & Company:	Victoria Gold		
Date Observed:	June 5, 2022	**Time Observed:** 7:50am	
Location of Spill:	Heap Leach Pad	**VGC Tracking Number:** VGC22-13	
Distance to Waterbody:	~500 m	**Photos Taken?**	☑ Yes ☐ No
Estimated Spill Volume:	10-15 L	**Reported to:** Supervisor	

PERSON/DEPT. RESPONSIBLE FOR SPILL	
Supervisor/Investigator:	Tyler Christian/John Jackson
Date of Spill:	June 5, 2022
Substance Spilled:	Process Solution
Equipment Involved:	N/A
Volume of Contaminated Material:	0.2 m3
Personnel Contacted for Disposal (Name):	Tyler Christian
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	At ~6:15am process solution was noted to be pooling within the lined containment area near CV25. Action was taken to direct solution by pumping and ditching towards the pregnant leachate pumps for recirculation into the system. At ~7:50am a small amount (~10-15L) of solution was noted to have evacuated the intended drainage works out of containment onto the edge of the roadway.
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	Any standing solution was pumped/ditched back into containment and away from the liner edge. Potentially contaminated materials outside of containment were recovered and placed back onto the heap. Additional berms, sumps, and interceptor ditches are being installed along the CV25 access ramp area.

ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number	YG22-042	**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:			
Disposal Container Labelled?	☑ Yes ☐ No	**Samples taken?**	☑ Yes ☐ No
Environmental areas affected: (Watercourse, soil, etc.):	Soil in area directly below Heap embankment between pad and embankment road. No solution migrated beyond the road to potential receiving environments.		
Method of Disposal & Further Remediation Required:	Materials placed back into heap. Awaiting lab data to confirm cleanup is complete.		
Follow Up Required?	☑ Yes ☐ No	**Follow Up Date:** COA Arrival	

SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Jeff Winterton	**Signature:**	
Safety:		**Signature:**	
Environment:	Lindsay Rear	**Signature:**	

Interim Report
Laboratory Results Pending

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	June 5,2022	VGC Spill #	VGC22-13
Volume (L):	15 L	Yukon Government #	22-042
Substance	Process Solution	Location	Heap Leach Pad

Additional information:

Following the process solution and surficial runoff release that occurred on the morning of June 5, immediate action was taken to mitigate and arrest the release. The accumulated solution adjacent to CV25 was directed through pumping and ditching towards the pregnant leachate solution (PLS) pumps for recirculation back into the system. Potentially contaminated materials outside of containment were recovered and placed back into the lined heap area.

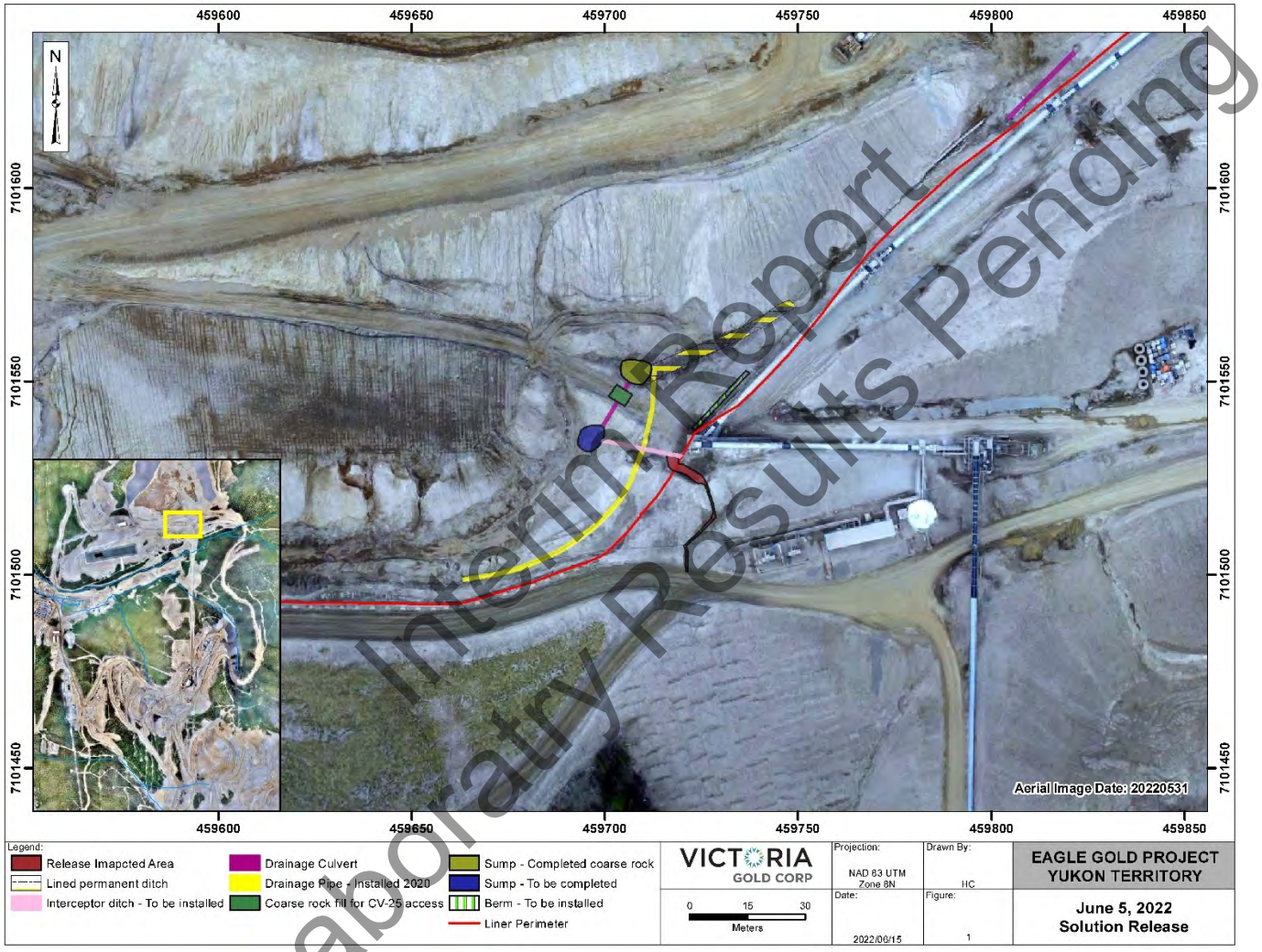
Works were immediately initiated on a coarse rock lined ditch adjacent to the eastern liner edge, leading to a rock lined sump within the heap pad. The rock lined sump is culverted across the in-heap access to the overland conveyor area (CV-25), to an additional downstream rock-lined sump (currently in progress) that will then flow to the PLS pumps. The in-heap access between the sumps was excavated and filled with coarse rock to act as an interceptor ditch. These works, with the exception of the down gradient sump, were completed June 10, 2022 and are provided in Figure 1. The ore stack on the east side of the pad is excavated down to the liner and across to the permanent ditch to allow for regular observations of potential surficial solution flow that may bypass the permanent drainage culvert installed in 2020.

Future works to be completed include an earthen berm directly adjacent to the CV25 conveyor that will follow the conveyor system running north. An additional interceptor ditch will be installed at the southern end of CV25 and will be constructed as a French drain with piping and rock fill. This interceptor ditch will be field fit in an east-west direction and direct any runoff towards the in-heap pond high permeability zone and PLS pumps (Figure 1).

The process solution release from containment was minor in nature and solely migrated to the area directly below the heap embankment in between the pad and embankment road. In response, ground water monitoring and soil sampling was initiated to evaluate potential impacts of the release. Ground water samples were taken on June 7, 2022 from wells downgradient of the HLF (MW19-EVP2b, MW19-DG6Ra, and MW19-HLF1b), to evaluate potential influence from the release. Five soil samples, following Contaminated Sites Regulations (CSR) requirements, were taken on June 7, 2022 from the potentially impacted area directly below the heap embankment in between the pad and embankment road. Excavation of the area will occur if results exceed the applicable CSR standards for WAD and/or SAD cyanide. Results have not been received from the lab to date.

Interim Report
Laboratory Results Pending

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	June 5,2022	VGC Spill #	VGC22-13
Volume (L):	15 L	Yukon Government #	22-042
Substance	Process Solution	Location	Heap Leach Pad



Interim Report
Laboratory Results Pending

Figure 1: Map of surficial runoff and process solution flow path that occurred on June 5. Permanent Interceptor ditches, sumps and excavated ditch corrective actions denoted.

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	June 5,2022	VGC Spill #	VGC22-13
Volume (L):	15 L	Yukon Government #	22-042
Substance	Process Solution	Location	Heap Leach Pad

Photos

Photo 1 - June 5, 2022: Process Solution flow path looking north from the Embankment Access Road up to CV25 (conveyor). No solution migrated beyond the embankment road.

Interim Report
Laboratry Results Pending

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	June 5,2022	VGC Spill #	VGC22-13
Volume (L):	15 L	Yukon Government #	22-042
Substance	Process Solution	Location	Heap Leach Pad

Interim Report
Laboratory Results Pending

Photo 2 - June 13, 2022: Lined permanent ditch on the HLF eastern perimeter to the rock-lined sump and drainage culvert. Material was removed above the rock-lined ditch to expose the liner to allow for future monitoring/observation of the perimeter.

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	June 5,2022	VGC Spill #	VGC22-13
Volume (L):	15 L	Yukon Government #	22-042
Substance	Process Solution	Location	Heap Leach Pad

Photo 3 - June 11, 2022: Rock-lined sump culverted across the CV-25 access to a lower sump. The access between the sumps was excavated and backfilled with coarse rock to enhance drainage and act as an interceptor ditch.

Laboratory Reports Pending

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	June 5,2022	VGC Spill #	VGC22-13
Volume (L):	15 L	Yukon Government #	22-042
Substance	Process Solution	Location	Heap Leach Pad

Photo 4 - June 11, 2022: Interceptor ditch access to CV-25, facing east. Coarse rock is excavated to 1 m and spans approximately 5 m by 3 m.

Laboratory Results Pending
Interim Report

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	June 5,2022	VGC Spill #	VGC22-13
Volume (L):	15 L	Yukon Government #	22-042
Substance	Process Solution	Location	Heap Leach Pad

Interim Report
Laboratory Results Pending

Photo 5 - June 13, 2022: Lower sump, facing south towards lined in-heap high permeability zone leading to PLS pumps. Sump to be completed with coarse rock lining

From: Hugh Coyle
To: Brett.Isbister@yukon.ca
Cc: Bill Bowden
Bcc: John Jackson
Subject: RE: VGC Spill Notification - Process Solution June 5, 2022
Date: Monday, July 18, 2022 7:14:00 PM
Attachments: VA22B3170_0_COA - Merged.pdf
image001.png
VA22B3341_0_COA - Merged.pdf

Hi Brett,

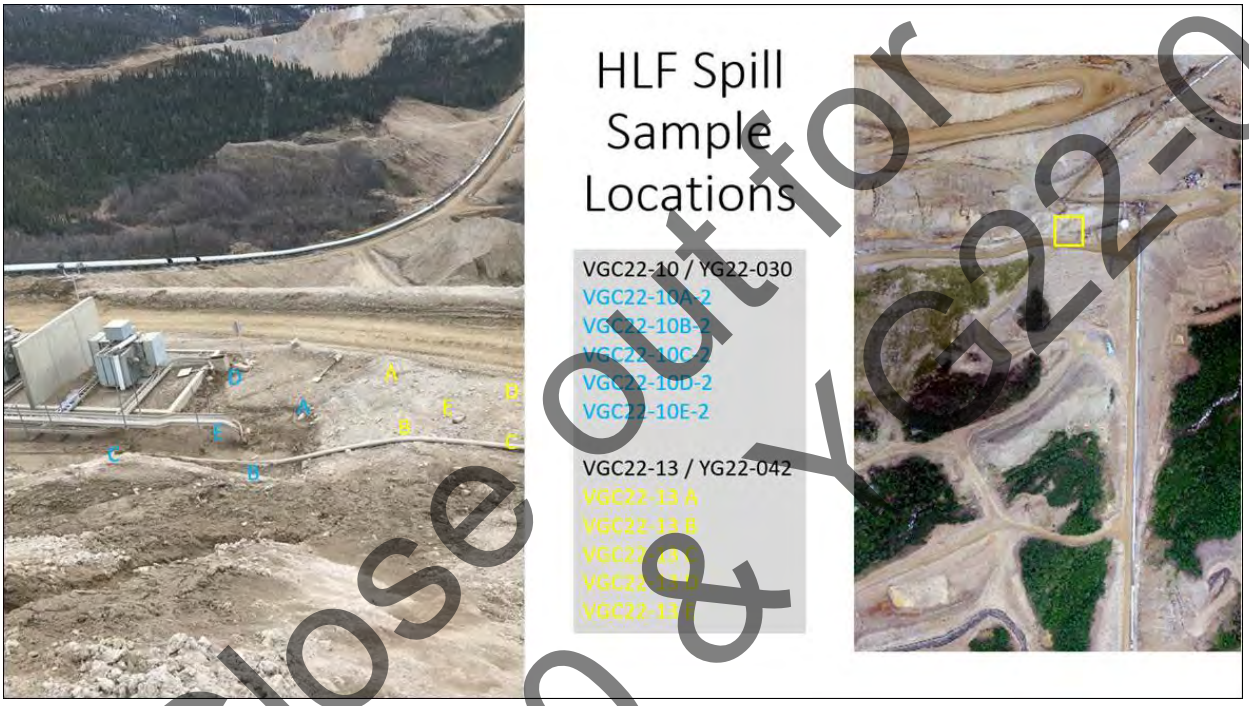
Attached are the results for the soil sampling in the area of the flow path from the May and June process solution spills. The graphic below shows the sample locations and numbers.

The samples results have yielded WAD and SAD cyanide concentrations that are significantly below the industrial standards in Schedule 1 of the Contaminated Sites Regulations.

I believe these results close out the two releases but if you have any questions just let me know,

Cheers,

Hugh



Hugh Coyle | VP Environment | T:604-696-6600 | C:604-349-6469 | F:604-682-5232

From: Brett.Isbister@yukon.ca <Brett.Isbister@yukon.ca>
Sent: Monday, July 18, 2022 12:29 PM
To: Hugh Coyle <hcoyle@vgcx.com>
Subject: RE: VGC Spill Notification - Process Solution June 5, 2022

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Slow down, read carefully and look for signs that it may be a phishing attempt. Do not click links or open attachments unless you recognize the sender and know the content is safe. If you think it's malicious forward this email to helpdesk@vgcx.com.

Thanks Hugh

From: Hugh Coyle <hcoyle@vgcx.com>
Sent: July-18-22 12:28 PM
To: Brett.Isbister <Brett.Isbister@yukon.ca>
Subject: RE: VGC Spill Notification - Process Solution June 5, 2022

Hi Brett,

We have all of the results now and Phil up at site was actually just compiling it all to resubmit to you. Should have it back to you today or tomorrow.

Cheers,

Hugh

Hugh Coyle | VP Environment | T:604-696-6600 | C:604-349-6469 | F:604-682-5232

From: Brett.Isbister@yukon.ca <Brett.Isbister@yukon.ca>
Sent: Monday, July 18, 2022 11:59 AM
To: Hugh Coyle <hcoyle@vgcx.com>
Subject: RE: VGC Spill Notification - Process Solution June 5, 2022

Close out for YG22-030 & YG22-042

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Good morning Hugh,

I am just following up on this report to see if you have received the analytical results yet from this spill. I believe that they were also going to be utilized to represent the impacts from the May spill as well. I know you have been busy in the last little while so I wasn't sure if this fell off the radar or not.

Thanks,

Yukon

Brett Isbister | Natural Resource Officer

Compliance Monitoring and Inspections Branch
Department of Energy, Mines and Resources | Yukon Government
Box 2703 | Whitehorse, Yukon Y1A 2C6
P 867.334-9280

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From: Hugh Coyle <hcoyle@vgcx.com>
Sent: June-15-22 4:45 PM
To: Brett.Isbister <Brett.Isbister@yukon.ca>
Cc: Bill Bowden <bbowden@vgcx.com>; John Jackson <jjackson@vgcx.com>
Subject: RE: VGC Spill Notification - Process Solution June 5, 2022

Hi Brett,

The attached report for the process solution release on June 5th was just uploaded to waterline. We will provide results of the sampling when they are received.

Cheers,

Hugh

Hugh Coyle | VP Environment | T:604-696-6600 | C:604-349-6469 | F:604-682-5232

From: Hugh Coyle
Sent: Monday, June 6, 2022 12:29 PM
To: Brett.Isbister@yukon.ca
Cc: Bill Bowden <bbowden@vgcx.com>; John Jackson <jjackson@vgcx.com>
Subject: VGC Spill Notification - Process Solution June 5, 2022

Hello Brett,

Yesterday (June 5, 2022) at approximately 7:50 am there was release of a small volume of process solution (approximately 15 L) outside of the lined containment of the heap leach pad at the Eagle Gold Mine.

Earlier in the morning (approximately 6:15 am), process solution was noted to be pooling along the eastern edge of the pad liner. Ditching and a pump was established to direct this fluid towards the pregnant leachate pumps with the intention of having it infiltrate in that high porosity zone so that it would be collected in the normal pregnant solution pumping network. At 7:50am, it was observed that a small volume of the pooled solution had escaped the additional drainage works established that morning with approximately 15L of process solution migrating outside of containment. The solution ran down onto the edge of the roadway and a minor visible flow path was seen but no pooling occurred due to the small volume involved. There is no evidence that fluid travelled beyond this location which is approximately 200 m from any watercourse.

Potentially contaminated material outside of containment was recovered and placed into the lined containment of the heap leach pad. Additional swales in the area are being installed.

We do not expect any demonstrable adverse impacts to the environment, due to rapid response and clean up. Environmental monitoring of the release area and downgradient sites is ongoing in conjunction with the investigation.

The release was reported to the Yukon Spill hotline and a report will follow within 10 days.

Please let me know if you have any questions.

Regards,

Hugh

Hugh Coyle | VP Environment | T:604-696-6600 | C:604-349-6469 | F:604-682-5232
Suite 1000 - 1050 West Pender Street | Vancouver | BC | V6E 3S7

VGCX VICTORIA GOLD CORP

Click to view: Mine to Mint | Corporate Presentation

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Close out for YG22-030 & YG22-042

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA22B3170**	Page	: 1 of 2
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Emmanuel Mariano
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: Spill Comfimatory June - VGC22- 13 NND Inspection	Date Samples Received	: 13-Jun-2022 10:40
PO	: 22036	Date Analysis Commenced	: 19-Jun-2022
C-O-C number	: 20220610B	Issue Date	: 04-Jul-2022 12:13
Sampler	: PE		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia

Close out for YG22-030 & YG22-042

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
%	percent
mg/kg	milligrams per kilogram

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	*CAS Number*	*Method*	*LOR*	*Unit*	*Client sample ID*	**VGC22-13A**	**VGC22-13B**	**VGC22-13C**	**VGC22-13D**	**VGC22-13E**
					Client sampling date / time	07-Jun-2022 17:15	07-Jun-2022 17:15	07-Jun-2022 17:15	07-Jun-2022 17:15	07-Jun-2022 17:15
						VA22B3170-001	**VA22B3170-002**	**VA22B3170-003**	**VA22B3170-004**	**VA22B3170-005**
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		8.10	8.11	19.1	11.2	12.5
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.050	mg/kg		0.198	1.02	<0.051	<0.050	<0.051
cyanide, weak acid dissociable	----	E336	0.050	mg/kg		<0.050	<0.050	<0.051	<0.050	<0.051
thiocyanate	302-04-5	E344	1.00	mg/kg		<1.00	<1.00	<1.00	<1.00	<1.00

Please refer to the General Comments section for an explanation of any qualifiers detected.

Close out for YG22-030 & YG22-042

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22B3170**	Page	: 1 of 7
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Emmanuel Mariano
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: Spill Comfimatory June - VGC22- 13 NND Inspection	Date Samples Received	: 13-Jun-2022 10:40
PO	: 22036	Issue Date	: 04-Jul-2022 12:13
C-O-C number	: 20220610B		
Sampler	: PE		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Close out for YG22-030 & YG22-042

Close out for YG22-030 & YG22-042

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: ✖ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Thiocyanate in soil by 1:5 DI water leach and colourimetric detection										
Amber glass/Teflon lined cap										
VGC22-13A	E344	07-Jun-2022	22-Jun-2022	14 days	15 days	✖	27-Jun-2022	-1 days	5 days	✖ EHT
Cyanides : Thiocyanate in soil by 1:5 DI water leach and colourimetric detection										
Amber glass/Teflon lined cap										
VGC22-13B	E344	07-Jun-2022	22-Jun-2022	14 days	15 days	✖	27-Jun-2022	-1 days	5 days	✖ EHT
Cyanides : Thiocyanate in soil by 1:5 DI water leach and colourimetric detection										
Amber glass/Teflon lined cap										
VGC22-13C	E344	07-Jun-2022	22-Jun-2022	14 days	15 days	✖	27-Jun-2022	-1 days	5 days	✖ EHT
Cyanides : Thiocyanate in soil by 1:5 DI water leach and colourimetric detection										
Amber glass/Teflon lined cap										
VGC22-13D	E344	07-Jun-2022	22-Jun-2022	14 days	15 days	✖	27-Jun-2022	-1 days	5 days	✖ EHT
Cyanides : Thiocyanate in soil by 1:5 DI water leach and colourimetric detection										
Amber glass/Teflon lined cap										
VGC22-13E	E344	07-Jun-2022	22-Jun-2022	14 days	15 days	✖	27-Jun-2022	-1 days	5 days	✖ EHT
Cyanides : Total Cyanide (0.05M NaOH Extraction)										
Amber glass/Teflon lined cap										
VGC22-13A	E333	07-Jun-2022	20-Jun-2022	14 days	13 days	✓	27-Jun-2022	14 days	7 days	✓
Cyanides : Total Cyanide (0.05M NaOH Extraction)										
Amber glass/Teflon lined cap										
VGC22-13B	E333	07-Jun-2022	20-Jun-2022	14 days	13 days	✓	27-Jun-2022	14 days	7 days	✓

Close out for YG22-030 & YG22-042

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide (0.05M NaOH Extraction)										
Amber glass/Teflon lined cap										
VGC22-13C	E333	07-Jun-2022	20-Jun-2022	14 days	13 days	✓	27-Jun-2022	14 days	7 days	✓
Cyanides : Total Cyanide (0.05M NaOH Extraction)										
Amber glass/Teflon lined cap										
VGC22-13D	E333	07-Jun-2022	20-Jun-2022	14 days	13 days	✓	27-Jun-2022	14 days	7 days	✓
Cyanides : Total Cyanide (0.05M NaOH Extraction)										
Amber glass/Teflon lined cap										
VGC22-13E	E333	07-Jun-2022	20-Jun-2022	14 days	13 days	✓	27-Jun-2022	14 days	7 days	✓
Cyanides : WAD Cyanide (0.05M NaOH Extraction)										
Amber glass/Teflon lined cap										
VGC22-13A	E336	07-Jun-2022	20-Jun-2022	14 days	13 days	✓	27-Jun-2022	14 days	7 days	✓
Cyanides : WAD Cyanide (0.05M NaOH Extraction)										
Amber glass/Teflon lined cap										
VGC22-13B	E336	07-Jun-2022	20-Jun-2022	14 days	13 days	✓	27-Jun-2022	14 days	7 days	✓
Cyanides : WAD Cyanide (0.05M NaOH Extraction)										
Amber glass/Teflon lined cap										
VGC22-13C	E336	07-Jun-2022	20-Jun-2022	14 days	13 days	✓	27-Jun-2022	14 days	7 days	✓
Cyanides : WAD Cyanide (0.05M NaOH Extraction)										
Amber glass/Teflon lined cap										
VGC22-13D	E336	07-Jun-2022	20-Jun-2022	14 days	13 days	✓	27-Jun-2022	14 days	7 days	✓
Cyanides : WAD Cyanide (0.05M NaOH Extraction)										
Amber glass/Teflon lined cap										
VGC22-13E	E336	07-Jun-2022	20-Jun-2022	14 days	13 days	✓	27-Jun-2022	14 days	7 days	✓
Physical Tests : Moisture Content by Gravimetry										
Amber glass/Teflon lined cap										
VGC22-13A	E144	07-Jun-2022	----	----	----		19-Jun-2022	----	----	

Close out for YG22-030 & YG22-042

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Amber glass/Teflon lined cap										
VGC22-13B	E144	07-Jun-2022	----	----	----		19-Jun-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Amber glass/Teflon lined cap										
VGC22-13C	E144	07-Jun-2022	----	----	----		19-Jun-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Amber glass/Teflon lined cap										
VGC22-13D	E144	07-Jun-2022	----	----	----		19-Jun-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Amber glass/Teflon lined cap										
VGC22-13E	E144	07-Jun-2022	----	----	----		19-Jun-2022	----	----	

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Close out for YG22-030 & YG22-042

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Moisture Content by Gravimetry	E144	529965	1	10	10.0	5.0	✓
Thiocyanate in soil by 1:5 DI water leach and colourimetric detection	E344	532642	1	5	20.0	5.0	✓
Total Cyanide (0.05M NaOH Extraction)	E333	529964	1	10	10.0	5.0	✓
WAD Cyanide (0.05M NaOH Extraction)	E336	529963	1	10	10.0	5.0	✓
Laboratory Control Samples (LCS)							
Moisture Content by Gravimetry	E144	529965	1	10	10.0	5.0	✓
Thiocyanate in soil by 1:5 DI water leach and colourimetric detection	E344	532642	1	5	20.0	5.0	✓
Total Cyanide (0.05M NaOH Extraction)	E333	529964	1	10	10.0	5.0	✓
WAD Cyanide (0.05M NaOH Extraction)	E336	529963	1	10	10.0	5.0	✓
Method Blanks (MB)							
Moisture Content by Gravimetry	E144	529965	1	10	10.0	5.0	✓
Thiocyanate in soil by 1:5 DI water leach and colourimetric detection	E344	532642	1	5	20.0	5.0	✓
Total Cyanide (0.05M NaOH Extraction)	E333	529964	1	10	10.0	5.0	✓
WAD Cyanide (0.05M NaOH Extraction)	E336	529963	1	10	10.0	5.0	✓
Matrix Spikes (MS)							
Thiocyanate in soil by 1:5 DI water leach and colourimetric detection	E344	532642	1	5	20.0	5.0	✓
Total Cyanide (0.05M NaOH Extraction)	E333	529964	1	10	10.0	5.0	✓
WAD Cyanide (0.05M NaOH Extraction)	E336	529963	1	10	10.0	5.0	✓

Close out for YG22-030 & YG22-042

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Total Cyanide (0.05M NaOH Extraction)	E333 Vancouver - Environmental	Soil/Solid	ISO 14403 (mod)	Total or strong acid dissociable (SAD) cyanide is determined after extraction by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration)."
WAD Cyanide (0.05M NaOH Extraction)	E336 Vancouver - Environmental	Soil/Solid	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined after extraction by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate in soil by 1:5 DI water leach and colourimetric detection	E344 Vancouver - Environmental	Soil/Solid	In-house	A dried soil is leached with DI water at a ratio of 1:5. Thiocyanate is determined by the ferric nitrate colourimetric method. Soil samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:5 Soil:Water for Anions	EP237 Vancouver - Environmental	Soil/Solid	EPA 300.1 (mod)	This analysis is carried out using a leaching procedure which involves the gentle tumbling of the sample in a specified leaching solution (typically deionized water) for a specific length of time.
Cyanide Extraction (0.05M NaOH)	EP333 Vancouver - Environmental	Soil/Solid	BC MOE Lab Manual	Extraction for various cyanide analysis is by rotary extraction of the soil with 0.05M Sodium Hydroxide.

Close out for YG22-030 & YG22-042

QUALITY CONTROL REPORT

Work Order	: **VA22B3170**	Page	: 1 of 4
Client	: Victoria Gold (Yukon) Corp.	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Emmanuel Mariano
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: Spill Comfimatory June - VGC22- 13 NND Inspection	Date Samples Received	: 13-Jun-2022 10:40
PO	: 22036	Date Analysis Commenced	: 19-Jun-2022
C-O-C number	: 20220610B	Issue Date	: 04-Jul-2022 12:13
Sampler	: PE		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Vancouver Organics, Burnaby, British Columbia

Close out for YG22-030 & YG22-042

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 529965)											
VA22B3170-001	VGC22-13A	moisture	----	E144	0.25	%	8.10	8.07	0.343%	20%	----
Cyanides (QC Lot: 529963)											
VA22B3170-001	VGC22-13A	cyanide, weak acid dissociable	----	E336	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Cyanides (QC Lot: 529964)											
VA22B3170-001	VGC22-13A	cyanide, strong acid dissociable (total)	----	E333	0.050	mg/kg	0.198	0.209	0.010	Diff <2x LOR	----
Cyanides (QC Lot: 532642)											
VA22B3170-001	VGC22-13A	thiocyanate	302-04-5	E344	1.00	mg/kg	<1.00	<1.00	0	Diff <2x LOR	----

Close out for YG22-030 & YG22-042

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 529965)						
moisture	----	E144	0.25	%	<0.25	----
Cyanides (QCLot: 529963)						
cyanide, weak acid dissociable	----	E336	0.05	mg/kg	<0.050	----
Cyanides (QCLot: 529964)						
cyanide, strong acid dissociable (total)	----	E333	0.05	mg/kg	<0.050	----
Cyanides (QCLot: 532642)						
thiocyanate	302-04-5	E344	1	mg/kg	<1.00	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 529965)									
moisture	----	E144	0.25	%	50 %	100	90.0	110	----
Cyanides (QCLot: 529963)									
cyanide, weak acid dissociable	----	E336	0.05	mg/kg	1.25 mg/kg	90.2	80.0	120	----
Cyanides (QCLot: 529964)									
cyanide, strong acid dissociable (total)	----	E333	0.05	mg/kg	2.5 mg/kg	84.1	80.0	120	----
Cyanides (QCLot: 532642)									
thiocyanate	302-04-5	E344	1	mg/kg	50 mg/kg	98.0	85.0	115	----

Close out for YG22-030 & YG22-042

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable, in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Cyanides (QCLot: 529963)										
VA22B3170-002	VGC22-13B	cyanide, weak acid dissociable	----	E336	2.92 mg/kg	3.125 mg/kg	95.1	75.0	125	----
Cyanides (QCLot: 529964)										
VA22B3170-002	VGC22-13B	cyanide, strong acid dissociable (total)	----	E333	5.76 mg/kg	6.25 mg/kg	93.8	75.0	125	----
Cyanides (QCLot: 532642)										
VA22B3170-002	VGC22-13B	thiocyanate	302-04-5	E344	49.2 mg/kg	50 mg/kg	98.4	75.0	125	----

Close out for YG22-030 & YG22-042

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Affix ALS barcode label here (lab use only)

COC Number: 20220610B

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Victoria Gold (Yukon) Corp.
Contact:	John Jackson / Bill Bowden
Phone:	867-456-7700 x 6381
	Company address below will appear on the final report
Street:	100-1050 West Pender Street
City/Province:	Vancouver, BC
Postal Code:	V6E 3S7

Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	STR125-EAGLEGOLD-VA
Contact:	

Project Information	
ALS Account # / Quote #:	STRG100 Q68199
Job #:	Spill Confirmatory June - VGC22-13 NND Inspection
PO / AFE:	22036
LSD:	

ALS Lab Work Order # (lab use only): 3170

Report Format / Distribution

Select Report Format: ☑ EXCEL ☑ EDD (DIGITAL)

Quality Control (QC) Report with Report ☐ YES ☐ NO

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: DLEnvironmentalLabResults@vgcx.com

Email 2: importer@victoriagold.ehsdata.com

Email 3:

Email 4:

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: invoices@vgcx.com

Email 2: bbowden@vgcx.com; jjackson@vgcx.com

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Contact: Emmanual Mariano **Sampler:** PE

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E1 - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	LEPH/HEPH	Total Oil Grease	VOC	BTEX/STY/RENE	PAHs	CN3	SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
	VGC22-13A	7-Jun-22	17:15	Soil						R			1
	VGC22-13B	7-Jun-22	17:15	Soil						R			1
	VGC22-13C	7-Jun-22	17:15	Soil						R			1
	VGC22-13D	7-Jun-22	17:15	Soil						R			1
	VGC22-13E	7-Jun-22	17:15	Soil						R			1

Environmental Division Vancouver
Work Order Reference
VA22B3170

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☑ NO

Are samples for human consumption/ use? ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please include Yukon Government EQWin format

SAMPLE CONDITIO

Frozen ☐ SIF Observ ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				4°C			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Ben Widdowson	Date: June 9 2022	Time: 10:27	Received by:	Date:	Time:	Received by: RL	Date: Jun 13, 2022	Time: 10:40

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Close out for F22-030 & YG22-042

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA22B3341**	Page	: 1 of 2
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Emmanuel Mariano
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: Spill Confirmatory June - VGC22-10 May 7 HLF	Date Samples Received	: 14-Jun-2022 11:00
PO	: 22036	Date Analysis Commenced	: 19-Jun-2022
C-O-C number	: 20220612A	Issue Date	: 04-Jul-2022 15:04
Sampler	: FIL		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia

Close out for YG22-030 & YG22-042

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
%	percent
mg/kg	milligrams per kilogram

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	*CAS Number*	*Method*	*LOR*	*Unit*	*Client sample ID*	**VGC22-10A2**	**VGC22-10B2**	**VGC22-10C2**	**VGC22-10D2**	**VGC22-10E2**
					Client sampling date / time	11-Jun-2022 11:10	11-Jun-2022 11:10	11-Jun-2022 11:10	11-Jun-2022 11:10	11-Jun-2022 11:10
						VA22B3341-001	**VA22B3341-002**	**VA22B3341-003**	**VA22B3341-004**	**VA22B3341-005**
						Result	Result	Result	Result	Result
Physical Tests										
moisture	----	E144	0.25	%		13.2	15.3	12.8	12.7	12.2
Cyanides										
cyanide, strong acid dissociable (total)	----	E333	0.050	mg/kg		0.545	0.106	<0.051	0.152	1.06
cyanide, weak acid dissociable	----	E336	0.050	mg/kg		<0.050	<0.052	<0.051	<0.051	<0.051
thiocyanate	302-04-5	E344	1.00	mg/kg		<1.00	<1.00	<1.00	<1.00	35.7

Please refer to the General Comments section for an explanation of any qualifiers detected.

Close out for YG22-030 & YG22-042

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA22B3341**	Page	: 1 of 7
Client	: **Victoria Gold (Yukon) Corp.**	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Emmanuel Mariano
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: Spill Confirmatory June - VGC22-10 May 7 HLF	Date Samples Received	: 14-Jun-2022 11:00
PO	: 22036	Issue Date	: 04-Jul-2022 15:03
C-O-C number	: 20220612A		
Sampler	: FIL		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Close out for YG22-030 & YG22-042

Close out for YG22-030 & YG22-042

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Thiocyanate in soil by 1:5 DI water leach and colourimetric detection										
Glass soil jar/Teflon lined cap										
VGC22-10A2	E344	11-Jun-2022	23-Jun-2022	----	----		27-Jun-2022	14 days	16 days	× EHT
Cyanides : Thiocyanate in soil by 1:5 DI water leach and colourimetric detection										
Glass soil jar/Teflon lined cap										
VGC22-10B2	E344	11-Jun-2022	23-Jun-2022	----	----		27-Jun-2022	14 days	16 days	× EHT
Cyanides : Thiocyanate in soil by 1:5 DI water leach and colourimetric detection										
Glass soil jar/Teflon lined cap										
VGC22-10C2	E344	11-Jun-2022	23-Jun-2022	----	----		27-Jun-2022	14 days	16 days	× EHT
Cyanides : Thiocyanate in soil by 1:5 DI water leach and colourimetric detection										
Glass soil jar/Teflon lined cap										
VGC22-10D2	E344	11-Jun-2022	23-Jun-2022	----	----		27-Jun-2022	14 days	16 days	× EHT
Cyanides : Thiocyanate in soil by 1:5 DI water leach and colourimetric detection										
Glass soil jar/Teflon lined cap										
VGC22-10E2	E344	11-Jun-2022	23-Jun-2022	----	----		27-Jun-2022	14 days	16 days	× EHT
Cyanides : Total Cyanide (0.05M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
VGC22-10A2	E333	11-Jun-2022	20-Jun-2022	14 days	9 days	✓	27-Jun-2022	14 days	7 days	✓
Cyanides : Total Cyanide (0.05M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
VGC22-10B2	E333	11-Jun-2022	20-Jun-2022	14 days	9 days	✓	27-Jun-2022	14 days	7 days	✓

Close out for YG22-030 & YG22-042

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : Total Cyanide (0.05M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
VGC22-10C2	E333	11-Jun-2022	20-Jun-2022	14 days	9 days	✓	27-Jun-2022	14 days	7 days	✓
Cyanides : Total Cyanide (0.05M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
VGC22-10D2	E333	11-Jun-2022	20-Jun-2022	14 days	9 days	✓	27-Jun-2022	14 days	7 days	✓
Cyanides : Total Cyanide (0.05M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
VGC22-10E2	E333	11-Jun-2022	20-Jun-2022	14 days	9 days	✓	27-Jun-2022	14 days	7 days	✓
Cyanides : WAD Cyanide (0.05M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
VGC22-10A2	E336	11-Jun-2022	20-Jun-2022	14 days	9 days	✓	27-Jun-2022	14 days	7 days	✓
Cyanides : WAD Cyanide (0.05M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
VGC22-10B2	E336	11-Jun-2022	20-Jun-2022	14 days	9 days	✓	27-Jun-2022	14 days	7 days	✓
Cyanides : WAD Cyanide (0.05M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
VGC22-10C2	E336	11-Jun-2022	20-Jun-2022	14 days	9 days	✓	27-Jun-2022	14 days	7 days	✓
Cyanides : WAD Cyanide (0.05M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
VGC22-10D2	E336	11-Jun-2022	20-Jun-2022	14 days	9 days	✓	27-Jun-2022	14 days	7 days	✓
Cyanides : WAD Cyanide (0.05M NaOH Extraction)										
Glass soil jar/Teflon lined cap										
VGC22-10E2	E336	11-Jun-2022	20-Jun-2022	14 days	9 days	✓	27-Jun-2022	14 days	7 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
VGC22-10A2	E144	11-Jun-2022	----	----	----		19-Jun-2022	----	----	

Close out for YG22-030 & YG22-042

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
VGC22-10B2	E144	11-Jun-2022	----	----	----		19-Jun-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
VGC22-10C2	E144	11-Jun-2022	----	----	----		19-Jun-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
VGC22-10D2	E144	11-Jun-2022	----	----	----		19-Jun-2022	----	----	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
VGC22-10E2	E144	11-Jun-2022	----	----	----		19-Jun-2022	----	----	

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Close out for YG22-030 & YG22-042

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Moisture Content by Gravimetry	E144	529965	1	10	10.0	5.0	✓
Thiocyanate in soil by 1:5 DI water leach and colourimetric detection	E344	534370	1	5	20.0	5.0	✓
Total Cyanide (0.05M NaOH Extraction)	E333	529964	1	10	10.0	5.0	✓
WAD Cyanide (0.05M NaOH Extraction)	E336	529963	1	10	10.0	5.0	✓
Laboratory Control Samples (LCS)							
Moisture Content by Gravimetry	E144	529965	1	10	10.0	5.0	✓
Thiocyanate in soil by 1:5 DI water leach and colourimetric detection	E344	534370	1	5	20.0	5.0	✓
Total Cyanide (0.05M NaOH Extraction)	E333	529964	1	10	10.0	5.0	✓
WAD Cyanide (0.05M NaOH Extraction)	E336	529963	1	10	10.0	5.0	✓
Method Blanks (MB)							
Moisture Content by Gravimetry	E144	529965	1	10	10.0	5.0	✓
Thiocyanate in soil by 1:5 DI water leach and colourimetric detection	E344	534370	1	5	20.0	5.0	✓
Total Cyanide (0.05M NaOH Extraction)	E333	529964	1	10	10.0	5.0	✓
WAD Cyanide (0.05M NaOH Extraction)	E336	529963	1	10	10.0	5.0	✓
Matrix Spikes (MS)							
Thiocyanate in soil by 1:5 DI water leach and colourimetric detection	E344	534370	1	5	20.0	5.0	✓
Total Cyanide (0.05M NaOH Extraction)	E333	529964	1	10	10.0	5.0	✓
WAD Cyanide (0.05M NaOH Extraction)	E336	529963	1	10	10.0	5.0	✓

Close out for YG22-030 & YG22-042

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Total Cyanide (0.05M NaOH Extraction)	E333 Vancouver - Environmental	Soil/Solid	ISO 14403 (mod)	Total or strong acid dissociable (SAD) cyanide is determined after extraction by Continuous Flow Analyzer (CFA) with in-line UV digestion followed by colourmetric analysis. Method Limitation: High levels of thiocyanate (SCN) may cause positive interference (up to 0.5% of SCN concentration)."
WAD Cyanide (0.05M NaOH Extraction)	E336 Vancouver - Environmental	Soil/Solid	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined after extraction by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Thiocyanate in soil by 1:5 DI water leach and colourimetric detection	E344 Vancouver - Environmental	Soil/Solid	In-house	A dried soil is leached with DI water at a ratio of 1:5. Thiocyanate is determined by the ferric nitrate colourimetric method. Soil samples containing high levels of hexavalent chromium, cyanide (together with sulfide), reducing agents, or hydrocarbons may cause negative or positive interferences with this method.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:5 Soil:Water for Anions	EP237 Vancouver - Environmental	Soil/Solid	EPA 300.1 (mod)	This analysis is carried out using a leaching procedure which involves the gentle tumbling of the sample in a specified leaching solution (typically deionized water) for a specific length of time.
Cyanide Extraction (0.05M NaOH)	EP333 Vancouver - Environmental	Soil/Solid	BC MOE Lab Manual	Extraction for various cyanide analysis is by rotary extraction of the soil with 0.05M Sodium Hydroxide.

Close out for YG22-030 & YG22-042

QUALITY CONTROL REPORT

Work Order	: **VA22B3341**	Page	: 1 of 4
Client	: Victoria Gold (Yukon) Corp.	Laboratory	: Vancouver - Environmental
Contact	: Bill Bowden	Account Manager	: Emmanuel Mariano
Address	: Suite 1000 - 1050 W. Pender St Vancouver BC Canada V6E 3S7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 867.456.7700 ext. 6381	Telephone	: +1 604 253 4188
Project	: Spill Confirmatory June - VGC22-10 May 7 HLF	Date Samples Received	: 14-Jun-2022 11:00
PO	: 22036	Date Analysis Commenced	: 19-Jun-2022
C-O-C number	: 20220612A	Issue Date	: 04-Jul-2022 15:03
Sampler	: FIL		
Site	: ----		
Quote number	: Q68199		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Vancouver Organics, Burnaby, British Columbia

Close out for YG22-030 & YG22-042

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 529965)											
VA22B3170-001	Anonymous	moisture	----	E144	0.25	%	8.10	8.07	0.343%	20%	----
Cyanides (QC Lot: 529963)											
VA22B3170-001	Anonymous	cyanide, weak acid dissociable	----	E336	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Cyanides (QC Lot: 529964)											
VA22B3170-001	Anonymous	cyanide, strong acid dissociable (total)	----	E333	0.050	mg/kg	0.198	0.209	0.010	Diff <2x LOR	----
Cyanides (QC Lot: 534370)											
VA22B3341-001	VGC22-10A2	thiocyanate	302-04-5	E344	1.00	mg/kg	<1.00	<1.00	0	Diff <2x LOR	----

Close out for YG22-030 & YG22-042

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 529965)						
moisture	----	E144	0.25	%	<0.25	----
Cyanides (QCLot: 529963)						
cyanide, weak acid dissociable	----	E336	0.05	mg/kg	<0.050	----
Cyanides (QCLot: 529964)						
cyanide, strong acid dissociable (total)	----	E333	0.05	mg/kg	<0.050	----
Cyanides (QCLot: 534370)						
thiocyanate	302-04-5	E344	1	mg/kg	<1.00	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 529965)									
moisture	----	E144	0.25	%	50 %	100	90.0	110	----
Cyanides (QCLot: 529963)									
cyanide, weak acid dissociable	----	E336	0.05	mg/kg	1.25 mg/kg	90.2	80.0	120	----
Cyanides (QCLot: 529964)									
cyanide, strong acid dissociable (total)	----	E333	0.05	mg/kg	2.5 mg/kg	84.1	80.0	120	----
Cyanides (QCLot: 534370)									
thiocyanate	302-04-5	E344	1	mg/kg	50 mg/kg	100	85.0	115	----

Close out for YG22-030 & YG22-042

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Cyanides (QCLot: 529963)										
VA22B3170-002	Anonymous	cyanide, weak acid dissociable	----	E336	2.92 mg/kg	3.125 mg/kg	95.1	75.0	125	----
Cyanides (QCLot: 529964)										
VA22B3170-002	Anonymous	cyanide, strong acid dissociable (total)	----	E333	5.76 mg/kg	6.25 mg/kg	93.8	75.0	125	----
Cyanides (QCLot: 534370)										
VA22B3341-002	VGC22-10B2	thiocyanate	302-04-5	E344	48.2 mg/kg	50 mg/kg	96.5	75.0	125	----

Close out for YG22-030 & YG22-042

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: 20220612A

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Victoria Gold (Yukon) Corp.
Contact:	John Jackson / Bill Bowden
Phone:	867-456-7700 x 6381
	Company address below will appear on the final report
Street:	100-1050 West Pender Street
City/Province:	Vancouver, BC
Postal Code:	V6E 3S7
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	STR125-EAGLEGOLD-VA
Contact:	

Report Format / Distribution

Select Report Format: ☑ ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report ☐ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: DLEnvironmentalLabResults@vgcx.com
Email 2: importer@victoriagold.ensdata.com
Email 3:
Email 4:

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: invoices@vgcx.com
Email 2: bbowden@vgcx.com; jlackson@vgcx.com

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E1 - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	STRG100 Q68199	AFE/Cost Center:	PO#:
Job #:	Spill Confirmatory June - VGC22-10 May 7 HLF	Major/Minor Code:	Routing Code:
PO / AFE:	22036	Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only):

ALS Contact: Emmanual Mariano | Sampler: | FIL

Analysis Request

Indicate Filtered (F), Preserved (P)

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	LEPH/HEPH	Total Oil Grease	VOC	BTEX/STYRENE	PAHs	CN3	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
	VGC22-10A2	11-Jun-22	11:10	Soil						R		1
	VGC22-10B2	11-Jun-22	11:10	Soil						R		1
	VGC22-10C2	11-Jun-22	11:10	Soil						R		1
	VGC22-10D2	11-Jun-22	11:10	Soil						R		1
	VGC22-10E2	11-Jun-22	11:10	Soil						R		1

Environmental Division
Vancouver
Work Order Reference
VA22B3341

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☑ NO

Are samples for human consumption/ use?
☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Please include Yukon Government EQWin format

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐
Ice Packs ☑ Ice Cubes ☐ | Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
							4

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Ben Widdowson	Date: June 12 2022	Time: 10:25	Received by:	Date:	Time:	Received by: HM	Date: 6/14	Time: 9am

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Close out for F22-030 & VG22-042

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

VICTORIA GOLD CORP

FIRST OBSERVER			
Name & Company:	Victoria Gold		
Date Observed:	September 17/22	**Time Observed:** 5pm	
Location of Spill:	90 day stockpile	**VGC Tracking Number:** VGC22-20	
Distance to Waterbody:	~1km	**Photos Taken?**	☑ Yes ☐ No
Estimated Spill Volume:	40L	**Reported to:**	Mike Berry
PERSON/DEPT. RESPONSIBLE FOR SPILL			
Supervisor/Investigator:	Mike Berry		
Date of Spill:	September 17/22		
Substance Spilled:	Propylene glycol		
Equipment Involved:	HT112		
Volume of Contaminated Material:	0- pending truck movement		
Personnel Contacted for Disposal (Name):			
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	On September 17, at ~5pm coolant was noticed directly below Haul Truck 112 which was going through major repair. A fan hub failed damaging the adjacent cooler which resulted in the loss of 40L of coolant to the ground surface directly below the Haul truck.		
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	The supervisor was notified upon observation and spill response was initiated. Absorbent pads and spill trays were utilised to capture the majority of the coolant release as well as remove free product from the ground surface. The release was contained to the immediate area. Excavation of the surface is pending truck removal.		
ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number	22-042 22-090	**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:	N/A		
Disposal Container Labelled?	☐ Yes ☑ No	**Samples taken?**	☐ Yes ☑ No
Environmental areas affected: (Watercourse, soil, etc.):	Ore stockpile laydown.		
Method of Disposal & Further Remediation Required:	Samples taken following free product removal. Excavation will occur as require		
Follow Up Required?	☑ Yes ☐ No	**Follow Up Date:**	October 6 2022
SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Andrew Ballance	**Signature:**	
Safety:		**Signature:**	
Environment:	Bill Bowden	**Signature:**	

Interim Report

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	September 17,2022	VGC Spill #	VGC22-20
Volume (L):	40 L	Yukon Government #	YG22-090
Substance	Coolant	Location	90 day

Interim Report

Figure 1: Map of spill site with spill located on 90 Day Stockpile.

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	September 17,22	VGC Spill #	VGC22-20
Volume (L):	40 L	Yukon Government #	YG22-090
Substance	Coolant	Location	90 Day

Interim Report

Photo 1: Coolant and water on ground outside of Haul truck.

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	September 17,22	VGC Spill #	VGC22-20
Volume (L):	40 L	Yukon Government #	YG22-090
Substance	Coolant	Location	90 Day

Interim Report

Photo 2: Sample locations taken at Spill Site

EAGLE GOLD PROJECT
SPILL RESPONSE FORM

VICTORIA GOLD CORP

FIRST OBSERVER			
Name & Company:	Lukas Traude (Victoria Gold)		
Date Observed:	Oct 11, 2022	**Time Observed:** 9:30 am	
Location of Spill:	Open Pit - 1145 bench	**VGC Tracking Number:**	VGC22-22
Distance to Waterbody:	>500 meters	**Photos Taken?**	☑ Yes ☐ No
Estimated Spill Volume:	10 Litres	**Reported to:**	Enviro
PERSON/DEPT. RESPONSIBLE FOR SPILL			
Supervisor/Investigator:	Lukas Traude		
Date of Spill:	October 11, 2022		
Substance Spilled:	Coolant		
Equipment Involved:	Caterpillar 785 Haul Truck/ unit 102		
Volume of Contaminated Material:	~0.25 m3		
Personnel Contacted for Disposal (Name):	Site Services Department.		
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)	Failed coolant line.		
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)	A spill tray was placed under the leak to collect any incidental releases and standing product was evacuated by the fuel truck. Absorbent materials were deployed on the ground to collect any residual product and contaminated materials taken to the waste transfer station for disposal by a third party waste contractor.		
ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number	YG22-098	**Reportable to Spill Hotline?**	☑ Yes ☑ No
Info Re. Spill Hotline:	Spill was reported to the YG within 24 hours of identification.		
Disposal Container Labelled?	☑ Yes ☐ No	**Samples taken?**	☐ Yes ☑ No
Environmental areas affected: (Watercourse, soil, etc.):	Surface of frozen soil.		
Method of Disposal & Further Remediation Required:	Contaminated material was taken to the waste transfer station for disposal.		
Follow Up Required?	☐ Yes ☑ No	**Follow Up Date:**	
SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:	Lukas Traude	**Signature:**	
Safety:		**Signature:**	
Environment:	Bill Bowden	**Signature:**	

Final Report
Spill Closed

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	October 11, 22	VGC Spill #	VGC22-22
Volume (L):	10 Litres	Yukon Government #	YG22-098
Substance	Coolant	Location	1145 bench

Final Report
Spill Closed

Figure 1: Map of spill site with spill located at

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	October 11, 22	VGC Spill #	VGC22-22
Volume (L):	10 Litres	Yukon Government #	YG22-098
Substance	Coolant	Location	1145 bench

Final Report
Spill Closed

Photo 1: Coolant and water on ground outside of Haul truck.

VICTORIA GOLD CORP	Additional Spill Information		
Spill Date:	October 11, 22	VGC Spill #	VGC22-22
Volume (L):	10 Litres	Yukon Government #	YG22-098
Substance	Coolant	Location	1145 bench

Final Report
Spill Closed

Photo 2: Spill absorbent on ground collecting coolant. Spill absorbent later collected and put in mega bags for site removal.

VICTORIA GOLD CORP
TSX | VGCX

December 13, 2022

Mr. Todd Powell, Director
Mineral Resources Branch
Yukon Government Department of Energy, Mines and Resources
#400 - 211 Main Street, Box 2703
Whitehorse, Yukon Y1A 2C6

Dear Mr. Powell,

RE: Eagle Gold Mine QML-0011 Environmental Audit

As required by Clause 12.1 of the Quartz Mining License QML-0011 for the Eagle Gold Mine, please find enclosed an audit undertaken by Stantec Consulting Ltd. (Stantec) of the environmental protection plans and regulatory controls set out in QML-0011.

Stantec, in their capacity as the approved independent contractor for this audit, were tasked with the review of the management, operations and practices of Victoria Gold (Yukon) Corp. that are intended to ensure environmental protection during production and development of the Eagle Gold Mine. Stantec's key findings are provided within the report and Stantec, consistent with their findings for the 2020 audit, stated in the audit report:

> *"Overall, the implementation of VGC's environmental management system can be described as adequate and no immediate concerns for water quality and quantity, aquatic habitat, air quality, soils, vegetation, wildlife and wildlife habitat, stability of physical structures and waste management have been identified."*

Also enclosed is Victoria's report detailing the remedial actions that we will undertake in response to the audit.

If you have any questions, please do not hesitate to contact our office.

Sincerely,

Hugh Coyle
VP Environment
Victoria Gold Corp.

EAGLE GOLD MINE 2022
ENVIRONMENTAL AUDIT REPORT

December 12, 2022

Prepared for:
Victoria Gold Corporation

Prepared by:
Stantec Consulting Ltd.

Project Number:
123222163

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Executive Summary

The Eagle Gold Mine (the Project), is owned and operated by Victoria Gold (Yukon) Corp. (VGC) and is located within the Mayo Mining District of Yukon Territory, Canada. The mine is situated approximately 85 km north of Mayo and 400 km north of Whitehorse. The Project is an open pit mine, in-valley heap leach with three stage crush and gold recovery plant.

VGC received a quartz mining license to build the open pit mine in September 2013. A Comprehensive Cooperation Benefits Agreement was signed with the First Nation of Na-Cho Nyak Dun in 2011. The Project achieved commercial production on July 1, 2020 and has an anticipated mine life of ten plus years.

Clause 12.0 of Quartz Mine License 0011 (QML-0011) requires the undertaking of an environmental audit every two years, by an independent contractor acceptable to the Director of the Mineral Resources Branch of Yukon Government Department of Energy, Mines and Resources (EMR). Stantec Consulting Ltd. (Stantec) was contracted by VGC to complete an Environmental Audit for the Project in accordance with the conditions of QML-0011. The first audit was completed by Stantec for the period July 1, 2018 to June 30, 2020, which spanned construction, commissioning and initial production phases (Stantec, 2020). This report is the second audit for the mine and the first to span only the production phase and is inclusive of monitoring and surveillance activities at the Project site from July 1, 2020, to June 30, 2022.

The audit scope involved an evaluation of consistency with requirements with the following approved plans:

- Environmental Monitoring, Surveillance and Adaptive Management Plan (EMSAMP) Version 2020-01
- Construction and Operations Water Management Plan Version 2017-01
- Water Management Plan Version 2020-01
- Solid Waste and Hazardous Materials Management Plan Version 2017-02
- Spill Response Plan Version 2017-02 and Version 2021-01
- Wildlife Protection Plan Version 2017-01

The auditors reviewed the following regulatory reporting submissions, as well as supporting documentation:

- Water License QZ14-041-01 / Quartz Mining License QML-0011 2020 Annual Report and relevant appendices
- Water License QZ14-041-01 / Quartz Mining License QML-0011 2021 Annual Report and relevant appendices

- A sample of monthly reports covering climate, air quality, hydrology, groundwater quality and quantity, surface water quality, geochemistry, soils, vegetation and physical structures monitoring; sample size varied with discipline
- Quarterly Wildlife Reports from September 2020 to June 2022.

The audit evaluated:

- Confirming the implementation of plans and associated monitoring programs, as well as associated reporting
- Confirming the monitoring (surface water quality and quantity, groundwater, and aquatics and fish and fish habitat), terrestrial environment and physical stability assessments were completed to the specifications in the approved plans and licences.

The following general steps were taken to conduct the audit:

1. Identification of documents to be reviewed to fulfill the audit objectives and requirements,
2. Comparison of monitoring activities at all sites against the execution described in the EMSAMP for frequency, methods, and results
3. Review of data quality assurance and quality control procedures
4. Confirmation that AMP thresholds are being monitored in conformance with the EMSAMP
5. Confirmation that AMP responses follow what is outlined in the EMSAMP and were reported
6. A site audit September 28 to 30, 2022
7. Provision of an audit adequacy statement regarding conformance with plans within the audit scope

Key findings of the audit are provided in section 10.0 of the report. Overall, the implementation of VGC's environmental management system can be described as adequate.

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Acronyms / Abbreviations

ADR	Adsorption Desorption Recovery
AMP	Adaptive management plan
ANCOVA	Analysis of covariance
ANOVA	Analysis of variance
AMT	Adaptive management threshold
CAAQS	Canadian Ambient Air Quality Standards
CCME	Canadian Council of Ministers of the Environment
CES	Critical-effect sizes
CPUE	Catch per unit effort
CWTS	Constructed wetland treatment system
dbRDA	Distance-based redundancy analysis
COA	Certificate of Analysis
EBAM	Environmental Beta-Attenuation Particulate Monitor
ECCC	Environment and Climate Change Canada
EEM	Environmental effects monitoring
EMR	Energy, Mines and Resources
EMSAMP	Environmental Monitoring, Surveillance and Adaptive Management Plan
EOM	End of Mine
EOR	Engineer of Record
EP	Eagle Pup
EQS	Effluent Quality Standard
FOS	Factor of Safety

GPS	Global positioning system
Hi-Vol	High volume
HLF	Heap Leach Facility
ISQG	Interim sediment quality guidelines
LDSP	Lower Dublin South Pond
LPL	Lowest practical level
ISQG	BC Interim Sediment Quality Guidelines I
masl	Meters above sea level
MDMER	Metal and Diamond Mining Effluent Regulations
Minnow	Minnow Environmental Inc.
MTL	Maximum tolerable levels
PASS	Passive Air Sampling System
PEL	Probably Effects Level
PG	Platinum Gulch
$PM_{2.5}$	Fine particulate matter passing a 2.5 µ sieve
PM_{10}	Coarse particulate matter passing a10 µ sieve
PTS	Passive Treatment System
QAQC	Quality Assurance / Quality Control
QA/QC	Quality assurance/quality control
QML	Quartz Mining License
RCP	Reclamation and Closure Plan
RISC	Resource Inventory Standards Committee
SD_{REF}	Standard Deviations from the Reference
SFS	Society of Freshwater Sciences
SWE	Snow-water-equivalent

TSP	Total suspended particulates
VGC	Victoria Gold (Yukon) Corp.
WMP	Water Management Plan
WPP	Wildlife Protection Plan
WQO	Water quality objective
WRSA	Waste Rock Storage Area
WUL	Water-use License
YWB	Yukon Water Board

1 Introduction

Stantec Consulting Ltd. (Stantec) was retained by Victoria Gold (Yukon) Corp. (VGC) in August 2022 to carry out an audit of the Eagle Gold Mine (the Project) in accordance with the conditions of the Quartz Mine License QML-0011 (QML). The objective of this audit was to assess whether the environmental management plans and regulatory controls set out in the QML are implemented in and about the mine and that the environmental management systems and controls are functioning as intended.

1.1 Background

The Eagle Gold Mine is owned and operated by VGC and is located within the Mayo Mining District of Yukon Territory, Canada. The Project is situated approximately 85 km north of Mayo and 400 km north of Whitehorse. The Project is an open pit mine, in-valley heap leach with a three-stage crush and gold recovery plant. Operation of the Project is governed by various regulatory approvals and non-discretionary Territorial and Federal legislation. A key regulatory approval for the Project is the Quartz Mining Licence QML-0011, issued pursuant to section 141(2)(a) of the *Quartz Mining Act* by the Department of Energy, Mines and Resources (EMR). Clause 12.0 of QML-0011 requires an environmental audit every two years, by an independent contractor acceptable to the Director of the Mineral Resources Branch of EMR.

VGC completed the environmental assessment process under the *Yukon Environmental and Socio-economic Assessment Act* (YESAA) and received Decision Documents from the Yukon Government and federal regulatory agencies in April 2013. An initial quartz mining license was received in September 2013, followed by a Water Use License in Dec 2015. Preliminary construction began in August 2017 and full construction commenced in March 2018. A Comprehensive Cooperation Benefits Agreement was signed with the First Nation of Na-Cho Nyak Dun in 2011.

In 2017, construction activities began with camp expansion, access road upgrades, site road construction, diversions and ditching, pond construction, clearing and grubbing, civil earthworks, septic system upgrade, and borrow source development. In 2018 activities included construction of Phase I of the Heap Leach Facility (HLF), Events Pond, Crushing and Screening Plants, Overland Conveying System and coarse ore transfer areas, Cement and Lime Silos, Adsorption, Desorption and Recovery Plant and Reagent Storage Buildings, Metallurgical Laboratories, Administration Office, mine offices, ANFO and Detonator Storage, Water Distribution Systems, pre-stripping of the Eagle pit and initial development of the Platinum Gulch Waste Rock Storage Area, and construction of 90-day Ore Stockpile.

Commissioning of the facilities began in Q2 2019. On February 16, 2019, VGC notified responsible authorities of their intent to enter the Production Phase (defined in the regulatory approvals as the relocation of waste rock from the Eagle Pit to a waste rock storage area) on March 17, 2019. Ore production commenced on July 1, 2019, and VGC poured its first gold in Q3 of 2019. The mine achieved commercial production on July 1, 2020, with an anticipated mine life of ten plus years.

The first environmental audit required by QML-0011 was conducted in 2020 and included both the construction phase and the initial production phase. The 2022 environmental audit is the first audit that covers only production and addresses works conducted between July 1, 2020, and June 30, 2022.

1.2 Approach

The scope and objectives of the audit were provided by VGC and are based on condition 12.0 in the Eagle Gold Mine's Quartz Mining Licence QML-0011 (YG 2016). The licence has been amended several times, most recently in June 2022, without altering the requirement for the environmental audit. The audit for 2020 was a desktop exercise without a field visit due to Covid-19 precautions. The audit scope for 2022 did include a field visit and involved an evaluation of consistency with requirements with the following approved plans:

- Environmental Monitoring, Surveillance and Adaptive Management Plan (EMSAMP) Version 2020-01
- Water Management Plan Version 2020-01
- Solid Waste and Hazardous Materials Management Plan Version 2017-02
- Spill Response Plan Version 2017-02 and Version 2021-01
- Wildlife Protection Plan Version 2017-01

The auditors reviewed the following regulatory reporting submissions:

- Water License QZ14-041-01 / Quartz Mining License QML-0011 2020 Annual Report and relevant appendices
- Water License QZ14-041-01 / Quartz Mining License QML-0011 2021 Annual Report and relevant appendices
- A sample of monthly reports from the reporting period covering climate, air quality, hydrology, groundwater quality and quantity, surface water quality, geochemistry, soils, vegetation, and physical structures monitoring; the sample differed with disciplines depending on reporting frequency and amount of data the relevant qualified professional determined was necessary to conduct a meaningful audit
- The Eagle Gold Mine 2020 Environmental Audit Report prepared by Stantec Consulting Ltd.

The audit evaluated:

- Confirming the implementation of plans and associated monitoring programs, as well as associated reporting.
- Confirming the monitoring (surface water quality and quantity, groundwater, and aquatics and fish and fish habitat), terrestrial environment and physical stability assessments were completed to the specifications in the approved plans and licences.

The following general steps were taken to conduct the audit:

1. Identification of documents to be reviewed to fulfill the audit objectives and requirements
2. Comparison of monitoring activities at all sites against the execution described in the EMSAMP for frequency, methods, and results
3. Review of data quality assurance and quality control procedures
4. Confirmation that adaptive management plan (AMP) thresholds are being monitored in conformance with the Environmental Monitoring, Surveillance, and Adaptive Management Plan (EMSAMP)
5. Confirmation that AMP responses follow what is outlined in the EMSAMP and were reported
6. Conduct a site audit September 28 to 30, 2022
7. Provision of an audit adequacy statement regarding conformance with plans within the audit scope
8. Provision of a summary table of identified gaps and/or recommendations for the monitoring programs

The evaluated disciplines included in this audit were meteorological and atmospheric environment, water resources (which included surface quantity and quality, groundwater quantity and quality, geochemistry, and the aquatic environment), the terrestrial environment (which included reclamation, vegetation, soils, and wildlife) and geotechnical stability (which included permafrost monitoring, open pits, material storage and stockpiles and the heap leach and process facilities). The audit also included a review of the solid waste and hazardous materials handling and spill response. Discipline-specific audit findings are included below.

2 Atmospheric Environment

2.1 Meteorology

2.1.1 Documents Reviewed

The documents in Table 1 were reviewed as part of the meteorology section of the audit.

Table 1 Climate Documents Reviewed

Document	Version Reviewed	Sections Applicable to Operations Phase
Eagle Gold Project Environmental Monitoring, Surveillance and Adaptive Management Plan - Version 2020-01	27-Feb-20	10 Climate
Quartz Mining License QML-0011 - Effective March 24, 2016 to September 20, 2040	29-Jun-22	Part VI - Audits and Reporting Schedule B - Plans to be submitted for approval as approved plans Schedule C - Approved Plans and Authorized Activities Schedule D - Annual Reporting Requirements
Yukon Water Board - QZ14-041-1 (Water License)	22-Aug-19	General references to EMSAMP
Eagle Gold Project Water License QZ14-041-01 Quartz Mining License QML-0011 2020 Annual Report	12-Apr-21	3.8 Meteorology and Air Quality Monitoring 3.8.1 Climate Monitoring Appendix K
Eagle Gold Project Water License QZ14-041-01 Quartz Mining License QML-0011 2021 Annual Report	11-Apr-22	3.8 Meteorology and Air Quality Monitoring 3.8.1 Climate Monitoring Appendix K
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - August 2020	05-Oct-20	6.1 Meteorological Stations Appendix D
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - November 2020	31-Dec-20	6.1 Meteorological Stations Appendix C
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - February 2021	03-Apr-21	6.1 Meteorological Stations Appendix D
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - April 2021	01-Jun-21	6.1 Meteorological Stations Appendix D
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - July 2021	31-Aug-21	6.1 Meteorological Stations Appendix D

Table 1 Climate Documents Reviewed

Document	Version Reviewed	Sections Applicable to Operations Phase
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - November 2021	02-Jan-22	6.1 Meteorological Stations Appendix C
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - December 2021	30-Jan-22	6.1 Meteorological Stations Appendix D
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report – January 2022	02-Mar-22	6.1 Meteorological Stations Appendix D
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report -April 2022	02-Jun-22	6.1 Meteorological Stations Appendix C

In addition, the following references were used as part of the Audit:

- British Columbia Ministry of Environment and Climate Change Strategy (BC ENV) British Columbia Field Sampling Manual – Part A: Quality Control and Quality Assurance and Part B: Air and Air Emission Testing (2013, 2020b)
- World Meteorological Organization (WMO) Guide to Instruments and Methods of Observations Volumes I, III, and V (2018)
- Environment and Climate Change Canada (ECCC) Manual of Surface Weather Observation Standards (2021)
- United States Environmental Protection Agency (U.S. EPA) Meteorological Monitoring Guidance for Regulatory Modeling Applications (2000)
- Canadian Council of Ministers of the Environment (CCME) Ambient Air Monitoring and Quality Assurance/Quality Control Guidelines (2019a)
- BC ENV Snow Survey Sampling Guide (2018)

2.1.2 Monitoring Program Implementations and Data Quality Assurance and Quality Control

2.1.2.1 Meteorology Stations

Two solar powered automated meteorology stations are currently operating in the Project area. The Potato Hills station (elevation 1,420 m) was installed in 2007 and the Camp station (elevation 782 m) in 2009. The meteorology stations continuously collect data for the following parameters:

- Ambient air temperature
- Precipitation
- Wind speed
- Wind direction
- Barometric pressure
- Solar radiation
- Snow depth
- Relative humidity

In October 2019, the original ONSET Hobo Potato Hills meteorology station was decommissioned due to repeated equipment failures. Air temperature and barometric pressure were measured by a stand-alone Hobo station during January and February 2020. The station was replaced in March 2020 with a Campbell Scientific solar powered meteorology station with data collected by a CR1000X datalogger. The updated station measures:

- Ambient air temperature
- Precipitation
- Wind speed
- Wind direction
- Barometric pressure
- Snow depth
- Solar radiation
- Relative humidity.

During this deployment, the Camp meteorology station underwent a service and calibration of the instrumentation. The tipping bucket rain gauges in both stations were replaced by the all-weather Geonor total precipitation gauge to better capture both rain and snow-water-equivalent (SWE) precipitation amounts.

The Potato Hills station experienced several data losses in 2020, including ongoing malfunctioning of the barometric pressure sensor. The barometric pressure The barometric pressure sensor was replaced in

January 2021 and operated continuously except for September, October, and December 2021. In 2021, the Potato Hills station experienced a data loss for all sensors from January 22 to February 27.

The Camp station had no data loss from July 01, 2020 through all of 2021. Both stations underwent another calibration and service in September 2021.

The EMSAMP details the requirements for the climate stations and reporting. It should be noted that the 2020 and 2021 annual reports have location coordinates (Table 2) that differ from those in the EMSAMP document. In addition, there have been changes to the equipment located at each site. As such the EMSAMP should be updated to reflect the changes at the meteorology stations.

Table 2 Locations of the Climate Stations and Snow Course Surveys Reported in the 2020 and 2021 Annual Reports

Type	Name	Elevation	NAD83 UTM Coordinates[2]			2020	2021
		m ASL[1]	m East	m North	Zone		
Meteorology Stations	Camp	782	458,164	7,101,036	8V	✓	✓
	Potato Hills	1,420	463,544	7,100,833	8V	✓	✓
Manual Snow Survey	Camp	782	458,164	7,101,036	8V	✓	✓
	Potato Hills	1,420	463,290	7,100,568	8V	✓	✓
	Ann Gulch Snow Survey	875	458,945	7,101,185	8V	2012-2017	
	Stewart (Snow Survey #2)	995	460,570	7,101,490	8V	2012	
	HLF Snow Survey[3]	1,078	459,859	7,102,319	8V	✓	
	PG WRSA 1370 Bench[4]	1,370	460,581	7,099,188	8V		✓
	HLF 3b (Bench and Slope)[3]	1,066	459,295	7,102,063	8V		✓
	HLF 4b (Bench and Slope)[3]	1,049	459,602	7,102,212	8V		✓
	HLF 5b (Bench and Slope)[3]	1,048	459,580	7,102,207	8V		✓

NOTES:

1 ASL – above sea level elevations reported in 2020 and 2021 annual reports

2 Universal Transverse Mercator (UTM), North American Datum 1983 (NAD83) coordinates reported in the 2020 and 2021 annual reports.

3 HLF – Heap Leach Facility

4 WRSA – Waste Rock Storage Area

The EMSAMP or the annual reports do not mention quality assurance and control methods that would be typically adopted to ensure the representativeness and reliability of the climate data being collected and reported. There is not enough information available in the EMSAMP or annual reports to verify that the 1-hour, 24-hour, monthly, and annual averages for the meteorology data were calculated based on standard methodologies.

2.1.2.2 Snow Depth Surveys

Snow depth information is also collected during winter with monthly manual snow course surveys near both meteorology stations and the additional locations shown in Table 2. As documented in the EMSAMP the manual snow surveys follow the Yukon Environment guidance and the BC ENV Snow Survey Sampling Guide (2016) using a standard federal snow sampler. The EMSAMP indicated that manual snow sampling would occur at or near the meteorology stations and west of lower Ann Gulch and typically start around April until the snow is melted each year. These locations may change based on changing conditions at the mine site as per the adaptive management framework.

The 2020 manual snow survey were conducted at similar sites as previous assessments and used 10 discrete sampling locations along a transect. The locations were sampled for depth and SWE, and the results averaged for the 10 discrete locations at the three sites. In 2021 four additional manual snow surveys were included and were conducted near the dates that the Yukon Water Resources Branch conducted their monthly surveys which includes the annual maximum snowpack. Data was not available for 2021

2.1.2.3 Reporting

The meteorology stations automatically collect data on an ongoing basis and store the results as 15-minute averages on the dataloggers. The data is downloaded during monthly station visits during the open water season, and in the winter concurrent with collection of the manual snow course surveys. This meteorology data is analyzed and summarized in an annual report during each collection year. The following data is summarized in the annual report:

- Monthly and annual recorded mean, minimum and maximum air temperature
- Total monthly and annual precipitation, as well as rainfall and snowfall amounts
- Maximum 24-hour precipitation total for each month
- Monthly snowpack depth as well as monthly snowmelt distribution
- Monthly average barometric pressure and relative humidity
- Monthly and annual recorded mean, minimum and maximum wind speed and direction
- Monthly and annual recorded mean, minimum and maximum net solar radiation
- Estimates of monthly sublimation and evaporation/evapotranspiration

The annual report is submitted to Yukon Government and the Yukon Water Board as part of the compliance with the EMSAMP, QML-0011 and QZ14-041-1. The submission includes a Microsoft Excel spreadsheet with the collected data and analyses used in the annual report. Meteorology monitoring parameters, frequencies and reporting requirements have remained the same throughout construction and operations phases of the Project.

Some monthly and quarterly reports were generated by VGC during the audit period. These were reviewed for information for the audit but are not evaluated as they are not specifically part of the requirements in the EMSAMP or QML-0011.

2.1.3 Reporting Adequacy, Consistency with Requirements, and Recommendations

The meteorology data for 2020 and 2021 are summarized in appendices to the Annual Reports. These appendices have the required summaries identified in the EMSAMP and provide previous years data for comparison. There is minimal information on the quality assurance and quality control methods used on the data referenced in the report and insufficient information available to determine what processing was done. There are letter codes within the data tables and footnotes indicating that the threshold for missing data are periods in which less than 25 days of data per month was not available. So, some quality assurance and control methods are being used.

In the 2021 annual report an additional appendix was provided which showed annual maintenance report from Campbell Scientific for the meteorology stations. This shows that adequate due diligence with respect to regular scheduled maintenance is being implemented for the meteorology stations.

It was indicated that due to the COVID-19 Pandemic that servicing the meteorological equipment was delayed which did impact the collection of some of the data. As mentioned in the previous audit (2020) it is recommended that VGC consider maintaining spare meteorology station sensors on site that may be easily deployed should sensors fail or when gaps are noted during monthly review of data records.

In addition, it is recommended that VGC should have ongoing site documentation for each of the meteorology monitoring sites. This would include:

- Description of the monitoring site
- Location in Latitude and Longitude as well as UTM coordinates and elevation
- List of instrumentation deployed on the site
- Indication of the height of the various meteorology instruments above the ground surface
- Description of the ground cover and surrounding conditions like distance to buildings and trees, heights of nearby structures and trees
- Description of potential biases to the collection of the meteorology data
- Pictures of the meteorology station and surrounding area in each of the four cardinal directions.

This documentation should be updated at least annually or when anything changes at the meteorology stations. During site visits there should be a log kept of the activities conducted at the stations included pictures of the state of the meteorology station during the site visit. Similar logs should be used for the manual snow surveys if they are not already used. Table 3 summarizes consistency with requirements gaps and/or deficiencies for the meteorology monitoring program and provides recommendations for improvements.

Table 3 Meteorology Monitoring Program Consistency with requirements and Recommendations

Consistency with requirements Gaps and/or Deficiencies	Recommendations
The meteorology data quality management process is unclear. Spare parts for the meteorology station should be readily available at the Eagle Gold site. The site documentation for each meteorology monitoring site should be collected and documented. Records of maintenance activities.	• Reference industry standards followed for data quality management in the next annual report. • Keep spare climate station sensors on-site for rapid deployment should sensors/equipment begin to fail, or data gaps are noted. • For each meteorology station, information should be compiled for its location, list of instrumentation, sensor height above ground, description of surrounding ground cover, description of potential biases, photos in each of the four cardinal directions. • Each station should have a logbook in which the various maintenance activities can be recorded.

2.2 Air Quality

2.2.1 Documents Reviewed

The documents in Table 4 were reviewed as part of the air quality section of the audit.

Table 4 Air Quality Documents Reviewed

Document	Version Reviewed	Sections Applicable to Operations Phase
Eagle Gold Project Environmental Monitoring, Surveillance and Adaptive Management Plan - Version 2020-01	27-Feb-20	11 Air Quality
Quartz Mining License QML-0011 - Effective March 24, 2016 to September 20, 2040	29-Jun-22	Part VI - Audits and Reporting Schedule B - Plans to be submitted for approval as approved plans Schedule C - Approved Plans and Authorized Activities Schedule D - Annual Reporting Requirements
Yukon Water Board - QZ14-041-1 (Water License)	22-Aug-19	General references to EMSAMP
Eagle Gold Project Water License QZ14-041-01 Quartz Mining License QML-0011 2020 Annual Report	12-Apr-21	3.8 Meteorology and Air Quality Monitoring 3.8.2 Air Quality Monitoring Appendix L
Eagle Gold Project Water License QZ14-041-01 Quartz Mining License QML-0011 2021 Annual Report	11-Apr-22	3.8 Meteorology and Air Quality Monitoring 3.8.2 Air Quality Monitoring
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - August 2020	05-Oct-20	6.2 Air Quality Data Collection Appendix E

Table 4 Air Quality Documents Reviewed

Document	Version Reviewed	Sections Applicable to Operations Phase
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - November 2020	31-Dec-20	6.2 Air Quality Data Collection Appendix D
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - February 2021	03-Apr-21	6.2 Air Quality Data Collection Appendix E
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - April 2021	01-Jun-21	6.2 Air Quality Data Collection Appendix E
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - July 2021	31-Aug-21	6.2 Air Quality Data Collection Appendix D
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - November 2021	02-Jan-22	6.2 Air Quality Data Collection Appendix D
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - December 2021	30-Jan-22	6.2 Air Quality Data Collection Appendix D
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report – January 2022	02-Mar-22	6.2 Air Quality Data Collection Appendix E
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report -April 2022	02-Jun-22	6.2 Air Quality Data Collection Appendix D

In addition, the following references were used as part of the Audit:

- British Columbia Ministry of Environment and Climate Change Strategy (BC ENV) British Columbia Field Sampling Manual – Part A: Quality Control and Quality Assurance and Part B: Air and Air Emission Testing (2013, 2020a)
- Canadian Council of Ministers of the Environment (CCME) Ambient Air Monitoring and Quality Assurance/Quality Control Guidelines (2019a)

2.2.2 Monitoring Program Implementations and Data QA/QC

Table 5 shows the locations of the air monitoring equipment deployed in the Project site as documented in the EMSAMP, 2020 annual report, and 2021 annual report.

Table 5 Locations of the Air Quality Monitoring Stations Reported in the 2020 and 2021 Annual Reports

Type	Name		NAD83 UTM Coordinates[1]			2020	2021
			m East	m North	Zone		
Continuous	EBAM (TSP, PM_{10}, $PM_{2.5}$)[2]		458,237	7,101,021	8V	✓	✓
	Hi-Vol/Partisol[3]					✓	✓
Dustfall and Passive Air Sampling System (PASS)[4]	Dustfall	PASS					
	D1	AQ1	463,559	7,100,818	8V	✓	✓
	D2	AQ2	—	—	8V	Pre-2020	
	D2B	AQ2B	458,254	7,100,976	8V	✓	✓
	D3	AQ3	460,583	7,099,088	8V	✓	✓
	D4	AQ4	458,436	7,097,951	8V	Pre-2020	
	D4B	AQ4B	458,290	7,097,734	8V	✓	✓
	D5	AQ5	458,290	7,097,734	8V	Pre-2020	
	D5B	AQ5B	457,864	7,095,942	8V	✓	✓

NOTES:

1 Universal Transverse Mercator (UTM), North American Datum 1983 (NAD83) coordinates reported in the 2020 and 2021 annual reports.

2 Environmental Beta-Attenuation Particulate Monitor (EBAM) stations measuring the ambient air for concentrations of total suspended particulates (TSP), coarse particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$)

3 High volume (Hi-Vol) station to collect 24-hour samples of TSP. Replaced by Partisol 2000i Air Sampler in May 2020.

4 Certain stations were relocated/renamed (denoted as a "B" station) as the monitoring program evolved. Station AQ4/D4 was decommissioned July 1, 2020. Station AQ5/D5 was renamed to AQ4B/D4B July 1, 2020. Station AQ5B/D5B was commissioned July 1, 2020.

2.2.2.1 Continuous Particulate Monitoring

There are three Environmental Beta-Attenuation Particulate Monitor (EBAM) stations measuring the ambient air for concentrations of total suspended particulates (TSP), coarse particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$) near the Camp meteorology station. These stations were established in 2018 and collect concentration data and uploads it to a cloud-based server and is accessed remotely for analyses of the results.

A high volume (Hi-Vol) ambient air quality monitoring station was installed with the EBAM station on May 21, 2020 to collect a 24-hour sample of TSP every six days. The samples were sent for laboratory analyses to measure the mass of TSP and the concentration of metals in the particulates on the filter

media. Specifically, the laboratory reports the 24-hour concentration of total arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), nickel (Ni), Zinc (Zn), and acid extractible mercury (Hg).

It is unclear between the EMSAMP and the annual reports if the Hi-Vol station was replaced by a Partisol 2000i Air Sampler or if the terminology is interchangeable. It is recommended to provide a clear indication of the history of this type of sampling with what equipment was deployed and when as well as the current equipment deployed at the site in the EMSAMP.

2.2.2.2 Dustfall Stations

Five dustfall stations were distributed within the Project area. These samples passively collect the particulates in the air using an open top container with a known surface area which is collected after approximately 30 days of exposure to the ambient air. These samples are sent to laboratory to determine the deposition of particulates at the sampling site. Once each quarter (approximately every 91 days) the dust fall sample is sent to the laboratory to measure the amounts of metals in the particulate.

The original D2 dustfall site was relocated due to construction activities at the D2B site. The original D4 station was not installed in the best location, so it was decommissioned in June 2020 and replaced by the D5 station, which was then renamed to D4B as of June 2020. A new dustfall station D5B was subsequently installed in July 2020. These relocations (to make five total locations) were done to better meet the intent of the EMSAMP and the Project Air Emissions Permit 60-600.

2.2.2.3 Passive Monitoring

Passive Air Sampling System (PASS) stations were co-located with the dustfall stations. Samplers are deployed with a diffusive barrier and a reactive media to collect ambient air for sulphur dioxide (SO_2), nitrogen dioxide (NO_2), and ammonia (NH_3). The samplers are exposed for a nominal 30-day period and sent to the laboratory for analyses. This provides 30-day average concentrations of SO_2, NO_2, and NH_3 at the monitoring locations. This type of sampling technology is a cost-efficient method to determine the presence of these chemical species at different areas of the Project and the exposure amounts. The technology is not necessarily precise enough to be used to determine regulatory compliance but can indicate if more refined monitoring technology is required.

2.2.2.4 Reporting

The EBAM stations are continuously collecting data which is uploaded to a cloud-based server and is accessible by authorized VGC personnel to view the data in real time. Two web cameras are used at the site to provide a qualitative record of the current ambient air quality at the EBAM stations. Designated VGC personnel automatically receive a daily report showing the monitoring data for the last 24-hour period.

The results from the Hi-Vol station, dustfall samples, and PASS samples are processed monthly through the laboratory and the results are available to designated VGC personnel. These data are summarized with the EBAM data every quarter (three months) and a quarterly report is sent internally to designated VGC staff.

An annual report is produced to summarize the EBAM, Hi-Vol, dustfall, and PASS data from the calendar year. These data are compared to the Yukon Ambient Air Quality Standards (Yukon DoE 2019) or other relevant criteria.

2.2.3 Reporting Adequacy, Consistency with Requirements, and Recommendations

The air quality data are summarized in the 2020 and 2021 annual reports for each of the air quality monitoring technologies used at the Project. For the EBAM stations and Hi-Vol sampler there is minimal information available to validate the methodologies to verify that the 1-hour, 24-hour, and annual averages are processed according to acceptable quality standards like the British Columbia Ministry of Environment and Climate Change Strategy (BC ENV) British Columbia Field Sampling Manual – Part A: Quality Control and Quality Assurance and Part B: Air and Air Emission Testing (2013, 2020a) and the Canadian Council of Ministers of the Environment (CCME) Ambient Air Monitoring and Quality Assurance/Quality Control Guidelines (2019a). Information regarding the maintenance and calibrations completed and how often that they are completed was not reviewed as part of this audit. Like the meteorology stations, the site documentation and documented quality management for the air quality stations should be referenced within the annual report and EMSAMP and routinely updated with changes to equipment or locations. There should also be a contingency plan in place to have spare parts or a stand-by EBAM sampler should one of the three stations experiences damage or require unanticipated maintenance to maintain continuous monitoring.

Unlike the meteorology annual reporting the air quality sampling results are all summarized within the body of the report. The 2020 annual report has a separate appendix which essentially echoes the tables from the report and does not provide any additional analyses, such as trends and relationship between results and wind conditions or mining activities; thus there was no need for an appendix for the 2021 report.

The data analyses includes some negative values which according to the CCME Ambient Air Monitoring and Quality Assurance/Quality Control Guidelines (2019a) should not be used for averaging periods greater than 1-hour. If the 1-hour average is negative it should be recorded as zero for the 24-hour and annual averaging as per this guidance. The CCME Guidance Document on Achievement Determination for the Canadian Ambient Air Quality Standards for Fine Particulate Matter and Ozone (CCME 2012) also provide some guidance on the calculation and data verification of particulate matter data that could be implemented. Although the Canadian Ambient Air Quality Standards (CAAQS) are only intended for air shed management and not for regulatory compliance they can be a useful tool in the management of the regional air shed (CCME 2019b). Many jurisdictions in Canada are either adopting the CAAQS as part of their provincial or territorial air quality criteria or are aligning them to be like the CAAQS (BC ENV 2020b, 2021; NWT ENR 2014; ON MoE 2020; Yukon DoE 2019).

Based on the material reviewed for the audit, it is unclear for the PASS and dustfall monitoring that common quality assurance and control methods are in place like deploying duplicate PASS sample media or dustfall containers at the sites and using trip blanks during the sample deployment and retrieval. These sites should be similarly documented with heights to the PASS samplers and top of the dustfall containers in addition to the typical site information common to the meteorology stations with pictures at the site.

Every quarter the dustfall samples are analyzed by the laboratory for metals content in the particulate matter collected but there is no associated summary of those results in the annual reports. In addition, the annual report did not have the laboratory reports attached as an appendix to the report. The monthly reports that were reviewed contained the laboratory reports.

The monthly reports reviewed were similar in content to the data summaries in the annual report, and they were just specific to the monthly monitoring period. The monthly reports mainly summarized the monitoring data for that period and identified any potential high concentrations and other issues that may have occurred during the monitoring period. No daily reports were supplied or reviewed as part of this audit. Table 6 summarizes consistency with requirements gaps and/or deficiencies for the air quality monitoring program and provides recommendations for improvement.

Table 6 Air Quality Monitoring Program Consistency with requirements and Recommendations

Consistency with requirements Gaps and/or Deficiencies	Recommendations
The air quality data quality management process is unclear	• Reference industry standards followed for data quality management in the next annual report and the EMSAMP.
Spare parts for the air quality stations should be readily available at the Eagle Gold site	• Keep spare parts for the air quality monitoring stations on-site for rapid deployment should sensors/equipment begin to fail, or data gaps are noted.
The site documentation for each air quality monitoring site should be collected and documented.	• For each air quality monitoring station, information should be compiled for its location, list of instrumentation, sensor height above ground, description of surrounding ground over, description of potential biases, photos in each of the four cardinal directions.
Records of maintenance activities	
Annual report was missing the results from the particulate matter metals analyses	• Include a summary of the quarterly results for the particulate matter metals analyses in the subsequent annual reports.
Annual report did not include the laboratory reports	• Include the air quality laboratory reports as appendices to the subsequent annual reports.

3 Water Resources

3.1 Surface Water Hydrology

3.1.1 Documents Reviewed

Documents shown in Table 7 were reviewed for the surface water hydrology section of the audit:

Table 7 Documents Reviewed – Surface Water Hydrology

Document	Version Reviewed	Sections Applicable to Operations Phase
Environmental Monitoring, Surveillance, and Adaptive Management Plan (EMSAMP)	2020-01	2.0 – Surface Water Hydrology
Water Licence QZ14-041-01 Quartz Mining License QML-0011 2020 Annual Report	N/A	2.1.1 – Summary of Construction Activities 3.1 – Surface Water Hydrology Appendix E – Streamflow Monitoring Report – 2020 Update
Water Licence QZ14-041-01 Quartz Mining License QML-0011 2021 Annual Report	N/A	2.1.1 – Summary of Construction Activities 3.1 – Surface Water Hydrology Appendix C – Eagle Gold Project – 2021 Streamflow Monitoring Report
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - August 2020	05-Oct-20	2.0 Surface Water Hydrology
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - November 2020	31-Dec-20	2.0 Surface Water Hydrology
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - February 2021	03-Apr-21	2.0 Surface Water Hydrology
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - April 2021	01-Jun-21	2.0 Surface Water Hydrology
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - July 2021	31-Aug-21	2.0 Surface Water Hydrology
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - November 2021	02-Jan-22	2.0 Surface Water Hydrology
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - December 2021	30-Jan-22	2.0 Surface Water Hydrology
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report – January 2022	02-Mar-22	2.0 Surface Water Hydrology
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report -April 2022	02-Jun-22	2.0 Surface Water Hydrology
Eagle Gold Project Water Management Plan (WMP)	2020-01	All

3.1.2 Monitoring Program Implementation and Data QA/QC

Table 8 summarizes the consistency with monitoring requirements for surface water hydrology during the operations phase as outlined in the EMSAMP. Table 9 summarizes the consistency with requirements performed at each EMSAMP (version 2020-01) monitoring site.

Table 8 Surface Water Hydrology Consistency with EMSAMP (version 2020-01) Requirements

Category	Consistency Criteria	Criteria Description
1. Field Program	1A: Frequency	Monitoring was performed at the prescribed frequency (station-specific).
	1B: Tasks	Required tasks were completed at each site visit (e.g., collect data, perform routine maintenance, obtain discharge measurement)
2. Analysis	2A: Rating Curve	For automated stations, a rating curve has been (or is being) developed in accordance with standard industry practices and EMSAMP.
	2B: Streamflow Record	For automated stations, a continuous streamflow record has been generated using continuous stage record and rating curve or other methods. For manual stations, discharges and/or water levels have been summarized.
	2C: QA/QC	QA/QC has been performed in accordance with standard industry practices and EMSAMP.
3. Reporting and Adaptive Management	3A: Reporting	Reporting covering/discussing the station was submitted at the prescribed frequency.
	3B: Exceedance Check/Comment	The results were compared to the applicable exceedance thresholds and an evaluation was formally made.
	3C: Response to Exceedance(s)	If an exceedance occurred, the appropriate adaptive management response was performed.

Table 9 Surface Water Hydrology Consistency with Requirements – EMSAMP 2020-01

Station	Location Description	Consistency Criteria							
		1. Field Program		2. Analysis [1]			3. Reporting and Adaptive Management [1]		
		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting	3B: Check for Exceedance	3C: Response to Exceedance(s)
W1[a]	Dublin Gulch above Stewart	Compliant. Monthly and automated monitoring documented during applicable periods.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station. VGC communication outside of reporting (personal communication, November 21, 2022) indicated these tasks are documented in field notes (not provided for review).	Compliant. Rating curve developed.	Compliant. Continuous flow record documented.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Compliant. Included in both annual and monthly reports	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.
W4[a]	Haggart Creek below Dublin	Compliant. Monthly and automated monitoring documented during applicable periods.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	Compliant. Rating curve developed.	Compliant. Continuous flow record documented.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Compliant. Included in both annual and monthly reports	Compliant. Exceedance check formally documented.	Compliant. Appropriate responses formally documented.
W5[a]	Haggart Creek above Lynx Creek	Compliant. Monthly and automated monitoring documented during applicable periods.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	Compliant. Rating curve developed.	Compliant. Continuous flow record documented.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Compliant. Included in both annual and monthly reports	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.
W6[a]	Lynx Creek above Haggart Creek	Compliant. Monthly and automated monitoring documented during applicable periods.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	Compliant. Rating curve developed.	Compliant. Continuous flow record documented.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Compliant. Included in both annual and monthly reports	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.
W20[b]	Bawn Boy Gulch	Compliant. Monthly manual monitoring documented.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	N/A. Rating curve not required for monthly manual measurement stations.	Compliant. Manual measurements have been summarized.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Compliant. Included in both annual and monthly reports	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.
W21[a]	Dublin Gulch at Mouth	Compliant. Monthly and automated monitoring documented during applicable periods.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	Compliant. Rating curve developed.	Compliant. Continuous flow record documented.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Compliant. Included in both annual and monthly reports	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.

Table 9 Surface Water Hydrology Consistency with Requirements – EMSAMP 2020-01

Station	Location Description	Consistency Criteria							
		1. Field Program		2. Analysis [1]			3. Reporting and Adaptive Management [1]		
		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting	3B: Check for Exceedance	3C: Response to Exceedance(s)
W22[a]	Haggart Creek above Project Influence	Compliant. Monthly and automated monitoring documented during applicable periods.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	Compliant. Rating curve developed.	Compliant. Continuous flow record documented.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Compliant. Included in both annual and monthly reports	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.
W23[b]	Haggart Creek below Lynx Creek	Compliant. Monthly manual monitoring documented.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	N/A. Rating curve not required for monthly manual measurement stations.	Compliant. Manual measurements have been summarized.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Compliant. Included in both annual and monthly reports	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.
W26[a]	Stewart Gulch	Compliant. Monthly and automated monitoring documented during applicable periods.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	N/A. Parshall flume installed.	Compliant. Continuous flow record documented.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Compliant. Included in both annual and monthly reports	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.
W27[a]	Eagle Creek near Camp below Eagle Creek Pond	Compliant. Monthly and automated monitoring documented during applicable periods.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	N/A. Parshall flume installed.	Compliant. Continuous flow record documented.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Compliant. Included in both annual and monthly reports	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.
W29[b]	Haggart Creek below Eagle Creek and Platinum Gulch	Compliant. Monthly manual monitoring documented.	N/A. Channel instabilities have led to decommissioning of the station; use of W99 as a surrogate.	N/A. Rating curve not required for monthly manual measurement stations.	Compliant. Manual measurements have been summarized.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Compliant. Included in both annual and monthly reports	Compliant. Exceedance check formally documented (through W99).	Compliant. Appropriate responses formally documented (through W99).
W39[c]	Haggart Creek above South McQuesten River	Partial consistency with requirements. Quarterly manual monitoring documented except for Q3 2021.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	N/A. Rating curve not required for quarterly manual measurement stations.	Partial consistency with requirements. Quarterly manual flows documented except for Q3 2021.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Compliant. Included in both annual and monthly reports	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.
W45[a]	Eagle Creek above Haggart Creek	Compliant. Monthly manual monitoring documented.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	Partial Consistency with requirements. Range in flow measurements to date not sufficient for production of rating curve.	Not Compliant. Continuous flow record has not been documented.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Compliant. Included in both annual and monthly reports	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.

Table 9 Surface Water Hydrology Consistency with Requirements – EMSAMP 2020-01

Station	Location Description	Consistency Criteria							
		1. Field Program		2. Analysis [1]			3. Reporting and Adaptive Management [1]		
		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting	3B: Check for Exceedance	3C: Response to Exceedance(s)
W49[c]	South McQuesten River below Haggart Creek	Partial consistency with requirements. Quarterly manual monitoring documented except for Q1, Q3, Q4 in 2021.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	N/A. Rating curve not required for quarterly manual measurement stations.	Partial consistency with requirements. Quarterly manual flows documented except for Q1, Q3, Q4 in 2021.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Compliant. Included in both annual and monthly reports	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.
W99[a]	Haggart Creek above 15 Pup	Compliant. Monthly and automated monitoring documented during applicable periods.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	Compliant. Rating curve developed.	Compliant. Continuous flow record documented.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Compliant. Included in both annual and monthly reports	Compliant. Exceedance check formally documented.	Compliant. Appropriate responses formally documented.
ADR Pad Ditch[f]	ADR Pad Ditch Outlet	Compliant. Documented as having no flow in monthly reports.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	N/A. Rating curve not required for manual measurement stations.	Compliant. Documented as having no flow in monthly reports.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Partial Consistency with requirements. Not included in annual reports; sometimes included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.
CS-07[e]	Sediment Basin - below Ice Rich Storage Area	Reports reviewed do not consistently address/discuss this station. Compliance cannot be determined using reviewed reports. VGC communication outside of reporting (personal communication, November 21, 2022), indicated the site was not active, suggesting EMSAMP requirements not applicable.							
EPS[b]	Eagle Pup WRSA Seepage	Reports reviewed do not consistently address/discuss this station. Compliance cannot be determined using reviewed reports. VGC communication outside of reporting (personal communication, November 21, 2022), indicated the site was not active, suggesting EMSAMP requirements not applicable.							
FT[e]	Mine Water Treatment Plant Finishing Tank	Reports reviewed do not consistently address/discuss this station. Compliance cannot be determined using reviewed reports. VGC communication outside of reporting (personal communication, November 21, 2022), indicated the site was not active, suggesting EMSAMP requirements not applicable.							
HLFUMV[a]	Heap Leach Facility Underdrain Monitoring Vault	Partial Consistency with requirements. Manual measurements not documented in all months; automated data not documented in reviewed reports.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	N/A. Rating curve for not applicable to piped system.	Not Compliant. Continuous flow record has not been documented. VGC communication outside of reporting (personal communication, November 21, 2022) indicated a continuous record exists (not provided for review).	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Partial Consistency with requirements. Not included in annual reports; sometimes included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.

Table 9 Surface Water Hydrology Consistency with Requirements – EMSAMP 2020-01

Station	Location Description	Consistency Criteria							
		1. Field Program		2. Analysis [1]			3. Reporting and Adaptive Management [1]		
		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting	3B: Check for Exceedance	3C: Response to Exceedance(s)
LDSPI[e]	Lower Dublin South Pond Inflow	Partial Consistency with requirements. Appendix E in 2020 and Appendix C in 2021 note that PDI + PGS + EPS = LDSPI, but LDSPI not reported directly and flow measurements at PDI, PGS, and EPS obtained at different times (complicating calculation).	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	Not Compliant. Rating curve for automated monitoring not documented.	Not Compliant. Continuous flow record has not been documented.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Partial Consistency with requirements. Included in annual reports; not included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.
LDSP[e]	Lower Dublin South Pond Outflow	Partial Consistency with requirements. Spot flow measurements provided; continuous/automated data not documented.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	Not Compliant. Rating curve for automated monitoring not documented.	Not Compliant. Continuous flow record has not been documented.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Partial Consistency with requirements. Not included in annual reports; sometimes included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.
LDSP-UND[b]	LDSP Underdrain Outflow	Compliant. Monthly manual monitoring documented.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	N/A. Rating curve not required for manual measurement stations.	Compliant. Monthly manual monitoring documented.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Partial Consistency with requirements. Not always included in monthly reports.	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.
MWTP[e]	Mine Water Treatment Plant	Reports reviewed do not consistently address/discuss this station. Compliance cannot be determined using reviewed reports. VGC communication outside of reporting (personal communication, November 21, 2022), indicated the site was not active, suggesting EMSAMP requirements not applicable.							
OPP[h]	Open Pit Pond	Reports reviewed do not consistently address/discuss this station. Compliance cannot be determined using reviewed reports. VGC communication outside of reporting (personal communication, November 21, 2022), indicated the site was not active, suggesting EMSAMP requirements not applicable.							
OPPO[b]	Open Pit Pond Overflow	Reports reviewed do not consistently address/discuss this station. Compliance cannot be determined using reviewed reports. VGC communication outside of reporting (personal communication, November 21, 2022), indicated the site was not active, suggesting EMSAMP requirements not applicable.							
PGS[b]	Platinum Gulch WRSA Seepage	Partial Consistency with requirements. Sometimes documented in monthly reports.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	N/A. Rating curve not required for manual measurement stations.	Partial Consistency with requirements. Sometimes documented in monthly reports.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Compliant. Included in both annual and monthly reports	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.
PDI & PG PTS[b,g]	Platinum Gulch Ditch into Lower Dublin South Pond (Ditch/Pipe A; PG Passive Treatment System)	Partial Consistency with requirements. Sometimes documented in monthly reports.	Partial Consistency with requirements. Monitoring visit tasks outlined in EMSAMP Section 2.3.1 not specifically documented for the station.	N/A. Rating curve not required for manual measurement stations.	Partial Consistency with requirements. Sometimes documented in monthly reports.	Partial Consistency with requirements. General QA/QC procedures outlined; not documented on a site-specific basis.	Compliant. Included in both annual and monthly reports	N/A. Not listed as requiring adaptive management check in EMSAMP.	N/A. Not listed as requiring adaptive management check in EMSAMP.

Table 9 Surface Water Hydrology Consistency with Requirements – EMSAMP 2020-01

Station	Location Description	Consistency Criteria							
		1. Field Program		2. Analysis [1]			3. Reporting and Adaptive Management [1]		
		1A: Frequency	1B: Tasks	2A: Rating Curve	2B: Streamflow Record	2C: QA/QC	3A: Reporting	3B: Check for Exceedance	3C: Response to Exceedance(s)
PS[d]	Open Pit Sump	Reports reviewed do not consistently address/discuss this station. Compliance cannot be determined using reviewed reports. VGC communication outside of reporting (personal communication, November 21, 2022), indicated the site was not active, suggesting EMSAMP requirements not applicable.							

NOTES:

[1] Consistency with requirements for analysis and reporting requirements could not be checked for consistency with requirements for 2022, as the monthly reports (all that is available for 2022) do not provide rating curves, flow records, QA/QC, monitoring summaries, or adaptive management checks

[a] Automated monitoring. Manual monitoring weekly during freshet until loggers installed and monthly during winter.

[b] Manual monitoring on a monthly basis.

[c] Manual monitoring on a quarterly basis.

[d] Automated monitoring when dewatering.

[e] Automated monitoring when discharging.

[f] Manual monitoring on a daily basis when discharging.

[g] Platinum ditch intake converted to Platinum Gulch PTS when PG WRSA is progressively reclaimed.

[h] Quarterly manual water level measurement during active closure.

3.1.3 Water Management Plan

The Licensee's consistency with requirements of the WMP was evaluated. The WMP is an approved plan with design drawings sealed by a professional engineer licensed to practice in the Yukon.

The consistency with requirements evaluation for the WMP checked for completion, and for effectiveness. Consistency with completion requirements occurred if the water management infrastructure item was documented as installed by the required time (e.g., prior to operation). Consistency with requirements with effectiveness occurred if water quality did not exceed the Effluent Quality Standards during operations (Table 6.1-1 in WMP), and if regular inspection (as required) was documented for water management infrastructure/measures. Table 10 summarizes the main water management infrastructure and provides an evaluation of consistency with requirements based on the reviewed reporting.
Water quality implications (for effectiveness consistency with requirements) are discussed in Section 3.2 (Surface Water Quality).

Table 10 Water Management Plan Implementation

Water Management Infrastructure	Consistency with Requirements
LDSP	Compliant. Previous VGC communication outside of reviewed reporting (personal communication, 29 October 2020) indicated as-built report submitted in 2017 annual report (prior to this audit period). The 2017 completion date was not documented in reviewed reports, although maintenance and minor modifications during this audit period are documented in reviewed reports.
Ditch A	Compliant. VGC communication outside of reviewed reporting (personal communication, 29 October 2020) indicated ditch as-built report provided to EMR as appendix to 2019 Annual Report (prior to this audit period). Ditch A maintenance and improvement activities during this audit period documented in reviewed reports.
Ditch B	Compliant. VGC communication outside of reporting (personal communication, October 29, 2020) indicated ditch as-built report provided to EMR as appendix to 2019 Annual Report (prior to this audit period). Ditch B maintenance and improvement activities during this audit period documented in reviewed reports.
Ditch C	Compliant. Excavation, rip rap armoring completed in April 2019, prior to beginning of operation (August 31, 2020).
Culverts	Partial consistency with requirements. In reviewed reporting, installation of culverts has been documented, however it is unclear whether the installed culverts include the nine named culverts in the WMP, and/or and which additional culverts have been installed. Inventory of culvert locations, characteristics, and completion dates not provided in reviewed reports.
Unnamed Ditches	Compliant. Unnamed ditches (roadside, collector) documented as part of the erosion and sediment control BMP implementations in reviewed reporting.
WRSA Rock Drains	Compliant. Ongoing construction of PG WRSA rock drain and EP WRSA rock drain documented in reviewed reporting.
Events Pond	Compliant. VGC communication outside of reporting (personal communication, October 29, 2020) indicated as-built documents provided to YWB as appendix to 2019 Annual Report (prior to this audit period). Events pond water transfers documented in reviewed reporting.

Table 10 Water Management Plan Implementation

Water Management Infrastructure	Consistency with Requirements
MWTP	Compliant. Initiation of MWTP construction documented in reviewed reports.
Erosion and Sediment Control BMP's	Compliant. Erosion and sediment control BMP implementations documented in reviewed reporting.

3.1.4 Reporting Adequacy, Consistency with Requirements and Recommendations

Overall, consistency with requirements results were a mix of compliant, partial consistency with requirements, and not consistent (see Table 9 and Table 10,). We note that the surface water hydrology consistency with requirements levels were notably improved from the previous environmental audit (Stantec 2020).

Several non-consistency with requirements or partial consistency with requirements themes were observed throughout the current audit period. Table 11 summarizes the \consistency, partial consistency, or non-consistency with requirements, and provides recommendations.

Table 11 Surface Water Hydrology Consistency with Requirements and Recommendations

Consistency with requirements Gap and/or Deficiency	Recommendations
EMSAMPs reference RISC (2009) as the document which was used to develop hydrology data collection. This document is out of date; Version 2.0 of that document was published in 2018.	The EMSAMP surface water hydrology program should be updated to reflect Version 2 of the hydrometric standards (RISC 2018).
The annual reports and the monthly reports do not consistently document the monitoring activities or status of each of the 29 surface water hydrology stations. Consistency with requirements can not always be determined.	Recommend including the full list of 29 sites from the EMSAMP in each of the annual and monthly reports, and summarizing the current status of each (e.g., automated monitoring ongoing, not active, not discharging, manual flow measurement collected this month). Consistency with requirements can not be determined if status is not documented.
For automated stations, winter and freshet time periods were not clearly delineated as to allow for demonstration of consistency with requirements as outlined in the EMSAMPs.	Recommend one of two changes: 1 Document approximate dates of freshet start and logger deployment each year in the monthly and annual reports to delineate winter, freshet, and open water periods (each of which have different monitoring requirements), or 2 Update the EMSAMP requirements for the freshet period to better acknowledge i) the subjectivity of determining freshet period and/or ii) the difficulty of obtaining flow measurements during freshet flows.

Table 11 Surface Water Hydrology Consistency with Requirements and Recommendations

Consistency with requirements Gap and/or Deficiency	Recommendations
The EMSAMPs list general tasks to be completed at each field visit and during QA/QC (Section 2.3.1). Completion of these tasks, including grading of each hydrometric station, was discussed in general in annual reports but documentation was not provided for audit review, for each station per requirements of RISC (2018).	Provide summary information regarding the completion of the tasks and QA/QC steps associated with each field visit in the annual reports, and/or indicate (in reporting) that these data have been documented internally and are available upon request. This could be done through "station datasheets" for each of the stations, with a full station history log. Formal grading of each station (per RISC 2018) would be a good addition demonstrating QA/QC completion.
QA/QC related to field and analytical tasks (e.g., benchmark surveys, station condition, field processes, photos, equipment calibration) were not documented.	Recommend that QA/QC processes in accordance with Section 2.3.1 in EMSAMP 2020-01, EC 2001, RISC 2018 are documented and provided in reporting.

3.2 Surface Water Quality

3.2.1 Documents Reviewed

Documents shown in Table 12 were reviewed for the surface water quality monitoring section of the audit. In addition, the monitoring program was reviewed with respect to procedures outlined in the British Columbia Field Sampling Manual as per the EMSAMP (BC ENV 2013), and the Guidance Document for the Sampling and Analysis of Metal Mining Effluents (EC 2001).

Table 12 Surface Water Quality Documents Reviewed

Document	Version Reviewed	Sections Applicable to Operations Phase
Environmental Monitoring, Surveillance, and Adaptive Management Plan (EMSAMP)	2020-01	3.0 – Surface Water Quality
Eagle Gold Project Water Management Plan (WMP)	2020-01	3.4.2 – Surface Water Quality 4.3 – Discharge Protocols 6.0 – Water Management Implementation
Water Licence QZ14-041-01 (Amendment 1, August 22, 2019)	22-Aug-19	Part F – EQS
Water Licence QZ14-041-01 Quartz Mining License QML-0011 2020 Annual Report	N/A	3.2 – Surface Water Quality
Water Licence QZ14-041-01 Quartz Mining License QML-0011 2021 Annual Report	N/A	3.2 – Surface Water Quality
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - August 2020	05-Oct-20	3.0 – Surface Water Quality
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - November 2020	31-Dec-20	3.0 – Surface Water Quality

Table 12 Surface Water Quality Documents Reviewed

Document	Version Reviewed	Sections Applicable to Operations Phase
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - February 2021	03-Apr-21	3.0 – Surface Water Quality
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - April 2021	01-Jun-21	3.0 – Surface Water Quality
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - July 2021	31-Aug-21	3.0 – Surface Water Quality
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - November 2021	02-Jan-22	3.0 – Surface Water Quality
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - December 2021	30-Jan-22	3.0 – Surface Water Quality
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report – January 2022	02-Mar-22	3.0 – Surface Water Quality
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report -April 2022	02-Jun-22	3.0 – Surface Water Quality

3.2.2 Monitoring Program Implementation

The surface water quality monitoring program was designed to meet the following objectives during operations as described in EMSAMP:

- *Continue to collect water quality data in the receiving environment at stations upstream and downstream of Project influences.*
- *Collect water quality data to verify compliance with the Effluent Quality Standards (EQSs) and monitor receiving environment Water Quality Objectives (WQOs) specified in QZ14-041-1.*
- *Provide a continuous water quality database to support adaptive management strategies to meet water quality compliance criteria and protect aquatic life.*

The following are key watersheds of the surface water monitoring program:

- Haggart Creek from below the confluence of Fisher Gulch to immediately downstream of the confluence with Lynx Creek;
- Dublin Gulch from Bawn Boy Gulch to the confluence with Haggart Creek;
- Eagle Creek;
- Lynx Creek; and
- Lower Haggart Creek and the South McQuesten River at the confluence with Haggart Creek

The surface water quality monitoring program is implemented according to the objectives stated in the EMSAMP. A review comparing reported parameters measured and detection limits to those listed in the EMSAMP was completed on each year (2020, 2021, and 2022). As ALS reports are not included in the annual report, one monthly report from each year for 2020, 2021, and 2022 were selected as a sample to represent the year. Results are listed in Table 13.

Table 13 Comparison of Surface Water Quality Parameters and Detection Limits to EMSAMP

Parameter		Unit	EMSAMP Detection Limit	2020 Annual Report[1] (ALS reported detection limit)	2021 Annual Report[2] (ALS reported detection limit)	2022 Monthly Report[3] (ALS reported detection limit)
Physical Parameters	Specific Conductance	µS/cm	2.0	✓✓	✓✓	✓✓
	Hardness (as $CaCO_3$)	mg/L	0.5	✓✗(0.6)	✓✗(0.6)	✓✗(0.6)
	pH	pH unit	0.1	✓✓	✓✓	✓✓
	TSS	mg/L	3.0	✓✓	✓✓	✓✓
	TDS	mg/L	10	✓✓	✓✓	✓✓
	Turbidity	NTU	0.1	✓✓	✓✓	✓✓
Organic/ Inorganic Carbon	DOC	mg/L	0.5	✓✓	✓✓	✓✓
	TOC	mg/L	0.5	✓✓	✓✓	✓✓
Major Anions and Nutrients	Alkalinity, Total (as $CaCO_3$)	mg/L	2	✓✓	✓✓	✓✓
	Ammonia as N	mg/L	0.005	✓✓	✓✓	✓✓
	Bromide	mg/L	0.05	✓✓	✓✓	✓✓
	Chloride	mg/L	0.5	✓✓	✓✓	✓✓
	Fluoride	mg/L	0.02	✓✓	✓✓	✓✓
	Nitrate (as N)	mg/L	0.005	✓✓	✓✓	✓✓
	Nitrite (as N)	mg/L	0.001	✓✓	✓✓	✓✓
	TKN	mg/L	0.05	✓✓	✓✓	✓✓
	Total Nitrogen	mg/L	0.0025	✓✓	✓✓	✓✓
	Ortho Phosphate as P	mg/L	0.001	✓✓	✓✓	✓✓
	Total Dissolved Phosphate as P	mg/L	0.002	✓✓	✓✓	✓✓
	Total Phosphate as P	mg/L	0.002	✓✓	✓✓	✓✓
	Sulphate	mg/L	0.5	✓✓	✓✓	✓✓

Table 13 Comparison of Surface Water Quality Parameters and Detection Limits to EMSAMP

Parameter		Unit	EMSAMP Detection Limit	2020 Annual Report[1] (ALS reported detection limit)	2021 Annual Report[2] (ALS reported detection limit)	2022 Monthly Report[3] (ALS reported detection limit)
Cyanide	Cyanide, Weak Acid Dissociable	mg/L	0.005	✓✓	✓✓	✓✓
	Cyanide, Total	mg/L	0.005	✓✓	✓✓	✓✓
	Cyanate	mg/L	0.2	✓✓	✓✓	✓✓
	Thiocyanate	mg/L	0.5	✓✓	✓✓	✓✓
Field Parameters	pH	pH unit	0.01	✓✓	✓✓	✓✓
	Temperature	°C	0.1	✓✓	✓✓	✓✓
	Conductivity	µS/cm	1	✓✓	✓✓	✓✓
	Dissolved Oxygen	mg/L	0.01	✓✓	✓✓	✓✓
Total and Dissolved Metals	Aluminum	mg/L	0.003	✓✓	✓✓	✓✓
	Antimony	mg/L	0.0001	✓✓	✓✓	✓✓
	Arsenic	mg/L	0.0001	✓✓	✓✓	✓✓
	Barium	mg/L	0.00005	✓×(0.00010)	✓×(0.00010)	✓×(0.00010)
	Beryllium	mg/L	0.0005	✓✓	✓✓	✓✓
	Bismuth	mg/L	0.0005	✓✓	✓✓	✓✓
	Boron	mg/L	0.01	✓✓	✓✓	✓✓
	Cadmium	mg/L	0.000017	✓✓	✓✓	✓✓
	Calcium	mg/L	0.05	✓✓	✓✓	✓✓
	Chromium	mg/L	0.0005	✓✓	✓✓	✓✓
	Cobalt	mg/L	0.0001	✓✓	✓✓	✓✓
	Copper	mg/L	0.0005	✓✓	✓✓	✓✓
	Iron	mg/L	0.03	✓✓	✓✓	✓✓
	Lead	mg/L	0.00005	✓✓	✓✓	✓✓
	Lithium	mg/L	0.005	✓✓	✓✓	✓✓
	Magnesium	mg/L	0.1	✓✓	✓✓	✓✓
	Manganese	mg/L	0.00005	✓×(0.00010)	✓×(0.00010)	✓×(0.00010)
	Mercury	mg/L	0.00001	✓✓	✓✓	✓✓
	Molybdenum	mg/L	0.00005	✓✓	✓✓	✓✓
	Nickel	mg/L	0.0005	✓✓	✓✓	✓✓
	Phosphorus – Total	mg/L	0.3	✓✓	✓✓	✓✓
	Potassium	mg/L	2	✓✓	✓✓	✓✓

Table 13 Comparison of Surface Water Quality Parameters and Detection Limits to EMSAMP

Parameter		Unit	EMSAMP Detection Limit	2020 Annual Report[1] (ALS reported detection limit)	2021 Annual Report[2] (ALS reported detection limit)	2022 Monthly Report[3] (ALS reported detection limit)
	Selenium	mg/L	0.001	✓✓	✓✓	✓✓
	Silicon	mg/L	0.05	✓✓	✓✓	✓✓
	Silver	mg/L	0.00001	✓✓	✓✓	✓✓
	Sodium	mg/L	2	✓✓	✓✓	✓✓
	Sulphur	mg/L	0.50	✓✓	✓✓	✓✓
	Strontium	mg/L	0.0001	✓×(0.0002)	✓×(0.0002)	✓×(0.0002)
	Thallium	mg/L	0.0001	✓✓	✓✓	✓✓
	Tin	mg/L	0.0001	✓✓	✓✓	✓✓
	Titanium	mg/L	0.01	✓✓	✓✓	✓✓
	Uranium	mg/L	0.00001	✓✓	✓✓	✓✓
	Vanadium	mg/L	0.001	✓✓	✓✓	✓✓
	Zinc	mg/L	0.003	✓✓	✓✓	✓✓

NOTES:
✓✓ Parameter sampled; detection limit is at or below applicable EMSAMP limit
✓× Parameter sampled; detection limit is above applicable EMSAMP limit
1 QZ14-041-1 Monthly Report - August 2020 was reviewed for this task as a spot check
2 QZ14-041-1 Monthly Report - April 2021 was reviewed for this task as a spot check
3 QZ14-041-1 Monthly Report - April 2022 was reviewed for this task as a spot check

3.2.3 Consistency with Requirements of the EMSAMP

The Water Management Plan 2020-01 was reviewed for alignment with the EMSAMP. Discharge protocols relating to WQOs, adaptive management thresholds (AMTs), and EQS were compared to the EMSAMP and Water Licence QZ14-041-01.

The 2020 Annual Report, 2021 Annual Report, and provided 2020, 2021 and 2022 Monthly Reports were reviewed for consistency with requirements of the EMSAMP. As described in Section 1.2 of this report, the scope of the audit including the audit of one monthly report per quarter. In this review, monitoring stations, sampling frequency, parameters analyzed, and rationale for missing data from selected monthly reports were evaluated for consistency with the EMSAMP. The results of this task are listed in Table 14. Effluent compliance points, EQS, and WQOs were described in the EMSAMP as per the Water License QZ14-041-01. Table 15 lists the threshold trigger events for surface water quality monitoring sites during operations while Table 16 describes the responses and follow up actions completed with auditor's comments on any discrepancies.

Table 14 Surface Water Quality Monitoring Program Consistency with Requirements of the EMSAMP for Selected Monthly Reports*

Site	Location Description	Sampling Frequency			Consistency Check (Y/N) with Rationale for Missing Data for Provided Monthly Reports							
		Field Measurements	Laboratory Analysis									
		pH, Temperature, Dissolved Oxygen and Specific Conductance	Analytical Suite[1]	48-Hour and 96-Hour LT50	Aug-20	Nov-20	Feb-21	Apr-21	Jul-21	Nov-21	Jan-22	Apr-22
					Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022
W1	Dublin Gulch above Stewart	M	M	-	Y	Y	Y	Y	Y	Y	Y	Y
W21	Dublin Gulch below Event Ponds	M	M	-	Y	Y	Y	Y	Y	Y	Y	Y
W4	Haggart Creek below Dublin	D, M	D[2], M[2]	-	Y	Y	Y	Y	Y	Y	Y	Y
W22	Haggart Creek above Project Influence	M	M[3]	-	Y	Y	Y	Y	Y	Y	Y	Y
W5	Haggart Creek above Lynx Creek	M	M[3]	-	Y	Y	Y	Y	Y	Y	Y	Y
W6	Lynx Creek above Haggart Creek	M	M[3]	-	Y	Y	Y	Y	Y	Y	Y	Y
W20	Bawn Boy Gulch	M	M	-	Y	Y - No Sample	Y	Y	Y	Y	Y	Y
W23	Haggart Creek below Lynx Creek	M	M[3]	-	Y	Y	Y	Y	Y	Y	Y	Y
W27	Eagle Creek near Camp below LDSP	M	M	-	Y	Y	Y - No Sample	Y	Y	Y	Y - No Sample	Y
W26	Stewart Gulch	M	M	-	Y	Y - No Sample	Y	Y	Y	Y	Y - No Sample	Y - No Sample
W29	Haggart Creek below Eagle Creek & Platinum Gulch	D, M	D[2], M[3]	-	Y	Y	Y	Y	Y	Y	Y	Y
W39	Haggart Creek above South McQuesten River	Q	Q[3]	-	Y – No Sample	Y	Y	Y	Y	Y - No Sample	Y	Y - No Sample
W45	Eagle Creek above Haggart Creek	M	M	-	Y	Y	Y	Y	Y	Y	Y	Y
W49	South McQuesten River below Haggart Creek	Q	Q[3]	-	Y - No Sample	Y	Y - No Sample	Y	Y	Y - No Sample	Y	Y - No Sample
W99	Haggart Creek above 15 Pup	M	Q[3]	-	Y	Y	Y	Y	Y	Y	Y	Y
EPS	Eagle Pup WRSA Seepage	M	M	-	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample
PDI & PG_PTS[5]	Platinum Gulch Ditch into Lower Dublin South Pond	M	M	-	Y	Y - No Sample	Y - No Sample	Y	Y	Y - No Sample	Y - No Sample	Y - No Sample
PGS	Platinum Gulch WRSA Seepage	M	M	-	Y	Y - No Sample	Y	Y	Y	Y - No Sample	Y - No Sample	Y - No Sample
PS	Open Pit Sump	M	M	-	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample
MWTP	Mine Water Treatment Plant	D	D[3]	-	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample
FT	Mine Water Treatment Plant Finishing Tank	D	D[3]	-	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample	Y - No Sample
LDSPI	Lower Dublin South Pond Inflow	D, M	D[3], M	M	Y	Y	Y	Y	Y	Y	Y	Y
LDSP	Lower Dublin South Pond Outflow	D, W	D[3], W[3,4]	Md	Y	Y - No Sample	Y - No Sample	Y - No Sample	Y	Y	Y - No Sample	Y – No Sample
CS-07	SG-G4 below Ice Rich Overburden Storage Area	Md	Md	-	N - ?	Y – No Sample	Y – No Sample	Y – No Sample	Y – No Sample	Y – No Sample	Y – No Sample	Y – No Sample
LDSP-UND	LDSP Underdrain Outflow	M	M[2]	-	Y	Y	Y	Y	Y	Y	Y	Y
HLFUMV	Heap Leach Facility Underdrain Monitoring Vault	C, D, W	D[5], M[3,4]	M	Y	Y	Y	Y	Y	Y	Y	Y
ADR Pad Ditch	ADR Pad Ditch Outlet	D, M	D[3], W[3,4]		Y – No Sample	Y – No Sample	Y – No Sample	Y – No Sample	Y – No Sample	Y – No Sample	Y – No Sample	Y – No Sample

Table 14 Surface Water Quality Monitoring Program Consistency with Requirements of the EMSAMP for Selected Monthly Reports*

NOTES:

1 Laboratory analysis includes physical parameters: pH, Specific Conductance, turbidity, TSS, TDS and hardness as well as total and dissolved organic carbon; cyanide species, major anions and nutrients (alkalinity, total nitrogen, total Kjeldahl nitrogen (TKN), ammonia-N, nitrate-N, nitrite-N, total dissolved phosphate-P, ortho-phosphate-P, sulphate, bromide, chloride, fluoride); and, total and dissolved metals (Al, Sb, As, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Hg, Ni, K, Se, Ag, Na, Sr, Tl, S U, Zn).

2 Laboratory analysis includes WAD, Total CN, Thiocyanate and Cyanate.

3 Laboratory analysis includes WAD and Total CN.

4 Calculation of un-ionized ammonia

5 Laboratory analysis only includes WAD and Total CN – no other parameters required.

C Continuous monitoring for specific conductance; D – Daily when discharging; W – Weekly when discharging; M – Monthly; Md – Monthly when discharging; Q – Quarterly

Y = Consistent with requirements

N - ? = No sample and no rationale provided in the monthly or annual reports

Y- No Sample = Consistent with reporting requirements; however, quarterly sample collected in another month, no flow, no discharge, dry conditions, frozen, not active, heavy sediment, or no safe access

* Selected Monthly Reports include August 2020, November 2020, February 2021, April 2021, July 2021, November 2021, January 2022, and April 2022

Table 15 Surface Water Quality Monitoring Program WQO Exceedance Table for Selected Monthly Reports*

Site	Site Description	Parameter in Exceedance	Thresholds/Objectives				Thresholds/Objectives Exceeded for Selected Monthly Reports							
			WQO (mg/L)	AMT T1 (mg/L)	AMT T2 (mg/L)	AMT T3 (mg/L)	Aug-20	Nov-20	Feb-21	Apr-21	Jul-21	Nov-21	Jan-22	Apr-22
							Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022
W1**	Dublin Gulch above Stewart	As (total)	0.0085	0.0064	0.0072	0.0085	WQO, AMT T3							
W21**	Dublin Gulch below Event Ponds	As (total)	0.0085	0.0064	0.0072	0.0085	WQO, AMT T3							
W4	Haggart Creek below Dublin	As (total)	0.0085	0.0064	0.0072	0.0085	WQO, AMT T3				WQO, AMT T3	WQO, AMT T3		
		Fe (total)	1.00	0.75	0.85	1.00	WQO, AMT T3				WQO, AMT T2			
W23	Haggart Creek below Lynx Creek	As (total)	0.0085	0.0064	0.0072	0.0085	WQO, AMT T1				WQO, AMT T3			
W29	Haggart Creek below Eagle Creek & Platinum Gulch	As (total)	0.0085	0.0064	0.0072	0.0085	WQO, AMT T3							
W99	Haggart Creek above 15 Pup	As (total)	0.0085	0.0064	0.0072	0.0085	WQO, AMT T2							

NOTES:
WQO = Water Quality Objective (QZ14-041-01)
AMT = Adaptive Management Threshold, T1 = Tier 1, T2 = Tier 2, T3 = Tier 3
There were no exceedances of MDMER standards or WUL EQSs.
*Selected Monthly Reports include August 2020, November 2020, February 2021, April 2021, July 2021, November 2021, January 2022, and April 2022
**AMT are not applicable to Dublin Gulch sites W1 and W21 but are included to show influence of Dublin Gulch on Haggart Creek.

Table 16 Selected Monthly Reports Surface Water Quality WQO Exceedances, Responses, and Consistency with Requirements of the EMSAMP

Date	Stations	WQOs and AMTs Exceeded	Response(s) by VGC	Follow Up Reporting by VGC	Auditor's Comments on Consistency with Requirements of the EMSAMP
August 2020	W4, W29, W99, W23	WQO and AMT T1, T2 and T3	• Additional samples were collected daily at W4 between August 3 and 18, 2020 • Additional samples were collected weekly from LDSP, W1, and W21 between August 3 and 17, 2020 • Acute lethality testing was performed on the discharged water on August 3, 2020 and yielded results that were non-acutely lethal to Rainbow Trout or *Daphnia magna.*	• A comparison trial was performed in September 2020 and included in the subsequent monthly reports. • A monthly water quality trend analysis was conducted by Lorax for the August 2020 data at Haggart Creek Stations and attached to the August 2020 Monthly Report. • A WQO Notification was sent to the Government of Yukon following this event and included notification, evaluation, and action.	• As per Section 3.6 of the EMSAMP 2020-01 notification, review, evaluation, and action for exceeding an AMT was not clear in the provided reports; however, the AMT response was provided by VGC as part of the audit review and is therefore consistent with the requirements.
July 2021	W4, W23	WQO and AMT T2 and T3	• Additional samples were collected daily at W4 between July 12 and 23, 2021. • Subsequent investigation sampling occurred in August 2021 as laboratory results were delayed. • Acute lethality testing was performed on the discharged water on July 12, 2021 and yielded results that were non-acutely lethal to Rainbow Trout or *Daphnia magna.*	• A WQO Notification was sent to the Government of Yukon following this event and included notification, evaluation, and action.	• As per Section 3.6 of the EMSAMP 2020-01 notification, review, evaluation, and action for exceeding an AMT was not clear in the provided reports; however, the AMT response was provided by VGC as part of the audit review and is therefore consistent with the requirements. • The audit included one monthly report per quarter; therefore, August 2021 Monthly Report was not reviewed.
November 2021	W4	WQO and AMT T3	• Additional sampled were collected daily at W4, W4 Mix and W99 between November 12 and 20, 2021 • Acute lethality testing was performed on the discharged water on November 3, and 12, 2021 and yielded results that were non-acutely lethal to Rainbow Trout or *Daphnia magna.*	• A WQO Notification was sent to the Government of Yukon following this event and included notification, evaluation, and action.	• As per Section 3.6 of the EMSAMP 2020-01 notification, review, evaluation, and action for exceeding an AMT was not clear in the provided reports; however, the AMT response was provided by VGC as part of the audit review and is therefore consistent with the requirements.

NOTE:
*Selected Monthly Reports include August 2020, November 2020, February 2021, April 2021, July 2021, November 2021, January 2022, and April 2022

3.2.4 Data Quality Assurance/Quality Control

2020 Annual Report

The methods and result and discussion sections of the quality assurance/quality control (QA/QC) program were adequately described and listed in the 2020 Annual Report with the exception of:

- A total of 9% of total water quality samples were QA/QC samples, which is below recommendations (>10%) as per BC ENV (2013). The 2020 Annual Report reported 28 QA/QC samples per 321 water quality samples; however, the auditor identified 30 QA/QC Samples (5 field blanks, 21 field duplicates, and 4 travel blanks) and 348 water quality samples, which also equates to 9%.
- QA/QC sample ID descriptions from Section 3.2.2 of the 2020 Annual Report and in subsequent tables and appendices are contradicting. Section 3.2.2 of the 2020 Annual Report describes QA/QC sample IDs as station number followed by "SampleID"01 for field replicates, "SampleID"02 for field (it is unclear whether *field* means field replicate or field blank; however, this was confirmed to be field blank by VGC), and "SampleID"03 for travel blanks. A fourth category, either field replicate or field blank should be included. These categories contradict with Table 3.2-2 of the 2020 Annual Report, as field blanks are represented with an "02"; in Appendix F1 field duplicates are represented as "01"; and travel blanks are not listed (Table 3.2-3 of the 2020 Annual Report).

2021 Annual Report

The methods and result and discussion sections of the QA/QC program were adequately described and listed in the 2021 Annual Report. A total of 22% of QA/QC samples were reported as collected in the 2021 Annual Report Section 3.2.4.3 (65 QA/QC samples per 303 water quality samples) which is above recommendations (>10%) as per BC ENV (2013). The auditor identified 71 QA/QC samples from Appendix D (19 field blanks, 3 travel blanks, and 49 field duplicates as opposed to 65 as reported). Appendix D mentions 46 field duplicates and Section 3.2.4.3 reports 48 field duplicates.

2020 to 2022 Monthly Reports

For all audited 2020 to 2022 monthly reports, in the report body or Appendix A, QA/QC samples are not explicitly identified, but are described in the 2020 and 2021 Annual Reports. Section 3.3.5 of the EMSAMP states QA/QC results will be reported on for each month of the sampling program.

3.2.5 Reporting Adequacy, Consistency with Requirements, and Recommendations

The 2020 Annual Report, the 2021 Annual Report, and the selected audited 2020, 2021 and 2022 Monthly Reports were reviewed for adequacy and consistency with requirements. Overall, the reporting and summarization of data collected for the surface water quality monitoring program is complete and adequate with deviations described below.

2020 Annual Report

The 2020 Annual Report adequately described and reported the operational monitoring program as described in the EMSAMP; however, some deviations and omissions were noted:

- In Tables 3.2-3 and 3.2-4, Sample IDs should be included so the reader can compare/link to laboratory certificates of analysis.
- Detection limits did not align with EMSAMP for hardness (0.6 mg/L reported and 0.5 mg/L in EMSAMP), total and dissolved barium (0.00010 mg/L reported and 0.00005 mg/L in EMSAMP), and total and dissolved strontium (0.0002 mg/L reported and 0.0001 mg/L in EMSAMP).

2021 Annual Report

The 2021 Annual Report adequately described and reported the operational monitoring program as described in the EMSAMP; however, some deviations and omissions were noted:

- In Appendix D Tables 2-2, 2-4, 2-6, 2-7, 2-8, 2-9, 2-10, and 2-11, Sample IDs should be included so the reader can compare/link to laboratory certificates of analysis.
- Detection limits did not align with EMSAMP for hardness (0.6 mg/L reported and 0.5 mg/L in EMSAMP), total and dissolved barium (0.00010 mg/L reported and 0.00005 mg/L in EMSAMP), and total and dissolved strontium (0.0002 mg/L reported and 0.0001 mg/L in EMSAMP).

2020, 2021, 2022 Selected Monthly Reports

- As per Section 3.6 of the EMSAMP 2020-01 notification, review, evaluation, and action for exceeding an AMT were partially completed. Missing:
    - Detailed AMT response following the EMSAMP methods was not clear in the reviewed Monthly Reports with AMT exceedances.
- Detection limits did not align with EMSAMP for hardness (0.6 mg/L reported and 0.5 mg/L in EMSAMP), total and dissolved barium (0.00010 mg/L reported and 0.00005 mg/L in EMSAMP), and total and dissolved strontium (0.0002 mg/L reported and 0.0001 mg/L in EMSAMP).
- Tabulated surface water quality data is recommended to be included in the monthly reports and identify the QA/QC sample types and Sample ID.
- August 2020 Monthly Report was missing COA for sample CS-07. Field parameters and flow were reported, but laboratory COA was not attached. Surface water quality data was not in provided database. Rationale for missing sample was not provided.

Recommendations to correct gaps and/or deficiencies for the surface water monitoring program are summarized in Table 17.

Table 17 Surface Water Quality Gaps Consistency with requirements and Recommendations

Consistency with Requirements Gap and/or Deficiency	Recommendations
2020 Annual Report – Section 3.2.2 QA/QC Program Sample IDs.	This was corrected in the 2021 Annual Report. Continue corrective action in future reports.
Reported surface water quality detection limits did not align with the EMSAMP for hardness (0.6 mg/L reported and 0.5 mg/L in EMSAMP), total and dissolved barium (0.00010 mg/L reported and 0.00005 mg/L in EMSAMP), and total and dissolved strontium (0.0002 mg/L reported and 0.0001 mg/L in EMSAMP).	Discuss with laboratory (e.g., ALS) to reduce detection limit for the listed parameters. If the upper detection limit is not achievable a description/rationale should be included in the report and the EMSAMP be updated. I
2021 Annual Report – QA/QC total samples not consistent in report body, tables, and appendices	Review database inputs/outputs and quality review procedures and reports.
Selected Monthly Reports – Describe QA/QC data as Section 3.3.5 of the EMSAMP states QA/QC results will be reported on for each month of the sampling program.	Include tabulated results of surface water quality samples including identifying which samples are QA/QC in monthly reports.

3.3 Groundwater Quantity and Quality

3.3.1 Documents Reviewed

Documents in Table 18 were reviewed for the groundwater quantity and quality section of the audit:

Table 18 Groundwater Quantity and Quality Documents Reviewed

Document	Version Reviewed	Sections Applicable to Operations Phase
Environmental Monitoring Surveillance and Adaptive Management Plan (EMSAMP)	2020-01	4.0 Groundwater Quantity 5.0 Groundwater Quality
Type A Water Use License QZ14-041-1 Monthly Reports, Reporting Period: August 2020 to April 2022	N/A	4.0 Groundwater Quantity and Quality; Appendix B Lab Results: Groundwater

The groundwater monitoring program audit period (August 2020 to April 2022) includes the mine's operations phase. The approved groundwater monitoring program (e.g., well locations, data collection frequency) are presented in the EMSAMP. The relevant version of the EMSAMP and groundwater monitoring programs used as the basis for the audit are presented in Table 18.

3.3.2 Monitoring Program Implementation and Data QA/QC

3.3.2.1 Groundwater Quantity

The objective of the groundwater quantity monitoring program, as presented in the EMSAMP, is to provide groundwater level measurement to monitor potential project effects on the occurrence and quantity of groundwater during mine operations and closure. The main components of the groundwater quantity program, as presented in the EMSAMP, are:

- Field program to install and maintain a network of groundwater monitoring wells at strategic locations and perform continuous and/or manual groundwater level measurement at selected wells in accordance with the monitoring schedule proposed in the EMSAMP
- Desktop assessment to compile and calibrate field groundwater level data, plot hydrographs versus time, precipitation, and temperature, and compare the hydrographs to existing baseline data
- Preparation of data summary report at the completion of construction, annually during operation, and for specific reporting periods as identified in the Reclamation and Closure Plan

As a part of the audit's effort to evaluate the implementation of the groundwater quantity monitoring program, the groundwater level records presented in the monthly reports from Q3 2020 to Q2 2022 were reviewed and compared with the applicable groundwater quantity monitoring requirements in the EMSAMP. A summary of the groundwater level monitoring program is provided in Table 20. Recommendations on the implementation of the groundwater quantity monitoring program are presented in Section 3.3.3.

Table 19 Groundwater Quantity Monitoring Program Implementation – Operations Phase

Well ID	Facility	Datalogger[1]	Groundwater Level Monitoring Frequency[2]	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Notes
BH-BGC11-73a	Open Pit	Yes	Quarterly									Decommissioned 2020
BH-BGC11-73b	Open Pit	Yes	Quarterly									Decommissioned 2020
BH-BGC11-73c	Open Pit	Yes	Quarterly									Decommissioned 2020
PZXX-OP1a/b	Open Pit	Yes	Quarterly									Installed after 2021, To be addressed in 2022 Annual Report
PZXX-OP2a/b	Open Pit	Yes	Quarterly									Installed after June 2021, To be addressed in 2022 Annual Report
PW-BGC11-02	Open Pit	No	Quarterly									Decommissioned 2020
MWXX-OP1a/b	Suttles Gulch	No	Quarterly									To be addressed in 2022 Annual Report
MW19-PGW1a	PG WRSA	Yes	Quarterly		M	M	M	M	M	M	M	
MW19-PGW1b	PG WRSA	Yes	Quarterly									Well reported damaged in Q4 2020; to be addressed in 2022 Annual Report
MW10-PG1	PG WRSA and Open Pit	Yes	Quarterly		M	M	M	M	M	M	M	
MW96-13A	EP WRSA	Yes	Quarterly		M	M	M					Decommissioned Apr. 30 2021
MW96-13B	EP WRSA	Yes	Quarterly		M	M	M					Decommissioned Apr. 30 2021
MW96-14A	EP WRSA	No	Quarterly									Decommissioned
MW96-14B	EP WRSA	No	Quarterly		M	M	M					Decommissioned Apr. 30 2021
MW96-15(B)	EP WRSA	No	Quarterly		M	M	M	M	M	M	M	
MWXX-15aR	EP WRSA	No	Quarterly									To be installed
MW19-EPW1a	EP WRSA	Yes	Quarterly		M		M	M	M	M	M	Reported frozen in Q1 2021
MW19-EPW1b	EP WRSA	Yes	Quarterly		M			M	M		M	Reported frozen in Q1 2021, Q2 2021
MW10-AG3a	HLF	Yes	Quarterly									Decommissioned
MW19-HLF1a	HLF	Yes	Quarterly			M	M	M	M	M	M	
MW19-HLF1b	HLF	No	Quarterly		M	M	M	M	M	M	M	
MWXX-AG6R	HLF	No	Quarterly									To be installed
MW19-DG6Ra	HLF	Yes	Quarterly				M					
MW19-DG6Rb	HLF	Yes	Quarterly				M					
MWXX-HLF2a/b	HLF	Yes	Quarterly									To be installed
MWXX-HLF3a/b	HLF	Yes	Quarterly									To be installed
MWXX-HLF4a/b	HLF	Yes	Quarterly									To be installed
MW19-EVP1a	Events Pond	No	Quarterly		M	M	M	M	M	M	M	
MW19-EVP1b	Events Pond	No	Quarterly		M	M	M	M	M	M	M	
MW19-EVP2a	Events Pond	No	Quarterly		M	M	M	M	M	M	M	
MW19-EVP2b	Events Pond	No	Quarterly		M	M	M	M	M	M	M	
MW18-DG2R	Lower Dublin South Pond	Yes	Quarterly									

Table 19 Groundwater Quantity Monitoring Program Implementation – Operations Phase

Well ID	Facility	Datalogger[1]	Groundwater Level Monitoring Frequency[2]	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Notes
MW18-LDSP1	Lower Dublin South Pond	Yes	Quarterly		M	M	M	M	M	M	M	
MW19-LDSP2a	Lower Dublin South Pond	Yes	Quarterly		M	M	M	M	M	M	M	
MW19-LDSP2b	Lower Dublin South Pond	Yes	Quarterly		M	M	M	M	M	M	M	
BH-BGC11-72	Lower Dublin Gulch	Yes	Quarterly			M	M	M	M	M	M	
BH-BGC11-74	Lower Dublin Gulch	No	Quarterly			M	M	M	M		M	
MWXX-LPH1	Low pH treatment solids storage cell	No	Quarterly									To be installed
MWXX-LPH2	Low pH treatment solids storage cell	No	Quarterly									To be installed
MW96-9b	N/A	Yes	Quarterly			M	M	M	M	M	M	

NOTES:

IM Groundwater level measured.
Q3 2020 data not presented in monthly report.

3.3.2.2 Groundwater Quality

The objective of the groundwater quality monitoring program is to monitor project effects on the quality of groundwater over the life of the project.

The key components of the groundwater quantity program, as presented in the EMSAMP, are:

- Field program to install and maintain a network of groundwater monitoring wells at strategic locations and collect groundwater samples from selected wells in accordance with the monitoring schedule, and sampling and transportation protocols presented in the EMSAMP. The groundwater quality monitoring is integrated with the groundwater quantity monitoring program such that groundwater samples are collected from a subset of wells that are monitored for groundwater levels.
- Field QA/QC program including collection of trip blanks, field blanks, and field duplicates samples
- Field and lab analysis of groundwater samples for the following groundwater quality parameters:
  - Field parameters: temperature, pH, conductivity, turbidity
  - Lab physical parameters: conductivity, turbidity, TDS, TSS, pH
  - Anion: Cl, SO_4, NO_3, NO, Total CN, WAD CN1, Total Alkalinity/hardness, F, Br
  - Nutrients: Total-PO4
  - Carbon: Dissolved Organic Carbon, Total Organic Carbon
  - Dissolved metals: ICPOES/MS + mercury, trace metals (Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, P, K, Se, Si, Ag, Na, Sr, Tl, V, U, Zn)
- Desktop analysis of analytical results and compilation of groundwater quality data, review data against baseline groundwater quality and QA/QC criteria to identify and eliminate false positives and negatives, compare results to monitoring criteria, and plot concentration of regulated constituents and key indicator parameters versus time and applicable standards and baseline concentrations
- Submission of groundwater quality data for regulatory review

As a part of this audit's effort to evaluate the implementation of the groundwater quality monitoring program, the groundwater quality data presented in the Q3 2020 to Q2 2022 monthly reports were reviewed and compared to applicable groundwater quality monitoring requirements in the relevant EMSAMP. The mine was in the operations phase during throughout this time period.

The audit results are presented separately in Table 20.

Table 20 Groundwater Quality Monitoring Program Implementation – Operations Phase

Well ID[1]	Facility	GW Quality Sample Frequency[2]	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q3 2022	Note
MW19-PGW1a	PG WRSA	Quarterly		S		S	S	S	S	S	Q3 2020 sampling not provided in quarterly reports, frozen Q1 2021
MW19-PGW1b	PG WRSA	Quarterly									Well reported damaged in Q4 2020
MW10-PG1	PG WRSA and Open Pit	Quarterly		S	S	S	S	S	S	S	
MW96-13A	EP WRSA	Quarterly		S	S	S					decommissioned
MW96-13B	EP WRSA	Quarterly									Well reported dry in Q4 2020, Q1 2021, Q2 2021; decommissioned
MW96-15(B)	EP WRSA	Quarterly		S	S	S	S	S	S	S	
MWXX-15aR	EPWRSA	Quarterly									To be installed
MW19-EPW1a	EP WRSA	Quarterly		S		S	S	S	S	S	Well frozen in Q1 2021
MW19-EPW1b	EP WRSA	Quarterly					S	S			Well reported frozen in Q4 2020, Q1 2021, Q2 2021
MW10-AG3A	HLF	Quarterly									
MW19-HLF1a	HLF	Quarterly			S	S	S	S	S		
MW19-HLF1b	HLF	Quarterly								S	Well reported dry in Q4 2020, Q1 2021, Q2 2021
MW19-DG6Ra	HLF	Quarterly				S					
MW19-DG6Rb	HLF	Quarterly									Frozen Q2 2021
MWXX-HLF2a/b	HLF	Quarterly									To be installed
MWXX-HLF3a/b	HLF	Quarterly									To be installed
MWXX-HLF4a/b	HLF	Quarterly									To be installed
MW19-EVP1a	Events Pond	Quarterly									Well reported dry in Q4 2020, Q1 2021, Q2 2021
MW19-EVP1b	Events Pond	Quarterly									Well reported dry in Q4 2020, Q1 2021, Q2 2021
MW19-EVP2a	Events Pond	Quarterly									Well reported dry in Q4 2020, Q1 2021, Q2 2021
MW19-EVP2b	Events Pond	Quarterly		S		S	S	S	S	S	Duplicate Q4 2020, frozen in Q1 2021
MW18-DG2R	Lower Dublin South Pond	Quarterly									
MW18-LDSP1	Lower Dublin South Pond	Quarterly					S	S			Well reported dry in Q4 2020, Q1 2021, Q2 2021
MW19-LDSP2a	Lower Dublin South Pond	Quarterly		S			S	S			Well reported dry in Q1 2021, Q1 2021, Q2 2021
MW19-LDSP2b	Lower Dublin South Pond	Quarterly		S	S	S	S	S	S	S	
BH-BGC11-72	Lower Dublin Gulch	Quarterly			S	S	S	S	S	S	
BH-BGC11-74	Lower Dublin Gulch	Quarterly			S	S	S	S		S	

Table 20 Groundwater Quality Monitoring Program Implementation – Operations Phase

Well ID[1]	Facility	GW Quality Sample Frequency[2]	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q3 2022	Note
MWXX-LPH1	Low pH treatment solids storage cells	Quarterly									To be installed
MWXX-LPH2	Low pH treatment solids storage cells	Quarterly									To be installed

NOTES:

S Groundwater sample collected.
Q3 2020 data not presented in monthly reports.

3.3.3 Reporting Adequacy, Consistency with Requirements and Monitoring

Table 21 summarizes consistency with requirement gaps and/or deficiencies for the groundwater quantity and quality monitoring program and provides recommendations.

Table 21 Groundwater Quantity and Quality Consistency with requirements and Recommendations

Consistency with requirements Gaps and/or Deficiencies	Recommendations
Some wells included in the monthly report are not part of the EMSAMP.	• Reporting should only include the wells listed in the EMSAMP.
Groundwater quantity and quality monitoring from some wells was performed less frequently than the schedule prescribed in EMSAMP.	• A number of factors, including those beyond the control of VGC may result in a scheduled monitoring not being performed (e.g. frozen conditions, weather, equipment malfunction, unsafe condition, construction). The monthly reporting needs to consistently provide the rationale for missed monitoring in tabular format and if any corrective action will be or has been taken. Corrective actions could include monitoring well repair, replacement, improved accessibility, etc. and should be relevant to the specific well concern.
The Q3 2020 data was not provided in the monthly reports.	• Include the Q3 2020 groundwater quantity and quality data in the monthly report.
No continuous water level data provided in monthly reports.	• VGC should consider including the continuous water level data hydrographs in the monthly reports. This would enable an ongoing analysis of groundwater levels which might identify changes which could lead to a circumstance of noncompliance with the permit. • If the continuous water level data will not be included in the monthly reports, a statement should be included indicating that the continuous water level data will be included and reviewed as part of the annual report.
EMSAMP (S. 5.2) presents groundwater quality parameters to be analyzed in the monitoring program. It is not clear in the monthly reports if all parameters are being analyzed.	• Review water license conditions and laboratory records to confirm if required parameters were analyzed and provide in monthly reports. • Include all analyzed parameters and laboratory reports in monthly reporting.

Table 21 Groundwater Quantity and Quality Consistency with requirements and Recommendations

Consistency with requirements Gaps and/or Deficiencies	Recommendations
No data interpretation is provided in the monthly reports.	• VGC should consider completing ongoing data analysis and interpretation in their monthly reports. This will enable the early identification of any trends which could lead to a circumstance of noncompliance with the permit. • If data interpretation is not planned to be included in the monthly reports, a statement should be included indicating that data review and interpretation consistent with the requirements of the EMSAMP will be provided in the annual reports.
EMSAMP (S. 5.3.2 and 5.3.3) describes the field QA/QC program for groundwater quality monitoring, which includes collection and analysis of trip blanks, field blanks and duplicates. The field QA/QC program is not included in the monthly reports.	• A statement should be included in the monthly reports that the field QA/QC program was implemented consistent with EMSAMP and a complete analysis of the QA/QC will be provided in the annual reports.

3.4 Geochemical Monitoring

3.4.1 Documents Reviewed

Documents listed in were reviewed for the geochemical monitoring section of the audit:

Table 22 Geochemical Monitoring Program Documents Reviewed

Document	Version Reviewed	Sections Applicable to Operations Phase
EMSAMP	2020-01	6.0 – Geochemical Monitoring
Water Licence QZ14-041-01 (Amendment 1, August 22, 2019)	22-Aug-19	Part F – EQS
Water Licence QZ14-041-01 Quartz Mining License QML-0011 2019 Annual Report	N/A	2.2.1 – Ore, Waste and Gold Production
Water Licence QZ14-041-01 Quartz Mining License QML-0011 2020 Annual Report	N/A	3.5 – Geochemical Monitoring
Water Licence QZ14-041-01 Quartz Mining License QML-0011 2021 Annual Report	N/A	3.5 – Geochemical Monitoring
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - August 2020	05-Oct-20	5.0 – Geochemical Monitoring
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - November 2020	31-Dec-20	5.0 – Geochemical Monitoring

Table 22 Geochemical Monitoring Program Documents Reviewed

Document	Version Reviewed	Sections Applicable to Operations Phase
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - February 2021	03-Apr-21	5.0 – Geochemical Monitoring
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - April 2021	01-Jun-21	5.0 – Geochemical Monitoring
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - July 2021	31-Aug-21	5.0 – Geochemical Monitoring
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - November 2021	02-Jan-22	5.0 – Geochemical Monitoring
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report - December 2021	30-Jan-22	5.0 – Geochemical Monitoring
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report – January 2022	02-Mar-22	5.0 – Geochemical Monitoring
Eagle Gold Project Type A Water Use Licence QZ14-041-1 Monthly Report -April 2022	02-Jun-22	5.0 – Geochemical Monitoring
Quartz Mining Licence QML-0011	N/A	9.3 and 9.4

3.4.2 Monitoring Program Implementation

The waste rock contact water monitoring program, as described in EMSAMP, includes:

- *[Monthly] seepage water quality monitoring program includes monitoring of seeps, if detected, at the toe of both waste facilities, in addition to the expected seepage where surface water flow currently exists in Eagle Pup and Platinum Gulch drainages (included as part of the surface water quality audit in Section 3.2)*
- *Field barrel monitoring is currently being conducted at least four times per year (during ice-free periods), and will continue through initial operations to expand the time trends until actual seepage database is adequate and can be related to the barrel data.*
- *Analysis to include hardness, pH, anions and nutrients (acidity, alkalinity, chloride, fluoride, nitrate, nitrite, and sulfate), and dissolved metals.*
- *Replicate analyses are completed on one sample for each sampling campaign.*
- *Monthly survey of waste facilities during ice-free months to observe developments of new seeps (as per Section 6.3.3 of the EMSAMP*

- *On-site analysis, when available, will consist of the following:*
  - *Blast-hole chip composites of waste rock and ore from each blast round in the open pit. Each composite sample will represent a maximum of 20% of the total blast holes be blast round.*
  - *Geological logging of blast hole composites.*
  - *Analysis for carbon, sulphur and arsenic.*
  - *Results will be geospatially linked to the sample location from the pit, and if possible, to the area within the waste storage facilities and the HLF pad that it is placed.*
- *Off-site analysis (accredited analytical lab) will consist of the following:*
  - *Grab samples collected quarterly representing blasted waste, reduced to 1-2 kg in size using a riffle splitter prior to shipping to an accredited analytical laboratory for testing of the following methods as recommended in MEND, 2009.*
  - *Rinse pH and EC*
  - *Modified Acid Base Accounting (ABA) including a total sulphur, sulphate sulphur, fizz rating, modified Sobek neutralization potential and total inorganic carbon*
  - *Metal analysis by ICP-MS following aqua regia digestion*

The geochemical monitoring program was implemented according to the objectives stated in the EMSAMP; consistency with requirements of the EMSAMP is included in the following section.

3.4.3 Consistency with Requirements of the EMSAMP

The 2020 Annual Report, the 2021 Annual Report, and the 2022 Monthly Reports were reviewed for consistency with requirements of the EMSAMP.

The following field and laboratory methods and consistency with requirements with sampling frequencies per the EMSAMP were reviewed for Operations:

- Blast-hole static testing
- Waste rock static testing
- Field barrel kinetic testing
- Waste rock contact water (seep) monitoring

The results of this task are listed in Table 23.

Table 23 Geochemical Monitoring Program Audit Table

Program	Analysis Location	Methods (EMSAMP and QML-0011)	Required		Conducted		Sample Consistency Check (Y/N) with Rationale	Methods Check (Y/N) with Rationale
			Sampling Quantity	Sampling Frequency	Sampling Quantity	Sampling Frequency		
Surficial Material Static Testing for Construction Material	Off-Site Analysis	• *The geochemical monitoring of surficial materials consists of the following:* - *Visual inspection of the blasted rock to ensure that anomalously high concentrations of sulphide are not present.* - *Grab samples representing each major excavation, with a separate bulk sample collected in each distinct geological formation encountered and/or from every 200,000 m^3 material moved.* • *The geochemical monitoring of bedrock materials consists of the following:* - *Grab samples representing each major excavation, with a separate sample collected in each distinct geological formation encountered and/or from every 100,000 m^3 material moved. An exception is proposed for bedrock excavated from the open pit, (…) [if used] in construction will be sampled at a rate of one per every 250,000 m^3 of material moved.* - *Samples will be sieved to obtain subsamples representing specific grain size distributions as follows:* - *Bulk sample* - *<2 mm fraction* • *The samples will be reduced to 1-2 kg in size using a riffle splitter prior to shipping to an accredited analytical laboratory for testing.* • *Depending on the use or disposition of the material, test methods may include the following as recommended in MEND (2009) (…)* - *Rinse pH and electrical conductivity (EC) on the <2 mm fr*action - *Modified Acid Base* Accounting on the bulk sample and the <2 mm fraction - *Metal analysis by ICP-MS following aqua regia digestion on the bulk sample and the* <2 mm fraction - *Leach extraction tests will be completed on every 5th sample using a 3:1 water to solid ratio on the <1 cm sample fraction* (EMSAMP) • Waste rock used for construction or fill purposes must have a pH of at least 5.0, a NP:AP ratio of at least 3:1, and a total sulphide sulphur content of no greater than 0.3% (QML-0011)	Varies	Each major excavation or every 200,000 m^3 material moved	**2020 Annual Report** • 6 Samples **2021 Annual Report** • 4 Samples **2022 Monthly Reports** • January 2022: None • April 2022: 3 samples	**2020 Annual Report –** N/A (as required based on excavated tonnes)) **2021 Annual Report –** N/A (as required based on excavated tonnes) **2022 Monthly Reports –** N/A (as required based on excavated tonnes)	**2020 Annual Report –** Y **2021 Annual Report** – Y **2022 Monthly Reports** – Y	**2020 and 2021 Annual Reports, and 2020, 2021 and 2022 Monthly Reports** – N Visual inspection not described. Description of volume of material moved was not provided or if samples were selected per distinct geological formation. All other methods were implemented.

Table 23 Geochemical Monitoring Program Audit Table

Program	Analysis Location	Methods (EMSAMP and QML-0011)	Required		Conducted		Sample Consistency Check (Y/N) with Rationale	Methods Check (Y/N) with Rationale
			Sampling Quantity	Sampling Frequency	Sampling Quantity	Sampling Frequency		
Field Barrel Kinetic Testing	Off-Site Analysis	• *Field barrel monitoring is currently being conducted at least four times per year (during ice-free periods), and will continue through initial operations to expand the time trends until actual seepage database is adequate and can be related to the barrel data.* • *Analysis to include hardness, pH, anions and nutrients (acidity, alkalinity, chloride, fluoride, nitrate, nitrite, and sulfate), and dissolved metals.* • *Replicate analyses are completed on one sample for each sampling campaign.* (EMSAMP).	Four	Per Year (during ice-free period)	**2020 Annual Report** - 10 samples collected from two new (in 2020) field barrels **2021 Annual Report** – 7 samples from two field barrels **2022 Monthly Reports** January 2022: n/a as field barrels were decommissioned for the winter. April 2022: not enough water to sample.	**2020 Annual Report** – Y **2021 Annual Report** – Y **2022 Monthly Reports** - Y	**2020 Annual Report –** Y **2021 Annual Report** – Y **2022 Monthly Reports** - Y	**2020 Annual Report –** N Replicate samples were not described in annual report or 2020 monthly reports. **2021 Annual Report –** N Replicate samples were not described in annual report or 2021 monthly reports. **2022 Monthly Reports** – n/a
Blast-hole Static Testing	On-Site Analysis	• *Blast-hole chip composites of waste rock and ore from each blast round in the open pit. Each composite sample will represent a maximum of 20% of the total blast holes per blast round.* • *Geological logging of blast hole composites.* • *Analysis for carbon, sulphur* and arsenic. • *Results will be geospatially linked to the sample location from the pit, and if possible, to the area within the waste storage facilities and the HLF pad that it is placed.* (EMSAMP).	Less than 20% of total blast hole	Each blast round	**2020 Annual Report** – 21 samples **2021 Annual Report** – 3502 samples **2022 Monthly Reports** January 2022: 45 samples April 2022: 8 samples	**2020 Annual Report** - Not described **2021 Annual Report** - Not described **2022 Monthly Reports** - Not described	**2020, 2021 Annual Report and 2022 Monthly Reports** – N Details of total blast holes were not included in the annual report Section 3.5; therefore, sample consistency with requirements could not be completed.	**2020 Annual Report** – N Geological logs were not included in the annual report. All other methods were implemented. **2021 Annual Report** – N Geological logs were not included in the annual report. All other methods compliant. **2022 Monthly Report** – N Results of onsite analysis were not included in provided monthly reports. Geological logs were not included in the annual report. All other methods were implemented.

Table 23 Geochemical Monitoring Program Audit Table

Program	Analysis Location	Methods (EMSAMP and QML-0011)	Required		Conducted		Sample Consistency Check (Y/N) with Rationale	Methods Check (Y/N) with Rationale
			Sampling Quantity	Sampling Frequency	Sampling Quantity	Sampling Frequency		
Quarterly Blasted Waste Rock Static Testing	Off-Site Analysis	• *Grab samples* collected quarterly representing blasted waste, reduced to 1–2 kg in size using a riffle splitter prior to shipping to an accredited analytical laboratory for testing of the following methods as recommended in MEND (2009). - *Rinse pH and EC* - *Modified Acid Bas*e Accounting (ABA) including a total sulphur, sulphate sulphur, fizz rating, modified Sobek neutralization potential and total inorganic carbon - *Metal analysis by ICP-MS following aqua regia digestion* (EMSAMP).	Less than 20% of total blast hole	Quarterly	**2020 Annual Report** – 4 samples **2021 Annual Report** – 4 samples **2022 Monthly Reports** January 2022: Not described April 2022: Not described	**2020 Annual Report –** 1/quarter **2021 Annual Report –** 1/quarter **2022 Monthly Reports** – Not described	**2020 Annual Report –** N A total of four samples were collected; however, two were collected in Q1, one in Q3, and one in Q4, and none in Q2. **2021 Annual Report** – N A total of four samples were collected: one from Q4 2020, one from Q1 2021, two from Q3 2021. **2022 Monthly Reports** – N For each monthly report, three samples were collected from waste rock; however, they are described as annual waste rock testing (see next row below)	**2020 Annual Report** – N Laboratory COAs or data tables were not included in the annual report. These are often provided in monthly reports; however, sampling did not occur in the provided monthly reports (included in this audit). **2021 Annual Report** – N Laboratory COAs or data tables were not included in the annual report. **2022 Monthly Report** – n/a
Annual Waste Rock Static Testing	Off-Site Analysis	*Annual waste sampling from placed waste rock in the storage facilities (Eagle Pup and Platinum Gulch) consisting of collection of grab samples from waste produced in the previous calendar year. The number of samples will vary depending on production. One sample per million tonnes of waste produced be collected.* (EMSAMP).	Varies. 1 sample / million tonnes of waste rock in previous year	Annual	**2020 Annual Report** – 12 samples **2021 Annual Report** – 11 samples **2022 Monthly Reports** January 2022: 3 samples April 2022: 3 samples	**2020 Annual Report –** Total mined tonnages in 2019 were not reported in the 2019 or 2020 Annual Report; however, were provided in the 2019 Annual Report (4.9 million tonnes). **2021 Annual Report –** As per Table 3.5-4 in 2020 Annual Report, 17 million tonnes were mined in 2020. **2022 Monthly Reports –** tonnages not provided	**2020 Annual Report** – Y 12 samples were collected for 4.9 million tonnes of rock mined. **2021 Annual Report** – N 11 samples were collected for 17 million tonnes of rock mined (required 17 to be consistent with requirements) **2022 Monthly Reports** – N Tonnages not provided; likely summarized in annual reports	**2020 Annual Report** – Y **2021 Annual Report** – Y **2022 Monthly Reports** – Y

Table 23 Geochemical Monitoring Program Audit Table

Program	Analysis Location	Methods (EMSAMP and QML-0011)	Required		Conducted		Sample Consistency Check (Y/N) with Rationale	Methods Check (Y/N) with Rationale
			Sampling Quantity	Sampling Frequency	Sampling Quantity	Sampling Frequency		
All Static Testing	Off-Site Analysis	*Samples will be sieved to collect samples representing specific grain size distributions as follows:* • *Bulk sample* • *<2 mm fraction* • *<1 cm fraction (including the < 2 mm fraction)* • *The samples will be reduced to 1-2 kg in size using a riffle splitter pr*ior to shipping to an accredited analytical laboratory for testing. *Test methods will include the following as recommended in MEND (2009) and summarized in Table 6.3-1:* • *Rinse pH and EC on the <2 mm size fraction* • *Modified Acid Base Accounting including a t*otal sulphur, sulphate sulphur, fizz rating, modified Sobek neutralization potential and total inorganic carbon on all three size fractions • *Metal analysis by ICP-MS following aqua regia digestion on all four size fractions* • *Leach extraction analyses using a 3:1 water to solid ratio on the <1 cm sample fraction* (EMSAMP).	N/A	N/A	N/A	N/A	N/A	**2020, 2021 Annual Report and 2022 Monthly Reports** – N All analyses are correct with the exception of conducting the SFE tests on < 1 cm and <2 mm fractions. These details are not included in Appendix I ALS Reports. ALS states a 0.50 g sample is prepared but does not include size fractions completed in that preparation - only refers to MEND 1.20.1 Predication Manual. The MEND 1.20.1 Prediction Manual methods describe 100 g samples of minus 6.35 mm size fraction.
Waste Rock Contact Water (Seep) Monitoring	Off-Site Analysis	• [Monthly] *seepage water quality monitoring program includes monitoring of seeps, if detected, at the toe of both waste facilities, in addition to the expected seepage where surface water flow currently exists in Eagle Pup and Platinum Gulch drainages (included as part of the surface water quality audit in Section 3.2)* • *Monthly survey of waste facilities during ice-free months to monitor for development of new seeps*. (EMSAMP).	As needed	Monthly Survey	N/A	N/A	N/A	**2020 Annual Report** – N Monthly seepage survey not described. **2021 Annual Report** – Y Weekly inspection including seep survey described in Section 4.2.2.

3.4.4 Data QA/QC

2020 Annual Report

- Details of the geochemical QA/QC program were not included in the 2020 Annual Report; however, review of provided datasheets showed two of twelve field barrel samples (17%) submitted to ALS were field replicates. The percentage of QA/QC samples per total samples above 10% is consistent with the EMSAMP.

2020 Monthly Reports

- Details of the geochemical QA/QC program were not included in the provided 2020 Monthly Reports (August 2020 and November 2020).

2021 Annual Report

- Details of the geochemical QA/QC program were not included in the 2021 Annual Report; however, a review of provided datasheets showed four of eighteen field barrel samples (22%) submitted to ALS were QA/QC samples, one field blank and three field replicates. The percentage of QA/QC samples per total samples above 10% is consistent with the EMSAMP.

2021 Monthly Reports

- Details of the geochemical QA/QC program were not included in the provided 2021 Monthly Reports (February 2021, April 2021, July 2021, November 2021, and December 2021).

2022 Monthly Reports

- Details of the QA/QC program were not included in the provided 2022 Monthly Reports (January 2022 and April 2022).

3.4.5 Reporting Adequacy, Consistency with requirements, and Recommendations

The 2020 Annual Report, the 2021 Annual Report, and the 2022 Monthly Reports were reviewed for adequacy and consistency with requirements of the EMSAMP. Overall, the reporting and summarization of data collected for the geochemical monitoring program is complete and adequate with deviations and recommendations listed in Table 24**.**

Table 24 Geochemical Monitoring Consistency with Requirements of the EMSAMP and Recommendations

Consistency Gaps and/or Deficiencies	Recommendations
2020 and 2021 Annual Report – Sample type description of surficial material static testing for construction use	Include details on the material sample collected (i.e., surficial, or bedrock) and why these samples were collected (i.e., 1 per 100,000 m^3 material moved or distinct geological unit).
2020 and 2021 Annual Report – Appended analytical data	Include all analytical data in appendices.
2020 and 2021 Annual Report – QA/QC samples	Collect field replicate samples of operational monitoring samples, include discussion of result (including relative percent differences) in report body, and append dataset.
2020 and 2021 Annual Report – Details of blast rounds	Include details of blast rounds to demonstrate consistency with EMSAMP. Include geological logs of blast holes.
2020 Annual Report – Reported mined tonnage of previous year	Annual waste rock samples are collected based on the tonnage mined from the previous year. Recommend including previous year tonnage when describing annual waste rock samples.
2020 Annual Report – Monthly seep sample survey	Include details of monthly seep sample survey in report.
2020 and 2021 Annual Report – Shake flask extraction size fraction	Check with off-site laboratory (ALS) if shake flask extraction is conducted on <2 mm and <1 cm size fraction.
2020, 2021, and 2022 Monthly Reports – QA/QC samples	Collect field replicate samples, include relative percent differences, and discuss results in the report body. Explicitly describe which samples are duplicates of respective parent sample.

3.5 Aquatic Environment

In April 2019, the Mine became subject to the Metal and Diamond Mining Effluent Regulations (MDMER) under the federal *Fisheries Act.* This occurred when the daily effluent discharge was greater than 50 m^3 per day from the Lower Dublin South Pond (LDSP). Schedule 5 of the MDMER describes requirements associated with the Aquatic Environment for Environmental Effects Monitoring (EEM) Studies which include effluent characterization, sub-lethal toxicity testing, water quality monitoring, and, if required, biological monitoring studies (e.g., fish population, benthic invertebrate community, and fish tissue studies).

Following the Mine being subject to the MDMER, an EEM study design was required within 12 months of triggering the MDMER, and at least six months prior to conducting the required biological monitoring field studies. These requirements were met with preparation by Minnow Environmental Inc. (Minnow) of a Phase 1 EEM Study Design in April of 2020, and field studies in 2021. An addendum to address ECCC questions about the Phase 1 EEM Study Design was prepared by Minnow in December 2020. The EEM

Study Design by Minnow was approved by ECCC on December 11, 2020. This study design has since replaced the 2020 EMSAMP for the monitoring of aquatics (sediment, benthics and fish).

3.5.1 Stream Sediment

3.5.1.1 Documents Reviewed

Documents shown in were reviewed for the stream sediment section of the audit.

Table 25 Stream Sediment Documents Reviewed for the 2022 Audit

Document	Version Reviewed	Sections Applicable to Mine Operations Phase
EMSAMP	2020-01	7.0 – Stream Sediment
Water License QZ14-041 Quartz Mining License QML-0011 2020 Annual Report	N/A	3.6 – Aquatic Environment and Appendix J1 – Eagle Gold Mine Phase 1 EEM Study Design (Minnow Environmental Inc. 2020a) and addenda (Minnow Environmental Inc. 2020b)
Water License QZ14-041 Quartz Mining License QML-0011 2021 Annual	N/A	3.6 – Aquatic Environment and Appendix I – Aquatic Monitoring and EEM Summary (Minnow Environmental Inc. 2022)

3.5.1.2 Stream Sediment Monitoring Program Design in EMSAMP and Phase 1 EEM

The objectives of the stream sediment monitoring program, as described by the EMSAMP, were to:

- collect data on pH and metal levels in the fine sediment fraction in watercourses in the study area, parameters relevant to toxicity and habitat requirements for benthos, fish eggs, and juvenile fish
- obtain data on sediment quality that can be used to evaluate potential Project related changes
- provide ongoing data to support refinement of future monitoring programs.

These data were to be collected from five sites in Haggart Creek between the confluence of Fisher Gulch to the confluence of Lynx Creek (one above Project influence and four below Project influence), two sites in Dublin Gulch (both above Project influence), one site in Lower Eagle Creek (below Project influence), one site in Lynx Creek (reference site in unaffected stream)

Triplicate field samples were to be collected in depositional habitats (i.e., pools) downstream of riffle habitats. Each sample comprised of a composite of five individual grabs. Composite samples were to be placed in individual acid-wash glass bottles and kept cool for delivery to the analytical lab. A field replicate was also to be collected at each site. The fine fraction (i.e., <63 µm fraction) was analyzed in the lab for particle size distribution, pH, total organic carbon, and a suite of 33 metals and metalloids. Only total concentrations were to be analyzed; no dissolved fractions were required by the EMSAMPs.

Results were to be compared to pre-construction baseline values and the BC Interim Sediment Quality Guidelines (ISQG) for arsenic, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, silver, and zinc (Nagpal et al. 2006). Data analyses would then be done to compare the monitoring data to

baseline results (i.e., pre-2018) and determine whether any statistically significant changes in sediment quality had occurred. Adaptive management thresholds for sediment monitoring were set at:

- 25% higher than median baseline concentrations for those parameters that currently exceed the Probable Effects Level[1] (PEL) as a baseline condition
- The PEL for those parameters that do not exceed PELs at baseline

If parameter concentrations exceeded these thresholds, adaptive management measures in the EMSAMP were to be considered.

3.5.1.3 EMSAMP/EEM Stream Sediment Monitoring Program Results

Stream sediment and benthic invertebrate sampling under the EMSAMP was to be conducted on a biennial basis (i.e., once every two years); sediment monitoring did not occur in 2020, as it was conducted in 2019 and the next scheduled event would have occurred in 2021.

Following the transition to the Phase 1 EEM Study Design in December 2020, sediment sampling was removed from the EEM study design (Victoria Gold 2022). As such, no sediment monitoring occurred in 2021 (Minnow 2022a).

Stream sediment sampling was excluded from the EEM following conservations with ECCC in 2020. The rationale for excluding stream sediment monitoring from the EEM included:

- the Haggart Creek study area contained limited depositional habitat suitable for fine sediment deposition. Instead, substrates were comprised primarily of small cobble and gravel. The general absence of fine sediments in Haggart Creek was deemed to preclude meaningful assessment of potential mine-related influences on sediment chemistry within and/or between watercourses.
- the applicability of stream sediment chemistry monitoring for interpretation of benthic invertebrate community data considered low given that fine sediment composed <5% of available substrates.
- ISQGs are conservative in predicting effects from the Mine because the thresholds identified in the ISQGs are intended for whole sediment samples, not the fine sediment fractions.
- the less than 63 um fraction of sediment that is used to analyze metal concentrations is not representative of whole sediment in the study area and, therefore, is overly conservative.
- Benthic invertebrate community sample sites are characterized by gravels and cobbles, with fine sediment deposits being rare or non-existent. As such, sediments were unlikely to be a significant exposure route for biota metal-uptake.
- Since fish species inhabiting lotic environments of the area (i.e., slimy sculpin and Arctic grayling) largely rely on benthic invertebrates as a food source, the applicability of stream sediment monitoring data to help understand effects on fish was considered to be minimal.

[1] The Probable Effects Level is a threshold above which adverse biological effects frequently occur (more than 50% adverse effects occur above the PEL).

3.5.1.4 Reporting Adequacy, Consistency with Requirements, and Recommendations

Stream sediment sampling was not conducted during 2020 under the EMSAMP, as it was done biannually and was last collected in 2019.

Following the switch to the EEM study design in late 2020, stream sediment sampling was removed because it was concluded that fine sediments targeted for metal analysis comprised a small fraction of available habitat and was not used by benthic invertebrates. Therefore, sediments were unlikely to be a pathway for biological accumulation of potential pollutants. This rationale was supported by ECCC and the EEM approved in December 2020 (Minnow 2022).

As sediment sampling was conducted within the timeline reviewed by this audit and was removed from the study design in 2020, there are no deficiencies for the stream sediment component.

3.5.2 Benthic Macroinvertebrates

3.5.2.1 Documents Reviewed

Documents shown in were reviewed for the benthic invertebrate monitoring section of the audit.

Table 26 Benthic Invertebrate Documents Reviewed For the 2022 Audit

Document	Version Reviewed	Sections Applicable to Mine Operations Phase
EMSAMP	2020-01	8.0 – Benthic Macroinvertebrates
Water License QZ14-041 Quartz Mining License QML-0011 2020 Annual Report	N/A	3.6 – Aquatic Environment and Appendix J1 – Eagle Gold Mine Phase 1 EEM Study Design (Minnow Environmental Inc. 2020a) and addenda (Minnow Environmental Inc. 2020b)
Water License QZ14-041 Quartz Mining License QML-0011 2021 Annual Report	N/A	3.6 – Aquatic Environment and Appendix I – Aquatic Monitoring and EEM Summary (Minnow Environmental 2022)

3.5.2.2 Benthic Invertebrates Monitoring Program Design in EMSAMP and EEM

The objectives of the benthic invertebrate monitoring program, as described by the EMSAMP, were:

- Characterize community diversity and abundance during the transition from baseline and through operation of the Project
- Determine variation relative to baseline data
- Provide supporting information for fisheries assessments and comply with future MDMER requirements

Benthic invertebrate data were to be collected from the same nine sites as the stream sediments described in the EMSAMP. Sampling methods were to be consistent with methods recommended in the Metal Mine Guidance Document for Aquatic Environmental Effects Monitoring (Environmental Canada 2012). Riffle habitats were to be sampled in late summer/fall using a quantifiable bottom sampler (e.g., Surber).

Three replicate samples were to be collected at each site with a minimum separation of three times bank-full width between replicates. Field measurements of water temperature, dissolved oxygen concentration, pH, and conductivity, bankfull and wetted width, depth, gradient and canopy cover were to be measured at each site.

Benthic invertebrates were to be identified to lowest practical level (typically genus) and enumerated by a qualified taxonomic laboratory. Data analysis was to include total number of individuals per sample, number of organisms per unit area, and the following indices:

- Total invertebrate density for each replicate as well as arithmetic mean, standard deviation, median, minimum, and maximum
- Family density for each replicate as well as arithmetic mean, standard deviation, median, minimum, and maximum
- Family richness
- Simpson's diversity or similar index
- Simpson's evenness, or similar index
- Bray Curtis index or similar index
- Taxon (i.e., Family) proportion
- Taxon (i.e., Family) presence/absence

Following statistical analysis, any significant differences from baseline conditions were to be interpreted as a Project effect requiring adaptive management measures listed in the EMSAMPs. Results were to be interpreted relative to the other indices as well as supporting environmental variables measured at the time of sampling, results of fish surveys, and relative to historical sampling. The effect of any outliers on results were to be evaluated.

The sampling program was altered in the Phase 1 EEM Study Design (Minnow 2020a). Ten sampling stations were selected, five in the reference reach in Haggart Creek, upstream of the Mine approximately upstream of W22, and five in the effluent exposed areas downstream of the LDSP at stations W4 and W29 in Haggart Creek,. Sampling stations were spaced approximately 20 m apart. Minnow (2020a) stated that the level of replication in the study design provided adequate statistical power to detect differences of ± two standard deviations from the reference area mean (± 2 SD_{REF}) based on Type I and II error probability (α and β, respectively) set equally at 0.10 as recommended in EEM guidance (Environment Canada 2012).

The revision of sampling sites from the EMSAMP stations to the five upstream and five downstream sites was based on the following rationale:

- During periods of effluent discharge, previous monitoring estimated effluent concentrations ranging from 1% to 15% in the effluent-exposed area. Therefore, sites in this area were suitable for evaluating effects related to Project effluent.
- The proposed reference area is sufficiently upstream of the Lower Dublin Sediment Pond Outlet (and the confluence with Dublin Gulch, which flows through mine influenced area) effluent discharge to preclude any effluent-related influences on physical, chemical, and biological conditions. Metal concentrations in water and sediment collected at the reference area have generally been below applicable guidelines, suggesting no substantial anthropogenic influences in this area.
- Average channel dimensions, water depth, water velocity, and substrate size were similar between the proposed effluent-exposed and reference study areas on Haggart Creek. This reduced the potential confounding influence of differing physical habitat for evaluating effluent-related influences on benthic invertebrates.
- Because the proposed study areas incorporate the locations of stations historically sampled, the use of these study areas for EEM provides temporal continuity and a basis for tracking changes in benthic invertebrate community endpoints over time.

Benthic invertebrate sampling sites targeted shallow (i.e., ≤0.4 m) riffle-run habitat characterized by coarse gravel-small cobble substrate. Samples were to be collected using a Hess sampler (0.1 m^2 sampling area) as recommended in EEM technical guidance (Environment Canada 2012) or a Surber sampler (0.093 m^2 sampling area), depending on water depth. Samplers were to be outfitted with a 300-µm mesh net to provide consistency with all previous benthic invertebrate monitoring. Each of the sampling sites form an aggregate sample, comprised of three sub-samples to increase the total area sampled per site.

Supporting information collected at each benthic station was to include substrate description (type and approximate particle diameter), water velocity (m/s), sampling depth (cm), water quality at the sediment-water interface, stream dimensions (wetted and bankfull width), general habitat notes (e.g., stream morphology, extent of riparian cover, surrounding land use, potential confounding influences), and global positioning system (GPS) coordinates.

Upon completion of the field program, benthic invertebrate samples were to be submitted to a qualified laboratory with Society of Freshwater Sciences (SFS) certified taxonomists. Benthic invertebrate sample processing was to be conducted using standard sorting methods that incorporate recognized QA/QC measures (e.g., Environment Canada 2012).

Benthic invertebrate communities were to be evaluated using EEM primary metrics that were:

- mean taxonomic richness (as identified to family level)
- mean invertebrate density (average number of organisms per m^2)
- Simpson’s Evenness Index
- the Bray-Curtis Index of Dissimilarity as required by the MDMER.

Additional comparisons could also be conducted using lowest practical level (LPL) taxonomic richness, percent composition of dominant or indicator taxa (calculated as the abundance of each respective taxonomic group relative to the total number of organisms in the sample), and any other metrics (e.g., functional feeding groups, habit preference groups) that may assist with data interpretation.

Except for Bray-Curtis Index, all selected endpoints were to be summarized by separately reporting mean, median, minimum, maximum, standard deviation, standard error, and sample size for each study area. For each endpoint, statistical comparisons between the effluent-exposed and reference areas were to be conducted using ANOVA. If data significantly violated the assumption of normality (i.e., not a normal distribution) following transformation, non-parametric statistics were to be applied using the untransformed data. An effect on the benthic invertebrate community was defined as a statistically significant difference between the effluent-exposed area and the reference area at an alpha level of 0.10 (Environment Canada 2012).

The magnitude of effect for all benthic invertebrate community indicators that differ significantly between study areas was to be calculated for the effluent-exposed area based on the formula provided in the MDMER. For effect indicators of density, richness, and Simpson's Evenness, the derived magnitude of difference was to be compared to an applicable critical effect size (CES) (i.e., $\pm 2\ SD_{REF}$). A statistical analysis was to be completed using these latter effect indicators to determine the probability of correctly detecting effects, as well as to determine the degree of confidence placed in the calculations.

The Bray-Curtis Index was to be used to evaluate community level differences between study areas. Specifically, abundance data was to be transformed in preparation for Bray-Curtis Index calculation and community level differences between study areas was to be assessed in a pairwise fashion with homogeneity of group variance calculated according to the PERMDISP2 procedure provided by Anderson (2006). A Mantel Test and distance-based Redundancy Analysis (dbRDA) was to be used to assess for differences in community structure between study areas using R statistical software (as per Borcard and Legendre 2013).

3.5.2.3 EMSAMP/EEM Stream Benthic Invertebrate Monitoring Program Results

Benthic invertebrate community sampling was conducted in September 2021, as per the sampling schedule outlined to meet the MDMER requirement to assess potential impacts of mine effluent on food resources for fish. The 2021 annual monitoring report stated that benthic invertebrate community study methods were conducted in accordance with the ECCC-approved study design for the purpose of meeting the MDMER requirements (Minnow 2020, VGC 2020).

Sampling occurred at Haggart Creek, downstream of the Ditch C confluence (Station W29-01 to W29-05) as the effluent-exposed area, and at Haggart Creek upstream of the Dublin Gulch confluence (Station W22-01 to W22-05) as the reference area. Benthic invertebrate community sampling was conducted using a Hess sampler, with a total of five samples collected from each station.

Benthic invertebrate communities were evaluated using the EEM primary metrics of density, richness, Simpson's Evenness Index, and the Bray-Curtis Index of Dissimilarity as required by the MDMER. In

addition, comparisons of relative abundance of dominant/indicator groups, functional feeding groups, and habitat preference groups between stations were conducted to augment interpretation of effects.

The analysis of benthic invertebrate data was based on recognized statistical approaches to evaluate differences between the effluent-exposed and reference areas of Haggart Creek. The design also incorporated use of critical effect sizes (CES) presented in the MDMER (i.e., ±2 SD_{REF}) to evaluate whether differences in benthic invertebrate community metrics between the effluent-exposed and reference areas was ecologically meaningful. Minnow's (2022) interpretation of the 2021 benthic invertebrate community data indicated:

- Significantly lower benthic invertebrate density downstream of the effluent discharge point in Haggart Creek compared to upstream.
- Benthic invertebrate densities in both areas of Haggart Creek were lower in 2021 than in 2007 and 2018 but richness and relative abundance of sensitive Ephemeroptera at each area were similar to 2007 suggesting that benthic invertebrate community structure has not changed between post- and pre-mine operations.
- No significant difference in species richness between study areas in 2021
- Significantly higher evenness at Station W29 downstream of the mine compared Station W22 to upstream of the mine. Since higher evenness indicates more equitable distribution of individuals across taxa present at a station, the difference in evenness between the effluent-exposed and reference areas was not consistent with an adverse effluent-related effect.
- Bray-Curtis index was significantly different between the Haggart Creek study areas suggesting differences in benthic invertebrate community structure. However, the relative abundance of sensitive Ephemeroptera did not differ significantly between the effluent-exposed and reference area indicating that the differences in community structure were unrelated to differing metals exposure. Instead, a significantly lower relative abundance of tolerant Oligochaeta at the effluent-exposed area compared to the reference area was the difference in community structure between areas in 2021.
- Overall, no adverse mine-related influences on benthic invertebrates were indicated at Haggart Creek in 2021.

3.5.2.4 Reporting Adequacy, Consistency with Requirements, and Recommendations

Benthic invertebrate sampling was not conducted in 2020 under the EMSAMP because previous sampling was conducted in 2019 and, therefore, sampling was not scheduled to occur again until 2021. Following the transition to the Phase 1 EEM Study Design, the benthic invertebrate sampling design was modified, and sampling was conducted in September 2021. Consistency with requirements Audit results are given in Table 27.

Table 27 Benthic Macroinvertebrates Monitoring Program Audit Results

Site	Five Samples Collected? (Yes/No)	Samples Collected at Appropriate Time of Year and from Appropriate Habitat? (Yes/No)	Field QA/QC Protocols Followed? (Yes/No)[1]	Required Lab Analysis Conducted? (Yes/No)	Lab QA/QC Protocols Followed? (Yes/No)[2]	Required Community Indices Calculated? (Yes/No)[3]	Required Statistical Analyses Performed? (Yes/No)[4]	Results Compared to Baseline Data? (Yes/No)	Adaptive Management Requirements Discussed? (Yes/No)
W22-01	Yes	Yes	Unknown	Yes	Unknown	No	No	Yes	Yes
W22-02	Yes	Yes	Unknown	Yes	Unknown	No	No	Yes	Yes
W22-03	Yes	Yes	Unknown	Yes	Unknown	No	No	Yes	Yes
W22-04	Yes	Yes	Unknown	Yes	Unknown	No	No	Yes	Yes
W22-05	Yes	Yes	Unknown	Yes	Unknown	No	No	Yes	Yes
W29-01	Yes	Yes	Unknown	Yes	Unknown	No	No	Yes	Yes
W29-02	Yes	Yes	Unknown	Yes	Unknown	No	No	Yes	Yes
W29-03	Yes	Yes	Unknown	Yes	Unknown	No	No	Yes	Yes
W29-04	Yes	Yes	Unknown	Yes	Unknown	No	No	Yes	Yes
W29-05	Yes	Yes	Unknown	Yes	Unknown	No	No	Yes	Yes

NOTES:
[1] Not discussed in the report
[2] Not discussed in the report
[3] MDMER requirements completed, but not all indices described in the EEM followed
[4] As per EEM Table 3.2

Deficiencies in the annual reporting for the benthic invertebrate monitoring program are summarized in Table 28. While the methods and findings of the benthic invertebrate sampling program in 2021 were generally consistent with the methods presented in the EEM, there were deficiencies in the report in terms of missing quantitative analyses between sites and between years and lack of discussion regarding adaptive management. The identified deficiencies should be addressed going forward.

Table 28 Benthic Macroinvertebrates Monitoring Program Consistency with and Recommendations

Consistency with Requirements Gaps and/or Deficiencies	Recommendations
Multiple versions of monitoring plans may result in confusion or be a potential source of method errors.	It is recommended that the EMSAMP be updated to reflect the EEM Study Design as the current version is out of date with respect to the current study design and analytical methods for benthic invertebrate sampling.
Frequency of monitoring not discussed in EEM	EEM only describes 2021 monitoring, with no mention of what the sampling interval will be (e.g., annual, biannual)
Reporting – no indication of whether field procedures were followed as per the EEM	Provide more detail on how samples were gathered in future reports. No discussion on sampling difficulties, sources of error, or whether amendments to sampling design were done in the field.
Reporting - Lab QA/QC procedures and results – not provided in report or appendices	Provide lab QA/QC procedures and results in appendix
Data analysis – missing statistical analyses comparing sites and contemporary data to pre-construction data	Conduct (or describe if completed) the required ANOVAs and multiple comparison tests as required by the EEM
Data analysis – missing some supporting statistical analyses described in the EEM, with no comment on why it was not done	Conduct (or describe if completed) the necessary analyses or provide rationale as to why it was not done.
Reporting – only qualitative comparisons between sites and years discussed	There is sufficient data from sites and between years to conduct quantitative statistical analysis to determine significant difference between impact and reference sites and trends between years.
Reporting – no discussion of need for adaptive management actions; no statistical analyses performed to inform adaptive management	Discuss adaptive management considering quantitative analysis of site data and trend analysis
Reporting – no analysis or discussion of environmental variables or outlier effects on benthic invertebrate results.	Discuss all potential factors that may introduce error in results.

3.5.3 Fish Population Monitoring

3.5.3.1 Documents Reviewed

Documents shown in were reviewed for the fish and fish habitat monitoring section of the audit.

Table 29 Fish and Fish Habitat Documents Reviewed For the 2022 Audit

Document	Version Reviewed	Sections Applicable to Mine Operations Phase
EMSAMP	2020-01	8.0 – Benthic Macroinvertebrates
Water License QZ14-041 Quartz Mining License QML-0011 2020 Annual Report	N/A	3.6 – Aquatic Environment and Appendix J1 – Eagle Gold Mine Phase 1 EEM Study Design (Minnow 2020a) and addenda (Minnow 2020b)
Water License QZ14-041 Quartz Mining License QML-0011 2021 Annual Report	N/A	3.6 – Aquatic Environment and Appendix I – Aquatic Monitoring and EEM Summary (Minnow Environmental 2022)

3.5.3.2 Fish Population Monitoring Program Design in EMSAMP and EEM

The objectives of the Fish and Fish Habitat monitoring program in the EMSAMP were to assess the effect of mine effluent on fish and to document changes to fish habitat downstream of the Project. A fish tissue study was to be undertaken if the concentration of effluent in the exposure area was >1% in the area within 250 m of the final discharge point, as per Environment Canada EEM guidance.

Fish sampling was to occur annually in July or August and was to include sampling locations in Iron Rust Creek (n=1) upstream of the Project, Haggart Creek (n=3) downstream of the project, and Lynx Creek (n=1), a reference site. Sampling was to be conducted with standard collection methods suitable for the habitats present (e.g., electrofishing, baited minnow traps, angling, seining). The following data was to be collected from fish captured at each sample location with all data to be recorded on modified Resource Inventory Standards Committee (RISC) site cards:

- Abundance (based on catch-per-unit effort)
- Species
- Weight
- Length
- General condition

Adaptive management measures were to be triggered if direct or indirect mortality of fish or change to fish abundance or community assemblage occurred including:

- Fish mortalities
- Chronic toxicity effects to individual fish
- Changes to fish abundance or community assemblages
- Acute or chronic toxicity effects are observed while the effluent discharge standards and receiving water quality objectives are consistently met
- Low flows result in decreased habitat availability
- Changes to fish habitat occur as described in hydrology, sediment, and benthic invertebrate sections, including Increased sedimentation

The Phase 1 EEM fish population survey was to employ a control-impact lethal study design targeting slimy sculpin (*Cottus cognatus*) and a control-impact non-lethal study design targeting Arctic grayling (*Thymallus arcticus*). Fish population sampling under the EEM was to be conducted at the same effluent-exposed sites on Haggart Creek as the benthic invertebrates sampling sites. However, reference fish samples were to be collected from Lynx Creek rather than upstream in Haggart Creek. The rationale for the selection of sentinel fish species, sampling approach, and fish population study areas in the EEM study design was:

- Slimy sculpin and Arctic grayling were the most abundant fish species present at the proposed effluent-exposed and reference areas during baseline and previous Water Use License monitoring. All other fish species were not present in sufficient numbers to meet lethal or non-lethal EEM survey requirements (i.e., minimum of 40 mature adults or 100 individuals, respectively).
- Environment Canada (2012) recommends monitoring two sexually mature, sedentary, fish species using a lethal sampling approach. However, most Arctic grayling captured in Haggart Creek and Lynx Creek have been young-of-the-year (YOY) individuals (i.e., >95% of sampled individuals) and very few adults (i.e., >30 cm long) suitable for the EEM program were present. Additionally, adult Arctic grayling are known to reside in both creeks for only a short duration during the open water season making use of adult Arctic grayling for the fish population study difficult.
- During periods of effluent discharge, effluent concentrations were estimated to range from 1% to 15% at the proposed effluent-exposed area. Therefore, this area was determined to be useful for evaluating effects related to the Project effluent.

- Upper Haggart Creek, upstream of Ditch C, was not selected as a reference area of the EEM fish population survey due to insufficient distance from the proposed effluent-exposed area, relatively low numbers of target fish species present, and low site fidelity and associated exposure time to reflect ambient local conditions on fish health.
- The use of Lynx Creek as a reference area for the fish population survey does not have the same issues as Upper Haggart Creek and is consistent with previously reference sampling areas used for the EMSAMP design. Metal concentrations in water and sediment collected at Lynx Creek were generally below applicable guidelines (except naturally high arsenic concentrations) and were considered indicative of limited anthropogenic influences.

The Phase 1 EEM fish population survey was to be conducted in May 2021 to correspond with the maturation timing of gonad development in slimy sculpin. Slimy sculpin are resident fish that spawn in May at water temperatures ranging from 5° to 10°C. As such, survey timing was planned to occur within the window between maximum gonad maturity and spawning. Water temperatures were to be monitored daily in Haggart Creek following ice-off in spring 2021 to inform the timing of EEM sampling prior to slimy sculpin spawning. Sampling was to be initiated when water temperatures reached 5°C, considering effluent discharge history.

In the Haggart Creek effluent-exposed area and the Lynx Creek reference area, a minimum of 20 sexually mature male and 20 sexually mature female slimy sculpin were targeted for the lethal survey. One hundred (100) adult Arctic grayling were targeted for the nonlethal survey. Sampling methods included the following:

- Slimy sculpin and Arctic grayling would be collected using two-person team consisting of a backpack electrofisher operator and a single netter.
- ‘Open’ station sampling (i.e., without block nets at the upstream and downstream ends) would be conducted in an upstream direction.
- At the conclusion of sampling at each station, total effort (i.e., electrofishing seconds) would be recorded to calculate time-standardized catch-per-unit-effort (CPUE) along with upstream and downstream GPS coordinates, and habitat notes pertinent to the fish population survey.
- All captured fish would be identified to species and enumerated. Slimy sculpin and Arctic grayling would be retained for subsequent measurements.

Slimy sculpin retained for lethal sampling would be transported to a dedicated field laboratory for processing as soon as is practical following capture. Measurements collected from each individual fish were to be recorded on appropriate data sheets in the laboratory and were to include:

- total length measured to the nearest tenth of a millimetre using digital calipers
- fish weight to the nearest milligram using an appropriately sized electronic balance
- external abnormalities and parasites
- sex and/or sexual maturity
- whole gonads and livers weights to the nearest milligram (0.001 g) using digital balance
- internal abnormalities and parasites

Whole ovaries from each sexually mature female were to be placed in individually labelled bags and preserved using an appropriate fixative (e.g., 10% buffered formalin solution) after being weighed. Otoliths (and pectoral fin rays as backup) were to be collected from each individual fish, placed into a separately labelled bag, and submitted to a qualified laboratory for age analysis.

Slimy sculpin ovary samples were examined in the lab to determine fecundity and egg weight. Three gonad tissue sub-samples (minimum 100 eggs each) were to be separated from the ovaries, weighed to the nearest milligram, and the number of eggs in the sub-sample counted with the aid of a dissecting microscope. Age analysis was also conducted at the lab. Otoliths were to be used as the primary aging structure for slimy sculpin, with pectoral fin rays used as backup and/or confirmatory structure. Prepared sections of otoliths or pectoral fin rays were to be mounted on a glass slide and aged (i.e., annuli counted) under a compound microscope. Age was to be recorded with a confidence rating based on edge condition.

Laboratory QA/QC measures applied to processing samples for fecundity determination was to include recounting the numbers of eggs in 10% of subsamples assessed to verify ±5% precision. Egg count data were to be used to estimate total fecundity and the average egg weight for each female.

For Arctic grayling retained for non-lethal sampling, fish were to be processed on the shoreline and the following information collected:

- For individual fish, external condition, fork and total length to the nearest millimetre, and fresh body weight to the nearest milligram using an analytical balance with ± 1% precision or appropriately sized spring scales for fish less than <50 grams.
- For a subset of individual fish spanning the size range of fish captured fish at each study area, otoliths were to be extracted in the field from approximately 10% of the total number of fish sampled from each study area.
- Arctic grayling not retained for age analysis were released into the study area from which they were collected after marking with a visible implant elastomer tag to identify recaptured fish.

Fish community sampling data was to be tabulated and CPUE calculated separately for the Haggart Creek effluent-exposed area and the Lynx Creek reference area. Electrofishing CPUE was to be

calculated as the number of fish captured per electrofishing minute. Analysis of the fish community sampling data was to include comparisons of total fish species richness, total number of fish captured, and total CPUE between study areas. In addition, temporal comparison of fish assemblage and relative abundance (i.e., CPUE) was to be conducted to evaluate potential changes in fish community indicators compared to historical data. Data analysis was to follow those recommended for EEM fish population surveys as described below:

- For the slimy sculpin lethal population survey:
    - fish measurements, summary statistics including mean, median, minimum, maximum, standard deviation, standard error, and sample size were to be calculated separately for each sex, by study area, for all endpoints related to survival (age and age structure), energy use (growth and reproduction), and energy storage (condition and relative liver size).
    - All data sets were to be assessed for normality and equality of variance to determine the suitability of parametric statistical procedures. If data significantly violated the assumption of normality following transformation, non-parametric statistics were to be used.
    - For each of the calculated endpoints, statistical differences between effluent-exposed areas and reference study areas were to be assessed separately for each fish sex using ANOVA, Mann-Whitney U-test, or Analysis-of-Covariance (ANCOVA) as appropriate.
- For the Arctic grayling non-lethal population survey:
    - length-frequency distributions were to be plotted so that, together with aging data, YOY individuals could be distinguished from juveniles and adults for each study area.
    - Summary statistics including mean, median, minimum, maximum, standard deviation, standard error and sample size for length and weight measurements were to be calculated by study area and, if possible, YOY and juvenile/adult age categories separately based on the outcome of the length-frequency distribution analysis.
    - The proportion of YOY fish and individual length and weight measurements were to be used to calculate endpoints associated with survival, growth, reproduction, and energy storage for each study area according to the procedures outlined for a non-lethal assessment.
    - Length-frequency distributions were to be compared using a nonparametric, two-sample, Kolmogorov-Smirnov goodness of fit test.
    - Relative proportions of YOY were to be compared between the effluent-exposed area and reference area to evaluate potential differences in reproductive success.
    - Mean length and body weight were to be compared separately for YOY and juvenile/adult groups between the effluent-exposed area and reference areas using ANOVA, with the data inspected for normality and homogeneity of variance before applying parametric statistical procedures. In cases where data do not meet the assumptions of ANOVA despite log transformation, non-parametric Mann-Whitney U-tests were to be performed.
    - Body weight at fork length (condition) was to be compared using ANCOVA based on methods provided in EEM technical guidance.

An effect on the fish population, defined as a statistically significant difference between an effluent-exposed area and a reference area at an alpha level of 0.10, was to be evaluated for each of the EEM effect endpoints. For endpoints showing significant area differences, the magnitude of difference between the effluent-exposed area and reference area was to be calculated using mean (ANOVA), adjusted mean (ANCOVA with no significant interaction) or predicted values (ANCOVA with significant interaction) as per EEM guidance.

Like the CES applied to the benthic invertebrate community survey, a difference of ± 25% for survival and growth indicators, and a difference of ± 10% for the condition indicator, was to be used as fish population survey CES applicable for defining ecologically relevant differences between study areas.

Finally, an *a priori* power analyses was to be completed to determine appropriate sample sizes for future fish population surveys as recommended by Environment Canada (2012). The power analyses were to be completed based on the mean square error values generated during the ANOVA or ANCOVA procedures. The power analysis results were to be reported as the minimum sample size (i.e., number of fish/area) required to detect a given magnitude of difference between the effluent-exposed and reference area populations for each effect endpoint.

The LDSP Outlet effluent contained mercury and selenium concentrations below the EEM triggers for conducting applicable fish tissue surveys as defined in the MDMER (i.e., average annual concentrations of mercury and selenium in effluent were below 0.10 µg/L and 10 µg/L, respectively) in two separate samples collected over four days in April 2019 (Table 3.5). Therefore, VGC was not required to conduct a fish tissue mercury survey or a fish tissue selenium survey as part of their MDMER obligations for the Eagle Gold Project Phase 1 EEM.

3.5.3.3 EMSAMP/EEM Fish and Fish Population Monitoring Program Results

Sampling occurred in Haggart Creek downstream of the Ditch C confluence (spanning the area between Station W4 and W29) as the effluent-exposed area and in lower Lynx Creek (Station L1) as the reference area in 2021 only. Fish sampling was conducted using a combination of backpack electrofishing, seine netting, and minnow trapping.

The EEM fish community sampling employed a control-impact lethal design targeting slimy sculpin and a control-impact non-lethal design targeting Arctic grayling. The original study design called for one field study in May 2021, but because of safety-related challenges related to high flow and low catch of the selected fish species, a second field study was conducted in September 2021.

Measurements and observations collected from individual fish were in accordance with those recommended for the EEM program to evaluate fish health endpoints related to survival (age and age structure), energy use (growth and reproduction), and energy storage (condition and relative liver size) as applicable to lethal and non-lethal designs. The analysis of fish health data was based on recognized statistical approaches to evaluate differences between the effluent-exposed areas of Haggart Creek and the Lynx Creek reference area in 2021. The analysis also evaluated the results based on CES presented in the MDMER to evaluate whether the degree of any differing fish health endpoints between the effluent-exposed and reference areas were ecologically meaningful.

Fish species captured during the May and September field studies in 2021 generally conformed to the same species and relative numbers reported previously in Haggart Creek and Lynx Creek considering electrofishing methods and time of year. Specifically, slimy sculpin were present in greatest abundance in each creek, followed by Arctic grayling. The 2021 abundance results aligned with previous studies conducted in the years prior to mine operations.

Adult slimy sculpin were used as the primary basis for evaluation of effects of mine effluent exposure on fish in Haggart Creek. Sample sizes for adult male and female slimy sculpin were small during the May survey but, nevertheless, indicated that adult slimy sculpin in Haggart Creek showed no significant differences in age or age structure, growth, relative number, size of eggs produced, or relative liver size compared to those at Lynx Creek. However, significantly lower relative gonad weight (males and females) and condition (males) were found in slimy sculpin from Haggart Creek compared to slimy sculpins from Lynx Creek. The difference in relative gonad weights was believed to reflect later development in fish at Haggart Creek due to naturally cooler water temperatures compared to Lynx Creek.

Although greater numbers of Arctic grayling were captured at Haggart Creek compared to Lynx Creek, the few adult Arctic grayling captured in Lynx Creek were considerably larger than fish captured in Haggart Creek. Nevertheless, the statistical analysis indicated no ecologically significant differences in the condition of Arctic grayling captured in Haggart Creek and in Lynx Creek in 2021. Thus, based on the available data, no adverse mine-related effects on fish health were indicated in Haggart Creek in 2021 (Victoria Gold 2022).

3.5.3.4 Reporting Adequacy, Consistency with Requirements, and Recommendations

Fish community sampling was not conducted in 2020. However, the rationale why sampling was not conducted was not clearly explained in the 2020 Annual Report (Minnow 2021). Consistency with requirements Audit results of the 2021 study are given in Table 30.

Table 30 Fish Population Audit Findings

Site	Appropriate Number of Samples Collected? (Yes/No)	Samples Collected at Appropriate Time of Year and from Appropriate Habitat? (Yes/No)	Field QA/QC Protocols Followed? (Yes/No)[1]	Required Lab Analysis Conducted? (Yes/No)	Lab QA/QC Protocols Followed? (Yes/No)[2]	Required Indices Calculated? (Yes/No)[3]	Required Statistical Analyses Performed? (Yes/No)[4]	Results Compared to Baseline Data? (Yes/No)	Adaptive Management Requirements Discussed? (Yes/No)
Haggart Creek	Yes	Yes	Unknown	Yes	Unknown	Yes	Yes	Yes	Yes
Lynx Creek	Yes	Yes	Unknown	Yes	Unknown	Yes	Yes	Yes	Yes

NOTES:

[1] Not discussed in the report

[2] Not discussed in the report

[3] Presented qualitatively

[4] As per EEM Table 3.4. This is presented qualitatively in the 2021 report.

summarizes the deficiencies in the fish and fish habitat monitoring program and provides recommendations how they can be addressed. In general, the fish and fish habitat monitoring program in 2021 was completed as specified in the EEM. However, while sampling occurred as scheduled in May of 2021, an additional sampling effort was made in September, rather than the summer when fish community was likely most stable and sampling efficiency is highest. Additionally, additional sampling methods were used than what was proposed in the EEM. While this isn't a consistency with requirements issue, it is recommended that the EEM methodologies be updated to account for the potential use of other methods besides backpack electrofishing or lessons learned from previous sampling efforts. Last, there were some areas where the report was less descriptive in terms of quantitative results or could be more transparent and show the statistical and quantitative comparisons between data sets more explicitly. The deficiencies and recommendations presented below should be incorporated in annual reporting going forward.

Table 31 Fish and Fish Habitat Monitoring Program Consistency with Requirements and Recommendations

Consistency with Requirements Gaps and/or Deficiencies	Recommendations
Multiple versions of monitoring plans may result in confusion or be a potential source of method errors.	It is recommended that the EMSAMP be updated to reflect the EEM Study Design, as the current version is fish and fish habitat monitoring.
Field methods – additional sampling methods used, but not described in EEM	The EEM only includes electrofishing as a sampling method, but seine nets and minnow traps were used in the field. Recommend expanding the sampling methods section of the EEM to include these other methods.
Field methods – single pass open sites	Although not required by the MDMER and not a deficiency of the annual monitoring programs, multi- pass depletion estimates in closed sites would provide more accurate and repeatable results and be better for long-term monitoring and statistical analyses
Field methods – Follow up fish and fish habitat surveys conducted in September instead of July or August when fish communities are likely more stable and fish sampling is more efficient	Although not a deficiency of the annual monitoring programs, sampling should be conducted in summer when fish community is most stable and sampling efficiency is highest.
Lab QA/QC procedures and results – not provided in report or appendices	Provide lab QA/QC procedures and results in appendix
Data analysis – missing references to completing statistical analyses comparing sites and contemporary data to pre-construction data	Conduct the required ANOVAs and multiple comparison tests as required by the EEM (e.g., append appropriate statistical analyses in excel format)
Reporting – no mention of why sampling did not occur in 2020	Speak to limitations or rationale if methods are excluded or change from the stated plan in the EEM
Reporting – only qualitative comparisons between sites and years discussed	There is sufficient data from sites and between years to conduct quantitative statistical analysis to determine significant difference between impact and reference sites and trends between years.

Table 31 Fish and Fish Habitat Monitoring Program Consistency with Requirements and Recommendations

Consistency with Requirements Gaps and/or Deficiencies	Recommendations
Reporting – no analysis or discussion of environmental variables, fish results, or outlier effects on benthic invertebrate results.	Discuss all potential factors that may introduce error or skew results.
Reporting – no mention of adaptive management trigger or threshold exceedances	Reports should specify whether any of the adaptive management thresholds in the EMSAMP/EEM were exceeded and if any of the adaptive management measures were required and implemented each year

4 Terrestrial Environment

4.1 Vegetation and Soils

The intent of Victoria Gold's vegetation monitoring program is *"to evaluate changes to vegetation during the life of the Project* (EMSAMP, Section 12.1)", while the intent of the soil monitoring program is *"to evaluate changes to metal and nutrient levels in soils during the life of the Project as a result of dust deposition* (EMSAMP, Section 13.1)".

The focus of "changes to vegetation" is mainly plant metal concentrations, in particular to *"identify whether any trends in metal uptake could be attributed to site activities",* such as mine-generated dustfall, dusts' effects on soil metals concentrations and plants' tissue metal concentrations (via soil-to-root uptake and translocation, and direct dermal adsorption from dusts settled on leaves/stems). However, another objective of the vegetation monitoring program with respect to "changes to vegetation" is *"to assess vegetation species composition to determine vegetative assembly and local ecosystem changes* (EMSAMP, Section 12.3)*"*, presumably that would be associated with any changes in soil metal and nutrient concentrations, or impacts associated with dust deposition on plants.

These objectives have been re-stated here as Stantec has evaluated the 2020 and 2021 monitoring (years 3 and 4 of the program) with respect to both annual sampling and analysis requirements for site vegetation and soils, as well as these broader objectives.

4.1.1 Documents Reviewed

The documents listed in Table 32 were reviewed in evaluating the 2020 and 2021 monitoring of site vegetation and soil element concentrations.

Table 32 Vegetation and Soil Monitoring Related Documents Reviewed

Document	Version Reviewed	Sections Applicable During Operations Phase
Environmental Monitoring Surveillance and Adaptive Management Plan (EMSAMP)	2020-01	Section 12 Vegetation Section 13 Soils
Eagle Gold Mine 2020 Environmental Audit Report	November 30, 2020	Section 4.1 Vegetation and Soils
Re: Eagle Gold Mine QML-0011 Environmental Audit Table 1 Third Party Audit Findings and Victoria Gold Response	December 2, 2020	Vegetation and Soils

Table 32 Vegetation and Soil Monitoring Related Documents Reviewed

Document	Version Reviewed	Sections Applicable During Operations Phase
Eagle Gold Project Water Licence QZ14-041-01 Quartz Mining License QML- 0011 2020 Annual Report		Section 3.9.1 Vegetation Monitoring Program Section 3.9.3 Soils Appendix M Vegetation and Soil Monitoring at the Eagle Gold Project 2020
Eagle Gold Project Water Licence QZ14-041-01 Quartz Mining License QML- 0011 2021 Annual Report		Section 3.9.1 Vegetation Monitoring Program Section 3.9.3 Soils Appendix M Vegetation Monitoring at the Eagle Gold Project 2021

4.1.2 Monitoring Program Requirements

4.1.2.1 Vegetation Monitoring Program

Section 12.3.2 of the EMSAMP established that vegetation (and soil) monitoring would be performed at four permanent plots (D1, D2, D3, D4). These plots were situated in areas with natural overburden soils, and different directions from the mine's main area of operations. Stations D3 and D4 were described as being in areas of the highest dispersion modelling predicted dustfall, and downwind of prevailing winds, respectively. Due to disturbance or activities occurring at plots D1, D2 and D4, those stations were slightly repositioned in 2019 or 2020 and renamed plots D1B, D2B and D4B. In 2020 a fifth plot (D5) was also added to the monitoring program. The five current plots are described in Table 33.

Table 33 Locations of Vegetation and Soil Monitoring Plots

Plot #	Aspect	Elevation (m)	Site Description
D1B	Level	1437	Potato Hills near climate station, 40 m south of original D1.
D2B	West	791	Upslope of the air quality station and the camp climate station, south side of Eagle Creek within influence. Established in 2019 approximately 70 m from original site D2.
D3	Southwest	1356	Top of Eagle Pup/Platinum Gulch drainages near the over-the-top road.
D4B	East	751	On the west side of the access road south of the Haggart Creek culverts and the power line. Established in 2019 approximately 300 m south of the original site D4.
D5	Level	720	Near surface water quality site W5, Haggart Creek upstream of Lynx Creek.

Section 12.3 of the EMSAMP states that *"all permanent vegetation monitoring plots will be sampled once each year during the growing season (July and August) before leaves start to yellow"*. Willow, sedge, bluejoint and northern rough fescue are indicated to be the preferred vegetation types sampled. The wording "each year" in Section 12.3 conflicts with the sampling frequency stated elsewhere. The EMSAMP's *Figure 12.3-1 Vegetation and Soil Monitoring Plot Layout* states *"foliar samples for willow, sedge, bluejoint and northern rough fescue collected every other year"*.

Section 12.3 of the EMSAMP states that *"vegetation samples will be analyzed by an accredited laboratory for metals including mercury using inductively coupled plasma mass spectrometry (ICP-MS). Duplicates of selected vegetation samples and reference standards will also be completed for the purpose of QA/QC of laboratory analytical technique over the Project phases"*.

Section 12.3 of the EMSAMP also states that "*vegetation species composition will be assessed to determine vegetative assembly and local ecosystem changes*."

Section 12.4 of the EMSAMP states that "*in the event vegetation monitoring indicates that metals concentration in vegetation is significantly increasing, VGC will consider additional dust control contingency measures described by the Dust Control Plan to limit particulate matter settling on vegetation."* However, the term "significantly" was not defined in terms of whether that means statistical significance or environmental significance (i.e., ecological and/or human health consumptions risks).

4.1.2.2 Soil Monitoring Program

Section 13.3 of the EMSAMP states that the *"soil monitoring sampling locations were established in conjunction with the permanent vegetation monitoring plots"*, i.e., the same locations listed above in Table 33 (D1B to D5).

Section 13.3 of the EMSAMP states that *"soil monitoring is performed in coordination with vegetation monitoring, once annually during the growing season (July /August)"* and that soil samples are to be *"collected from the surface soil horizon at depths between 0 and 0.5 m"*. Again, the wording "annually" in Section 13.3 is unclear, in relation to the soil sampling program having been meant to accompany the vegetation monitoring program and the EMSAMP's *Figure 12.3-1 Vegetation and Soil Monitoring Plot Layout*. That figure clearly states (in the legend) and illustrates (sampling grid depicting odd years) that soil sampling is to occur every other year. Section 13.3 of the EMSAMP details the methods to be used to measure metals, nutrients, and other parameters in soils. The prescribed method for quantifying metals was the BC method referred to as the Strong Acid Leachate metals (SALM).

Section 13.4 of the EMSAMP states that *"in the event monitoring data indicates that metals concentration in soil within the footprint or at sites established outside the Project footprint is increasing, VGC will engage additional dust control contingency measures described above in the Air Quality Section 11 to limit particulate matter settling on soils."*

4.1.3 Sampling and Reporting Adequacy, Consistency with requirements, and Recommendations

Vegetation sampling and reporting was performed by Laberge Environmental Services in 2020 and 2021. Laberge's methods and results were presented in Appendix M of the Eagle Gold Project 2020 and 2021 Annual Reports.

Soil sampling was performed in 2020 but not 2021. VGC confirmed with Stantec that it shifted the soil sampling program to every-other-year. VGC has met, and possibly gone beyond, its monitoring requirements by collecting vegetation in 2021. VGC should confirm whether the EMSAMP can be interpreted as sampling of soil and vegetation every second year. Such sampling frequency is likely acceptable for the purposes of tracking changes in soil and vegetation metals levels and community composition, in particular if these parameters don't appear to be showing changes relevant to the protection of ecological and human health.

Sampling occurred at all five plot locations listed in Table 33. Samples were analysed by ALS Environment and the laboratory reports were included. Vegetation metal concentrations were presented in tables in both the 2020 and 2021 Annual Reports as range per plant type (Table B-1) and average per plant type (2020 Annual Report Table B-2 and Figure 3, 2021 Annual Report Table B-3 and Figure 3). Soil grain size, nutrients, and metals concentrations were presented in Tables 3, 4, and 5 of the 2020 Annual Report. The 2020 sampling and analysis appears to have lacked inclusion of soil and plant sample duplicates for QA/QC purposes (calculation of lab relative percent differences), while the 2021 sampling program included a few plant sample duplicates, and relative percent differences were calculated and presented in Table B-2, discussed, and were generally low/acceptable. The metals concentrations shown in these tables as well as the reports figures appear to be dry weight results; however, Laberge should confirm this, and for future reports tables and figures should include a reference to tissue concentrations being dry weight or wet weight concentrations. Table B-2 should also indicate that the concentrations shown are average/mean values.

2021 plant tissue concentrations were compared to National Research Council of the National Academies (U.S.) Mineral Tolerance of Animals "maximum tolerable levels (MTLs) of minerals in the feed of animals based on indices of animal health" (NRC, 2005), specifically the MTLs for cattle and rodents. Whereas 2020 plant tissue concentrations were compared to Puls (1994) dietary tolerances for beef cattle, that had previously been used by Stantec (2011). The NRC MTLs are a good choice as a set of food-based ingestion screening benchmarks. The toxicological basis of each MTL is well documented. Table B-1 used MTL values for cattle and rodents. Stantec endorses the decision to include rodents MTL values given small mammals are often a receptor group evaluated in wildlife risk assessments and given this receptor group can have greater exposure to more localized contamination than large wildlife on account of their smaller home ranges. Note that the NRC document also includes MTLs for poultry, and the values for selenium (3 mg/kg) and vanadium (<5 mg/kg) are lower than the values used by Laberge for rodents and cattle. Consideration should be given to including these values for poultry, as their inclusion may make the screening exercise more protective of site bird populations.

The 2020 soil concentrations were compared to the Canadian Council of Ministers of Environment (CCME) guidelines and Yukon Contaminated Sites Regulation (CSR) standards for agricultural and park land use. Arsenic, chromium, molybdenum, nickel were shown to exceed guidelines and standards. Chromium, molybdenum, and nickel were shown to exceed guidelines or standards at stations D3 and D4, while arsenic was shown to exceed guidelines and standards at all five plots.

As indicated in Stantec's previous 2020 Environmental Audit Report, future monitoring reports should attempt to evaluate in greater detail whether there are trends over time in the plant and soil metals concentrations, as wording in the EMSAMP suggests that there needs to be an evaluation of whether metals concentrations are increasing, as opposed to just whether metals concentrations increase above soil guidelines/standards or agricultural screening benchmarks such as MTLs. Stantec suggests that future monitoring could include the following to assist in answering whether metals concentrations are increasing in plants and soils as a result of mine operations:

- Preparation of figures that illustrate all tissue and soil sample results to date (individual sample results or means by plant type for a plot similar to the report's Figure 3) using different colours for different years, and potentially including the pre-mine 2009 plant and soil metal concentrations that are shown in the following reports:
    - Stantec (2011e) Eagle Gold Project: Environmental Baseline Report: Vegetation, prepared for Victoria Gold Corp., June 2011.
    - Stantec (2011g) Eagle Gold Project, Environmental Baseline Report: Surficial Geology, Terrain, and Soils; prepared for Victoria Gold Corp., June 2011.
- Statistics comparing tissue and soil results between stations and over time (since 2018, or since 2009). Such a comparison may be challenging given the limited number of sampling plots and samples collected from each plot.

The plant community composition (species present) was also determined and presented for each plot in both 2020 and 2021, along with some general discussion of the community composition relative to earlier years. It may be difficult determine whether community composition changes are occurring at the plots by only recording species presence. Observations of percent cover by the species present could be added to the field observations and may provide another tool to evaluate changes in community composition over the life of the monitoring program.

At some of the sampling plots different plant species from the EMSAMP's target species of willow, sedge, bluejoint and northern rough fescue were collected in 2020 and 2021. Section 12.3 of the EMSAMP indicates that *"if those particular species are not available within the 2 m circle, then samples are taken from the nearest available specimens"*. It is unclear in the EMSAMP on whether that statement was intended to mean collect whatever plant types were within the sample location/circle, or whether sampling was meant to be shifted to a nearby location where those species were present. The former was likely the intent of the EMSAMP and appears to have been conducted, i.e., collection of what is present as substitute species within the pre-set sampling areas. Collection of alternate species should be fine provided that the species collected each sampling event are similar in order to monitor same-species changes. However, it may be useful to evaluate the cumulative species monitoring data to identify a

priority list of alternate species for sampling at each site if the target species described in the EMSAMP are not available. This may help to provide consistency in vegetation sampling to support analysis of longer-term trends. Such a list might consider plant species of importance as wildlife browse or forage, and for traditional use.

In review of the EMSAMP's methods Stantec has also observed two aspects of the field collections that may limit the program's ability to notice increases in soil metal concentrations associated with dustfall deposition, or to make meaningful comparisons of vegetation metals concentrations between years or stations. 1) Soil sampling appears to be a composite sample of the 0 to 0.5 m interval. Dustfall effects may be more pronounced on shallower more surficial soil. Soil monitoring should be expanded to include separate samples of the LFH layer (litter-fermented-humus) and shallower mineral layer at sites where these different soil horizons are available. 2) The vegetation analyses are for unwashed plants, and therefore it is possible that if higher metals concentrations were observed in a given year, that could be an artifact of weather (duration since rain) and the level of dust adhered to the plants rather than bioaccumulation. If the primary objective of the monitoring program is to identify small increases in plant concentrations (i.e., statistically significant bioaccumulation) then consider analysing rinsed plant samples. Note that unwashed results are better for comparison to the NRC MTLs, and if the data were to be used in a human health and wildlife risk assessment, assuming people, and given wildlife, would not be washing food items.

Overall, Laberge's field investigations and reporting appear to have met the monitoring requirements of the EMSAMP; however, Stantec would encourage VGC to adopt the above recommendations with respect to future reports, specifically such reports should expand on the comparison of metals concentrations in plants and soils over time and between stations. Recommendations are summarized below in Table 34.

Table 34 Vegetation and Soil Monitoring Program Deficiencies and Recommendations

Consistency with requirements Gaps and/or Deficiencies	Recommendations
Unclear wording of EMSAMP with respect to frequency of vegetation and soil sampling	Confirm whether both vegetation and soil sampling can be performed every two years. If acceptable by regulator adopt such a sampling and reporting frequency.
Missing concentration information in Annual Report tables and figures.	Ensure that tables and figures presenting plant metals concentrations indicate whether results are wet weight or dry weight concentrations.
The NRC (2005) MTLs used as screening benchmarks for vegetation metals concentrations only included values for mammals (cattle and rodents).	Consider including the NRC (2005) MTLs for poultry as screening benchmarks for birds.
To date the Annual Reports have focused predominantly on comparing vegetation and soil metals concentrations to benchmark levels, and have not addressed whether concentrations have increased since the mine began operating.	Consider performing a more detailed evaluation/depiction of metal concentrations in plants and soils over time via the use of statistics (examine for feasibility) and figures that differentiate results by year. Include in this comparison the historic pre-mine 2009 vegetation and soil results.

Table 34 Vegetation and Soil Monitoring Program Deficiencies and Recommendations

Consistency with requirements Gaps and/or Deficiencies	Recommendations
The vegetation community assessment has evaluated which species are present at each plot; however, community composition (percent cover by those species present) was not recorded.	Consider including percent cover for those species present at a plot, to possibly facilitate a more quantitative/detailed evaluation of changes in community composition over time.
Alternate species of plants have been sampled from the EMSAMPs preferred species of willow, sedge, bluejoint and northern rough fescue.	Identify a priority list of alternate species for sampling at each plot if the target species described in the EMSAMP are not available.
Plant metals results are for unwashed samples. This makes it difficult to discern whether an increase in concentrations at a given location in a given year reflect greater bioaccumulation, or a greater amount of adhered dust and time since rainfall.	Determine the objectives of the monitoring program and adjust the field program accordingly. For the purpose of discerning if there are small statistically significant increases in plant metals concentrations over time, switch to analysis of rinsed plant samples. For the purpose of collecting data for human health and wildlife risk assessment continue to collect and analyze unwashed plant samples. Alternatively, continued to analyse unwashed samples and archive plant material for later washing and re-analysis if unwashed results indicate an increase in concentrations and one wishes to ascertain if that is due to dust adhesion versus bioaccumulation.
Soil sampling over the 0–0.5 m horizon may be too deep to detect changes in shallower soils resulting from dustfall deposition.	Soil monitoring should be expanded to include separate samples of the LFH layer and shallow mineral layer.

4.2 Wildlife Protection

The intent of VGC's Wildlife Protection Plan (WPP) is to minimize wildlife disturbance at the site through the establishment of wildlife protection policies, employee education, traffic management, and avoidance of disturbance and harassment of wildlife in the Project area (Strata Gold 2017).

4.2.1 Documents Reviewed

Quartz Mine License QML-011 and Water License QZ14-041 both require quarterly and annual reporting on license conditions and management plans related to wildlife protection. This audit reviews available reports, supporting documentation, and on-site audit results against requirements in the WPP and mine licenses. The documents listed in were reviewed as part of the wildlife protection section of the audit.

Table 35 Wildlife Protection Documents Reviewed

Document	Version Reviewed	Sections Applicable during Operations Phase
Wildlife Protection Plan	2017-01	3.0 – Wildlife Protection Procedures 4.0 – Monitoring
Water Licence QZ14-041 Annual Reports	2020 Annual Report 2021 Annual Report	3.9.4 – Wildlife
Quartz Mining License QML-0011 Quarterly Wildlife Reports	September 1, 2020 December 1, 2020 March 1, 2021 June 1, 2021 September 3, 2021 December 1, 2021 February 28, 2022 June 3, 2022	all
Variation Notice, Compliance Monitoring & Inspections, Government of Yukon	March 26, 2021	n/a

4.2.2 Management and Monitoring Program Implementations and Data QA/QC

The WPP guides management and monitoring of wildlife during the mine's construction and operations phases. Section 3.0 of the WPP includes mitigation measures that VGC has committed to implementing and following related to wildlife-human conflicts, land use, transportation, wildlife habitat protection, and the heap leach/events pond operation and management. Section 4.0 of the WPP describes four wildlife-related monitoring programs that are to be implemented at the Mine:

- Wildlife Records Program
- Heap Leach Facility Area and Events Pond Monitoring Program
- Moose Distribution Surveys
- Metal Levels in Vegetation Monitoring Program

An audit of the Wildlife Records Program, Heap Leach Facility Area and Events Pond Monitoring Program, and Moose Distribution Surveys are provided in this section. An audit of the Metal Levels in Vegetation Monitoring Program is provided in Section 4.1 (Vegetation and Soils) of this audit.

Wildlife Records Program

The objective of the Wildlife Records Program is to provide data to evaluate changes to wildlife distribution and habitat use as a result of Mine activities during construction and operations. The wildlife records program includes monitoring of wildlife incidents, documenting observations of focal species (i.e., moose, grizzly bear, olive-sided flycatcher, and rusty blackbird), documenting observations of species on Schedule 1 of the *Species at Risk Act*, and monitoring the implementation of mitigation measures described in Section 3.0 of the WPP. The data collected are also intended to inform adaptive management as required. The WPP requires annual reporting be completed on the findings of the Wildlife Records Program and QML-0011 requires quarterly reporting of wildlife observations and incidents.

The wildlife sections and applicable appendices of the 2020 and 2021 Annual Reports were reviewed. The 2020 Annual Report states that wildlife mitigation measures were implemented through mandatory site orientations, traffic control policies, and training and implementation of the Project's management plans. The Annual Report states that personnel record wildlife sightings and encounters on wildlife observation cards. It is unclear if these observation cards are the same as the Wildlife Observation Form (Appendix E of the WPP).

Wildlife is further addressed in four sections of the 2020 Annual Report:

- Section 3.9.4.1 (Nesting Songbird Surveys) states that 10 nesting songbird surveys were completed prior to clearing activities that took place from May to July 2020. It is unclear how many of these surveys occurred during the reporting period for this audit (i.e., after July 1, 2020). The 2020 Annual Report states that 10 nests were found; however, the nests were either deemed to be inactive or found outside of the active work zones. No information is provided on the methods, types of wildlife features surveyed, survey dates, or survey locations. The Annual Report does not indicate if:
    - prior to surveys VGC consulted with the appropriate regulator and developed management strategies (see Section 3.4 of the WPP), or
    - surveys were completed by a qualified professional.
- Section 3.9.4.2 (Pre-Clearing Wildlife and Wildlife Habitat Surveys) states that pre-clearing wildlife feature surveys were completed and no wildlife features were found. No information is provided on the methods, types of wildlife features surveyed, or survey locations.
- Section 3.9.4.3 (Wildlife Incidents) summarizes wildlife incidents which occurred in 2020. The report states that several incidents with nuisance bears were reported to the Mayo Conservation Officer, but no lethal control was required. The report also states that ongoing education is provided to Site personnel regarding wildlife. The Annual Report does not indicate if wildlife incidents were reported using the Wildlife Incident Form (Appendix D of the WPP).
- Section 3.9.4.4 (Annual Moose Survey) summarizes the annual moose survey. The 2020 moose survey occurred in March 2020, which is outside of the audit period.

The 2021 Annual Report states that wildlife mitigation measures were implemented through mandatory site orientations, traffic control policies, and training and implementation of the Project's management plans. Wildlife is further addressed in four sections of the 2021 Annual Report:

- Section 3.9.4.1 (Nesting Songbird Surveys) states that land disturbance occurred outside of the breeding period and no songbird surveys were completed in 2021.

- Section 3.9.4.2 (Pre-Clearing Wildlife and Wildlife Habitat Surveys) states that one wildlife habitat feature pre-clearing survey was completed in 2021 and no wildlife habitat of note was detected. No information is provided on the methods, types of wildlife habitat surveyed, or survey location.

- Section 3.9.4.3 (Wildlife Incidents) states that there were several observations of animals near the camp and mine site, but no deterrents were deployed. A conservation officer attempted to trap an American marten due to concerns the animal was at risk of injury from mine activities, however the trapping was unsuccessful. The report notes one wildlife mortality, a common raven, which was reported to the Mayo Conservation Officer. The report also states that ongoing education regarding wildlife continues to be provided to Site personnel. The Annual Report does not indicate if wildlife incidents were reported using the Wildlife Incident Form (Appendix D of the WPP).

- Section 3.9.4.4 (Annual Moose Survey) states that the 2021 moose survey did not occur. Victoria Gold was granted a temporary variation from their requirement to complete annual moose surveys due to constraints related to COVID-19.

Quartz Mining License QML-0011 requires that quarterly reporting of wildlife incidents and observation be completed. These reports summarized wildlife incidents and observations as required by QML-0011. The September 2020 through June 2022 quarterly reports were reviewed). The reports state that wildlife mitigation measures continue to be implemented, and that ongoing education regarding wildlife and waste management is provided to site workers. Three bear encounters associated with the waste management facility were recorded in the quarterly reports. The encounters occurred August 24-28, 2020 during a maintenance shutdown of the waste management facility and did not result in bear fatalities or injury. No other incidents at the waste management facility were reported. Detections of two species listed on Schedule 1 of the *Species at Risk Act* (i.e., grizzly bear, olive-sided flycatcher) are included in the quarterly reports. However, there is no indication in the quarterly reports or annual reports if those detections have been reported to the Yukon Conservation Data Centre as required in Section 4.1 of the WPP.

Documentation provided by VGC indicates that the waste management follows the requirements laid out in the WPP. Waste is stored on-site in heavy bins which require a winch to open and the waste compound is surrounded by electrified fence. Waste is either incinerated or transported to an off-site landfill for final disposal.

Three wildlife mortalities are reported in the quarterly reports. A bird mortality (species not recorded) was found at the Heap Leach Facility on July 14, 2020. The quarterly report does not provide any additional information on this mortality and does not specify if the mortality was found in the event pond or another

area of the Heap Leach Facility. A second bird mortality (species not recorded) was found near the powerline adjacent to the main control pond on July 15, 2020. The quarterly report does not provide any additional information on this mortality and the cause of the mortality is unknown. A third bird mortality (common raven) was recorded along a Project road (date unknown), but the quarterly report states that there was no indication that the mortality was related to Project activities. The Annual Report does not indicate if these wildlife mortalities were reported using the Wildlife Incident Form (Appendix D of the WPP).

Heap Leach Facility Area and Events Pond Monitoring Program

The objective of the Heap Leach Facility Area and Events Pond Monitoring Program is to confirm that wildlife access to process solution is restricted. Section 3.5 of the WPP describes mitigation measures to reduce effects on wildlife from interactions with the Heap Leach Facility Area and Events Pond. These mitigations include:

- Fencing the area
- Controlling the growth of vegetation at the site and not reclaiming the events pond shoreline
- Using Bird Balls or a reasonable alternative to deter birds from landing on the events pond.

Section 4.2 of the WPP states that monitoring of the heap leach facility area will be undertaken as part of the Wildlife Records Program and that regular inspections of the events pond will be completed by the Environmental Coordinator. The WPP requires annual reporting be completed on the results of the heap leach facility area monitoring and events pond inspections.

Section 5.5.2 of the 2020 and 2021 Annual Reports report on wildlife monitoring of the Heap Leach Facility. This section states that “Wildlife observations and incidents are documented and reported quarterly through the Environmental department as per QML-0011” (Victoria Gold Corp 2020, 2021). Quartz Mining License QML-0011 annual reports note one bird mortality (July 14, 2020) in association with the Heap Leach Facility Area and events pond area. Information on the species, possible cause of mortality, and location of the mortality was not reported. The Annual Report does not indicate if the wildlife mortality was reported using the Wildlife Incident Form (Appendix D of the WPP). Other wildlife detections in the Heap Leach Facility and Events Pond areas were:

- A grey wolf was observed walking through the Phase 1B Heap Leach Facility area (May 28, 2021)
- A squirrel was observed in the Heap Leach Facility (July 13, 2021)
- A porcupine was observed at the Events Pond (July 22, 2021)
- An owl was observed perched on a sign at the pregnant leach solution pump at the Heap Leach Facility (March 30, 2022)

Section 5.5.2 of the 2020 Annual Report indicates that exclusion fencing will be installed around the perimeter of the Events Pond in 2021. At the time of the site-audit (September 2022) fencing around the Events Pond had not yet been installed. As per information provided by the Environmental Manager, fencing installation was delayed due to the need to install permanent power in the area prior to fencing being installed; fencing installation is now planned for later in 2022 or 2023.

The annual reports do not provide information on whether vegetation management at the Heap Leach Facility Area and Events Pond has occurred.

Section 5.5.2 of the 2020 and 2021 Annual Reports indicate that electronic propane sound cannons are used in the area around the Events Pond during the summer and fall in lieu of Bird Balls to deter wildlife, particularly migratory birds and waterfowl, from landing on the Events Pond. Information on the decision and rationale to substitute sound cannons for Bird Balls, and whether the appropriate regulators or a qualified professional were consulted is not provided.

4.2.3 Reporting Adequacy, Consistency with Requirements, and Recommendations

The content of the Annual Reports and quarterly reports was generally sufficient to confirm consistency with the requirements of the WPP. There were no discrepancies between the wildlife incidents reported in the quarterly and annual reports. However, the annual and quarterly reports do not contain enough information to determine if all mitigation measures contained in the WPP are being implemented. Stantec has identified the following deficiencies and recommendations, which are also summarized in Table 36 :

- Section 3.3 of the WPP includes a requirement to facilitate wildlife movement by providing wildlife crossing and escape points along snowbanks and open ditches. There is no information in the 2020 or 2021 Annual Reports indicating how crossing points are selected, the distance between crossing points, how frequently crossing points are maintained, and what snow depth triggers the creation of crossing points in snowbanks. Stantec recommends that the Annual Report include information on the implementation of measures listed in Section 3.3 of the WPP.
- Section 3.4 of the WPP includes a requirement to complete a wildlife habitat feature survey prior to clearing activities. The Annual Reports do not provide information on the methods, types of wildlife features surveyed, survey locations, or whether this work was carried out by a qualified professional. Stantec recommends that information on the location(s), timing, methods, and results of wildlife habitat feature surveys be included in the Annual Report.
- Section 3.4 of the WPP also includes a requirement to consult with the appropriate regulator (e.g., Yukon Environment, Canadian Wildlife Services) and develop management strategies if clearing activities cannot be scheduled to occur outside the breeding bird window. The annual reports do not indicate if this consultation was carried out and does not provide information on the management strategy developed. Stantec recommends that information on regulatory consultation, and the location(s), timing, methods, and results of pre-clearing nest surveys be included in the Annual Report.

- Section 4.1 of the WPP includes a requirement to report all detections of Species at Risk to the Yukon Conservation Data Centre. Information provided in the annual and quarterly reports is insufficient to determine if this has been completed. Stantec recommends that the Annual Report clearly indicates that this requirement has been completed.
- Stantec recommends that bird mortalities be fully documented using the Wildlife Incident Form (WPP Appendix D) and the species identified by a Qualified Professional either in-person or using a photograph.
- Stantec recommends that Section 3.9.4 of the Annual Report include a reference to wildlife monitoring reported in Section 5.2.2 of the Annual Report. This would more clearly link together the two sections containing wildlife monitoring information.
- All wildlife detections should be fully documented either using the Wildlife Incident Form (WPP Appendix D) or the Wildlife Observation Form (WPP Appendix E). Stantec also recommends that location names be standardized where possible, and that coordinates of wildlife detections be recorded to allow more accurate mapping of wildlife detections. This would assist in evaluating changes to wildlife distribution and habitat use as a result of Mine activities and would facilitate adaptive management to address emerging wildlife issues.

Table 36 Wildlife Protection Monitoring Program Compliance and Recommendations

Compliance Gaps and/or Deficiencies	Recommendations
Section 3.3 of the WPP includes a requirement to facilitate wildlife movement by providing wildlife crossing and escape points along snowbanks and open ditches. The Annual Reports do not provide information regarding how wildlife crossing points are selected, the distance between crossing points, how frequently crossing points are maintained, and what snow depth triggers the creation of crossing points in snowbanks.	Stantec recommends that the Annual Report include information on the implementation of measures listed in Section 3.3 of the WPP.
Section 3.4 of the WPP includes a requirement to complete a wildlife habitat feature survey prior to clearing activities. The Annual Reports do not provide information on the methods, types of wildlife features surveyed, survey locations, or whether this work was carried out by a qualified professional.	Stantec recommends that information on the location(s), timing, methods, and results of wildlife habitat feature surveys be included in the Annual Report.
Section 3.4 of the WPP includes a requirement to consult with the appropriate regulator (e.g., Yukon Environment, Canadian Wildlife Services) and develop management strategies if clearing activities cannot be scheduled to occur outside the breeding bird window. The annual reports do not indicate if this consultation was carried out and does not provide information on the management strategy developed.	Stantec recommends that information on regulatory consultation, and the location(s), timing, methods, and results of pre-clearing nest surveys be included in the Annual Report.

Table 36 Wildlife Protection Monitoring Program Compliance and Recommendations

Compliance Gaps and/or Deficiencies	Recommendations
Section 4.1 of the WPP includes a requirement to report all detections of Species at Risk to the Yukon Conservation Data Centre. Information provided in the annual and quarterly reports is insufficient to determine if this has been completed.	Stantec recommends that the Annual Report clearly indicates that this requirement has been completed.
The number of wildlife mortalities reported in the annual and quarterly reports are different, and the reports do not provide information on species, location, or possible cause of death.	Stantec recommends that wildlife mortalities be fully documented using the Wildlife Incident Form (WPP Appendix D) and the species identified by a Qualified Professional either in-person or using a photograph.
There is no linkage between the two sections of the annual report that document wildlife monitoring (Sections 3.9.4 and Section 5.2.2).	Stantec recommends that Section 3.9.4 of the Annual Report include a reference to wildlife monitoring reported in Section 5.2.2 of the Annual Report.
The locations and nature of wildlife detections as reported in the quarterly reports are not clear.	All wildlife detections should be fully documented either using the Wildlife Incident Form (WPP Appendix D) or the Wildlife Observation Form (WPP Appendix E). Stantec also recommends that location names be standardized where possible, and that coordinates of wildlife detections be recorded to allow more accurate mapping of wildlife detections.

5 Geotechnical Stability of Infrastructure and Facilities

This section presents an audit of the geotechnical and physical stability monitoring procedures of infrastructure and facilities on site as specified in the applicable EMSAMP document, compared to the data and information reported in supporting physical inspections, as well as annual and monthly reports. The intent is to determine if ongoing monitoring and data collection meets the commitments outlined in the EMSAMP. This audit is specific to the following areas:

- Permafrost Foundations
- Open Pit
- Material Storage and Stockpiling Areas
- Heap Leach Facility

The scope of this geotechnical stability audit includes review of the documents listed in Table 37, and Table 40.

This audit does not assess the ongoing geotechnical stability of infrastructure of the four areas listed above. This audit also excludes review and assessment of the limit equilibrium slope stability analysis and related Factor of Safety (FOS) design criteria, deformation and/or settlement, comparing reported groundwater tables with established trigger levels in other documentation, and further excludes review of open pit wall stability, catch berm adequacy, the surveillance and inspection checklist of the Adsorption Desorption Recovery (ADR) Plant as laid out in EMSAMP Table 18.3-1, and determination if WRSA or stockpile structures were constructed to design specifications.

5.1 Permafrost Monitoring

5.1.1 Documents Reviewed

The following documents in were reviewed as part of the permafrost physical stability section of the audit.

Table 37 Permafrost Monitoring Program Document Review

Document	Version Reviewed	Sections Applicable During Construction Phase	Sections Applicable During Operations Phase
Quartz Mining License QML-0011	Amendment June 29, 2022	13.0 – Reporting and Inspections	13.0 – Reporting and Inspections
Yukon Water Board, Water License QZ14-041-01	Amendment August 23, 2019	Part D – Operating Conditions	Part D – Operating Conditions
EMSAMP	2020-01	N/A	15.0 – Infrastructure and Facilities

Table 37 Permafrost Monitoring Program Document Review

Document	Version Reviewed	Sections Applicable During Construction Phase	Sections Applicable During Operations Phase
Annual Report for Water License QZ14-041-1 and Quartz Mining License QML-0011 2020	N/A	3.0 – Environmental Monitoring	3.0 – Environmental Monitoring
Annual Report for Water License QZ14-041-1 and Quartz Mining License QML-0011 2021	N/A	3.0 – Environmental Monitoring	3.0 – Environmental Monitoring
Type A Water Use License QZ14-041-1 Monthly Report, One Monthly Report per Quarter from July 2020 to February 2021	N/A	N/A	8.0 – Physical Monitoring Program
Type A Water Use License QZ14-041-1 Monthly Report, One Monthly Report per Quarter from February 2021 to June 2022	N/A	N/A	7.0 – Physical Monitoring Program

5.1.2 Monitoring Program Implementations and Data QA/QC

This section compares the permafrost monitoring program described in the EMSAMP to the field programs and data collected over the audit period reported in the annual and monthly reports.

Permafrost monitoring activities summarized in those documents in Table 37 . The documents were checked for consistency with requirements with monitoring frequency and methods described in the EMSAMP document. Non-consistency with requirements, such as missing monitoring results, AMP thresholds, or other deficiencies in carrying out the monitoring programs are identified in and discussed in section 5.1.3.

Table 38 Permafrost Monitoring Program Implementation

Monitoring Method	EMSAMP Monitoring Requirements	Consistency with Requirements (Yes/No)
Visual Inspection	• Regular Intervals • Freshet, prolonged rainy periods, freeze-up	No[1]
Subsurface Temperature Monitoring (thermistor)	• Quarterly	Yes
Surface Water Quality (TSS, Turbidity)	• Freshet, rainy periods, freeze-up	Yes

NOTE:
[1] Execution of visual inspections not documented or discussed in annual or monthly reports.

5.1.3 Reporting Adequacy, Consistency with Requirements, and Recommendations

Table 41 summarizes the consistency with requirements gaps and/or deficiencies identified with the permafrost monitoring program.

The notable non-consistency with requirements related to permafrost monitoring is the absence of recorded and documented regular visual inspections, specifically during the freshet, rainy periods, and freeze-up. These inspections should be recorded and documented as per the EMSAMP document.

Table 39 Permafrost Monitoring Program Consistency with Requirements and Recommendations

Consistency with requirements Gaps and/or Deficiencies	Recommendations
Regular Visual Inspections not documented or reported.	Include an appendix in Annual and Monthly reporting that summarizes the observations from regular visual inspections to identify and quantify any deformation associated with melting of permafrost, such as but not limited to, cracks, subsidence, sinkholes, and sloughing on existing foundations and slope overlay permafrost. Summarize those visual inspections executed during the freshet, prolonged rainy periods, and rising trend in any thermistors.
Thermistor BH-BGC11-42 in the 2020 Q4 (November 2020) quarterly report and thermistor BH-BGC10-7 in the 2021 Q3 (July 2021) quarterly report not included in summary tables of quarterly readings.	Include reasoning for missed readings if none were taken for that quarterly period.

5.2 Open Pit Monitoring

5.2.1 Documents Reviewed

The following documents in Table 42 were reviewed to audit open pit slope stability monitoring.

Table 40 Open Pit Monitoring Program Document Review

Document	Version Reviewed	Sections Applicable to Operations Phase
Quartz Mining License QML-0011	Amendment June 29, 2022	13.0 – Reporting and Inspections
EMSAMP	2020-01	16.0 – Open Pit
Annual Report for Water Licence QZ14-041-1 and Quartz Mining License QML-0011 2020	N/A	3.4 – Groundwater 4.1 – Eagle Pit 4.5 – Engineer's Physical Stability Annual Inspection
Annual Report for Water Licence QZ14-041-1 and Quartz Mining License QML-0011 2021	N/A	3.4 – Groundwater 4.1 – Eagle Pit 4.5 – Engineer's Physical Stability Annual Inspection
2020 Physical Stability Inspection	1	6.0 – Open Pit 18.0 – Recommendations
2021 Physical Stability Inspection	0	7.0 – Open Pit 20.0 – Recommendations
Type A Water Use License QZ14-041-1 Monthly Report, Reporting Period: August 2020 to April 2022	N/A	4.1 – Groundwater 8.0 – Physical Monitoring Program

5.2.2 Monitoring Program Implementation and Data QA/QC

This section compares the open pit monitoring program described in the EMSAMP to the field programs and data collected over the audit period.

Open pit monitoring activities summarized in documents shown in Table 41, were checked for consistency with requirements with monitoring frequency and methods described in the EMSAMP. Non-consistency with requirements, such as missing monitoring results and exceedances of objectives/standards, AMP thresholds, or other deficiencies in carrying out the monitoring programs are identified in Table 41 and discussed in Section 5.2.3.

Table 41 Open Pit Monitoring Program Implementation

Monitoring Method	EMSAMP Monitoring Requirements	Consistency with Requirements (Yes/No)	Notes
Visual Inspection	Daily	No	Execution of daily visual inspections not documented or discussed in annual or monthly report
Drone Survey	Regular (bi-weekly)	Yes	Reported completed in 2021 annual report.
Survey Prisms	Monthly	Yes	Survey prisms installed in pit benches over winter of 2020/2021. Summarized in the 2021 annual report.
Robotic Theodolites	Hourly (if implemented)	N/A	Monitoring method not implemented / installed at open pit.
Piezometer	Quarterly	Yes	The following piezometer installations listed in EMSAMP are reported decommissioned in 2021 annual report: PW-BGC11-02, BH-BGC11-73a, BH-BGC11-73b, and BH-BGC11-73c and are no longer documented in monthly reports.
TDR Cables (not installed)	No frequency	N/A	Monitoring method not implemented / installed at open pit.
Slope Inclinometers (not installed)	No frequency	N/A	Monitoring method not implemented / installed at open pit.
Extensometers	No frequency	Yes	Two extensometers located on the East pit wall monitored cumulatively.
Fixed Slope Radar (not installed)	No frequency	N/A	Monitoring method not implemented / installed at open pit.
Mobile Slope Radar (not installed)	No frequency	N/A	Monitoring method not implemented / installed at open pit.
Stability Reporting	Annually, inspection by an independent engineer conducted before October 1 of each year	Yes	Annual Physical Stability Inspections completed by a qualified engineer from Allnorth during September 8 to 9 of 2021 and September 23 to 24 in 2020 within QML-0011 time frame.

In addition to the EMSAMP monitoring requirements listed above, the QML-0011 requires VGC to respond to recommendations resulting from the annual stability inspection that are related to the open pit. From the two (2) annual inspection within the audit scope for the open pit, for 2020 and 2021, Stantec identified five (5) general and one (1) specific recommendation relevant to the open pit. These recommendations, listed below, are referenced from the 2020 and 2021 physical stability inspection reports (Allnorth, 2020 and 2021).

1. 2021 – VGC should consider monitoring pooled water at the base of the pit, removing water via trash pump as needed.

    a. VGC response: To date, the water accumulations have been minor and are managed on an as needed basis. If volumes are observed to increase in the near term, a trash pump will be installed to transfer water to Ditch A. Management of pit wall seepage and precipitation accumulation is being discussed by the Technical Services Superintendent (i.e., the EoR for the pit) and a consulting engineer who supported the pit design to ensure that long term management strategies are appropriate. The available details of the long-term strategy will be provided with the annual report required by QML-0011 and QZ14-041-1. (Q1 2022)

2. 2020 and 2021 – VGC should assign a qualified, on site, individual to be responsible for monitoring and documentation of any mass earth structures that have significant risks in the case of a failure. The individual should develop a standard operating procedure for the monitoring and risk management of these structures. This individual should be responsible for coordination with a qualified professional to review monitoring data for concerns and trends, if they are not qualified themselves.

    a. VGC response: Monitoring of structures is completed by the Technical Services Department under the direction of the Technical Services Superintendent working closely with the EOR for the areas while following standard operating procedures. The Technical Services Superintendent is the EOR for a number of the Engineered Structures on the Mine site. The results of monitoring and the documentation developed are provided with VGC's annual reports as required by the Quartz Mining Licence (QML-0011) and Water Use License (QZ14-041-1) (ongoing).

3. 2020 & 2021 – VGC should continue to assign individuals to document and be responsible for the monitoring and construction of any structures to determine if the structures are constructed in accordance with design. Any variations between design documents and final construction should be included in final record drawings.

    a. VGC response: Monitoring of structures including construction review to meet design specifications is done by the Technical Services department under the direction of the Technical Services Superintendent working closely with the EOR for the areas. Construction reports and as-built drawings document variations or minor modification from IFC designs (ongoing).

    b. Additionally, VGC has updated the Waste Rock and Overburden Facility Management Plan, that includes QA/QC plan and related OMS Manual to support this work (completed Feb 2022).

4. 2020 & 2021 – Any finalized construction of mass earth structures should include a final construction report that includes any operational and maintenance requirements (if any) to ensure stability of the structure.

    a. VGC response: As per both QML-0011 and QZ14-041-1, the EOR provides final construction reports for Engineered Structures, which includes requirements for maintenance as needed, once the structures are complete (ongoing).

5. 2020 and 2021 – VGC should consider a monitoring program to assist in early warning and detection of any movements in mass earth structures. Such a program might use permanent survey points, slope inclinometers, piezometers, or other tools to measure internal/external movements and pore water pressures. Such a monitoring program should be developed with the assistance of and be implemented with the oversight of a qualified professional.

    a. VGC response: Monitoring programs have been developed, are in use, and undergoing further refinement by the Technical Services department with the oversight of a qualified professional. In addition to routine visual inspection, monitoring for physical stability include the following (ongoing):

        - Pit wall and dump biweekly survey using unmanned aerial vehicle or drone
        - Pit wall monitoring using survey prisms
        - Piezometer water level readings in the pit area

6. 2020 and 2021 – For any stockpiles, cut slopes, and/or fill slopes with over-steepened slopes that do not require immediate rectification (due to proximity to structures, roadways, active work areas, etc.) VGC should still cordon off the area above and/or below the oversteepened slope depending on what would be accessible to site staff.

    a. VGC response: As noted in the 2021 audit report, over-steepened sections identified in previous years at the secondary stockpile perimeter ditch were addressed in 2021. Additional areas were cordoned off in response to the previous audit and these areas will be checked in the snow free period and upgraded/repaired if deemed necessary. Management of other over-steepened slopes will continue in 2022 (ongoing).

Of the six (6) physical stability recommendations from the annual stability inspections, Recommendation one (1) will be discussed in detail in the long-term pit wall seepage plan in the 2022 annual reporting and Recommendations two (2) through six (6) are ongoing and therefore no non-consistency with requirements issued have been identified and no recommendations are made at this time.

5.2.3 Reporting Adequacy, Consistency with Requirements, and Recommendations

Table 42 summarizes the consistency with requirements gaps and/or deficiencies identified with the open pit monitoring program.

The notable non-consistency with requirements related to open pit monitoring is the absence of reported daily visual inspections. These inspections are noted to be completed on a weekly basis using visual and UAV drone observations. This is non-compliant with the daily visual observation frequency as per the EMSAMP 2020-01 document.

There is a lack of consistency between the number of piezometer instruments listed in the EMSAMP document (2020-01) and those with reported water tables in the 2021 annual report and monthly reports. Stantec understands the BH-BGC11-73 series instruments (a, b, and c) were decommissioned in early 2020 and are therefore excluded from the monthly reports. New piezometers documented in the 2021 annual report, are not documented in any of the 2021 monthly reports, or the EMSAMP. In general, Stantec found piezometer monitoring consistent with the quarterly monitoring frequency and provides recommendations for reporting in Table 42.

Survey prisms were installed in pit benches during the winter of 2020/2021. This combined with documented visual inspection, piezometric monitoring, bi-weekly drone survey and annual stability review provides sufficient general monitoring of the performance of the open pit. There are a number of instruments and monitoring approaches listed in the EMSAMP that are not implemented, such as, robotic theodolite, TDR cables, slope inclinometers, fixed slope radar, and mobile slope radar. Stantec understands that these are displacement monitoring options which might be implemented if stability issues arise and additional monitoring is deemed to be required. It is recommended that the EMSAMP be adjusted to indicate the instrumentation to be used for typical operating displacement monitoring as well as the instrumentation which might be implemented if unstable conditions develop or might be installed as contingency to existing instrumentation.

Table 42 Open Pit Monitoring Program Consistency with Requirements and Recommendations

Consistency with Requirements Gaps and/or Deficiencies	Recommendations
Daily visual inspections not reported.	Include an appendix in Annual and Monthly reporting that documents the results of daily visual inspections as per EMSAMP. VGC Annual reports state full visual inspections are completed on a weekly basis; however, EMSAMP states visual inspections of open pit slopes are to completed daily and to be documented in shift log reports, along with daily and weekly records.
Piezometers installed within the pit location (DEEP-08, DEEP-06, and DEEP-04) and documented in section 4.1 (Eagle Pit) of the 2021 annual report, are not documented in section 3.4 (Groundwater) where groundwater well monitoring is documented. These pit piezometers are also not documented in the monthly reports as well the EMSAMP document.	Provide dates of commissioning and relevant information of new and existing piezometers in all applicable sections of the annual and monthly reports. Update EMSAMP revision to show relevant piezometers.
Data for two (2) extensometers, (Extensometers 3 and 4) installed on SB8 instability are not reported in the 2020 annual report.	Provide dates of commissioning and decommissioning for all instrumentation in annual and monthly reports.
There are multiple instrumentation types listed in EMSAMP documentation that monitor displacement in various forms. Currently prisms and extensometers are serving this purpose and others are deemed not required due to normal operating (stable) conditions (robotic theodolites, TDR cables, slope inclinometers, fixed slope radar, mobile slope radar).	Modify the EMSAMP, or provide cross references to other VGC materials, to identify the displacement monitoring instrumentation to be used for normal operating (stable) conditions and instrumentation to be used for unstable conditions or as contingency to existing instrumentation.

5.3 Materials Storage and Stockpile Management Areas Monitoring

5.3.1 Documents Reviewed

The following documents in Table 43 were reviewed to audit the materials storage and stockpile management area monitoring.

Table 43 Materials Storage and Stockpile Management Areas Monitoring Program Document Review

Document	Version Reviewed	Sections Applicable During Operations Phase
Quartz Mining License QML-0011	Amendment June 29, 2022	13.0 – Reporting and Inspections
EMSAMP	2020-01	17.0 – Material Storage and Stockpile Management Areas
2020 Annual Report for Water License QZ14- 041-1 and Quartz Mining License QML-0011	N/A	3.4 – Groundwater 4.4 – Material Storage and Stockpile Management Areas 4.5 – Engineer's Physical Stability Annual Inspection
2021 Annual Report Water License QZ14- 041-1 and Quartz Mining License QML-0011	N/A	3.4 – Groundwater 4.4 – Material Storage and Stockpile Management Areas 4.5 – Engineer's Physical Stability Annual Inspection
2020 Physical Stability Inspection	1	4.0 – Secondary Stockpile 12.0 – Ditch A 17.0 – Un-Named Stockpile Area 18.0 – Recommendations
2021 Physical Stability Inspection	0	4.0 – Secondary Stockpile 6.0 – Heap Leach Overburden Stockpile 14.0 – Ditch A 19.0 – Un-Named Stockpile Area 20.0 – Recommendations
Type A Water Use License QZ14-041-1 Monthly Report, One Monthly Report per Quarter from July 2020 to June 2022	N/A	4.1 – Groundwater 8.0 – Physical Monitoring Program

5.3.2 Monitoring Program Implementation and Data QA/QC

This section compares the materials storage and stockpile management areas monitoring program described in the EMSAMP to the field programs and data collected over the audit period.

Monitoring activities summarized in documents shown in Table 44 were checked for consistency with requirements with monitoring frequency and methods described in the EMSAMP. Non-consistency with requirements, such as missing monitoring results and exceedances of objectives/standards, AMP thresholds, or other deficiencies in carrying out the monitoring programs are identified in Table 44 and discussed in section 5.3.3.

Table 44 Materials Storage and Stockpile Management Areas Monitoring Program Implementation

Monitoring Method	EMSAMP Monitoring Requirements	Consistency with Requirements (Yes/No)	Notes
Visual / Drone inspection	• Daily (WRSA crest) • Weekly (WRSA toe) • Weekly (developing Stockpile) • Monthly (established Stockpile) • Monthly (detailed WRSA)	No	Only the active and inactive EP and PG dumps are noted in the 2021 annual report to be visually, and drone inspected weekly. Stantec understands that reclamation stockpiles do not have monitoring equipment setup to date due to the minimal consequence of failure. Execution of weekly and monthly visual / drone inspections of the secondary stockpile are not documented or discussed in annual or monthly reports.
Piezometers	• Quarterly	No	Piezometer MW19-PGW1b presented in EMSAMP is not listed in Q3 2020 (August monthly report) and Q2 2022 (April monthly report). Stantec understands this piezometer was reported broken in monthly reports within this audit period with plans to fix in 2021. Piezometer MW19-EPW1b had a missed reading without explanation in Q1 of 2021 (February monthly report).
Rock Drain Flow	• Weekly	No	PG WRSA rock drain is still under development, with 100 m of rock drain remaining to be developed as per the 2021 annual report. Construction of the EP WRSA rock drain commenced in March 2021.
Survey Prisms	• No frequency	N/A	Monitoring method not implemented / installed at WRSA or stockpile structures.
Wireline Extensometers	• No frequency	Yes	PG WRSA extensometer monitoring conducted on a regular basis.
Inclinometers	• No frequency	N/A	Monitoring method not implemented / installed at WRSA or stockpile structures.
Radar / photogrammic surveying	• No frequency	N/A	Monitoring method not implemented / installed at WRSA or stockpile structures.

Table 44 Materials Storage and Stockpile Management Areas Monitoring Program Implementation

Monitoring Method	EMSAMP Monitoring Requirements	Consistency with Requirements (Yes/No)	Notes
Annual Physical Stability Inspection	• Annually, inspection by an independent engineer conducted before October 1 of each year	Yes	Annual Physical Stability Inspections completed by a qualified engineer from Allnorth during September 8 to 9th of 2021 and September 23 to 24th in 2020 within QML-0011 time frame.

In addition to the EMSAMP monitoring requirements listed above, the QML-011 requires VGC to respond to recommendations resulting from the annual stability inspections that are related to material storage and stockpile. From the two (2) annual inspection completed, by Allnorth in 2020 and 2021 Stantec identified a total of 11 separate recommendations relevant to the material storage and stockpiles, which are listed below:

1. 2020 – [related to Secondary Stockpile Perimeter ditch] Un-block the feeder ditch/culvert which will carry flow from the Secondary Stockpile perimeter ditch to Ditch A.

    a. VGC response: The secondary stockpile ditch will be cleaned out and tied into Ditch A in 2021 (Q1, Q2 2021)

2. 2020 – [related to Un-Named Stockpile Area] Consider additional ditching and water management in the area to prevent scouring of the road surfaces and erosion around the stockpiles. Ditch water away from the laydown areas to prevent ponding.

    a. VGC response: This area will be inspected prior to freshet 2021 and additional ditching installed, as necessary. This area will also be considered for the 2021 revegetation program (Q1/Q2 2021)

3. 2021 – [related to Secondary Stockpile] Monitor over-steepened slopes, cordon off if accessible by site staff.

    a. VGC response: An internal assessment by the Technical Services Department was conducted in this area and it was determined that it did not present a safety risk to staff. Monitoring of the area will continue to ensure that a risk does not develop (ongoing).

4. 2021 – [related to Heap Leach Overburden Stockpile] Continue to monitor pile for further collapse. Work in conjunction with regulators and geoscience/engineering professionals to design a short-term immediate remedy and long-term solution to the issue.

    a. VGC response: Short-term immediate remedies were executed with the proposed activities communicated to EMR Inspections and conducted under the guidance of onsite experts. The short-term activities included (Q2 2022):

        - Immediate and permanent halt to material placement in the affected area
        - Installation of silt fences, hay bales, willow staking, wattle fencing and containment sumps upgradient of Haggart Creek within the material flow path
        - Visual and instrumentation monitoring (extensometers) of the material stockpile
        - Regrading of the material stockpile in areas where this activity was safe to be undertaken
        - Excavation of portions of the material flow path and backfill with clean durable rock to minimize future erosional potential and to insulate permafrost zones.

    b. VGC response: A long-term solution has been developed with the proposed activities communicated to EMR Inspections and these will be conducted under the guidance of onsite experts. The long-term activities include (complete Q1 2022):

        - Additional regrading of the material stockpile in areas where this activity is safe to be undertaken and where conditions indicate it is necessary for long term stability
        - Installation of extensometers prior to spring freshet if additional surface cracking is observed
        - Monitoring by drone flights to compare surfaces for differential settlement analyses
        - Completion of a spring Heli-seeding program to stabilize the runout zone.

5. 2021 – [related to Un-Named Stockpile Area] Flag over-steepened slopes in area to protect site staff. Consider dismantling over-steepened slopes depending on proximity to roadways, areas frequented by site staff.

    a. VGC response: The material stockpiles identified were intended to be part of the H1 2021 revegetation work; however, ongoing travel restrictions and staff availability impacted our ability to complete this work. This area is currently being monitored and will be considered for revegetation work which may involve regrading if a risk to staff and the environment is identified (Q1/Q2 2022).

6. 2020 & 2021 – VGC should assign a qualified, on site, individual to be responsible for monitoring and documentation of any mass earth structures that have significant risks in the case of a failure. The individual should develop a standard operating procedure for the monitoring and risk management of these structures. This individual should be responsible for coordination with a qualified professional to review monitoring data for concerns and trends if they are not qualified themselves.

    a. VGC response: Monitoring of structures is completed by the Technical Services Department under the direction of the Technical Services Superintendent working closely with the EOR for the areas while following standard operating procedures. The Technical Services Superintendent is the EOR for a number of the Engineered Structures on the Mine site. The results of monitoring and the documentation developed are provided with VGC's annual reports as required by the Quartz Mining Licence (QML-0011) and Water Use License (QZ14-041-1) (ongoing).

    b. VGC response: Additionally, VGC has updated the Waste Rock and Overburden Facility Management Plan, that includes QA/QC plan and related OMS Manual to support this work (Completed Feb 2022).

7. 2020 & 2021 – VGC should continue to assign individuals to document and be responsible for the monitoring and construction of any structures to determine if the structures are constructed in accordance with design. Any variations between design documents and final construction should be included in final record drawings.

    a. VGC response: Monitoring of structures including construction review to meet design specifications is done by the Technical Services department under the direction of the Technical Services Superintendent working closely with the EOR for the areas. Construction reports and as-built drawings document variations or minor modification from IFC designs (ongoing).

    b. Additionally, VGC has updated the Waste Rock and Overburden Facility Management Plan, that includes QA/QC plan and related OMS Manual to support this work (completed Feb 2022).

8. 2020 & 2021 – Any finalized construction of mass earth structures should include a final construction report that includes any operational and maintenance requirements (if any) to ensure stability of the structure.

    a. VGC response: As per both QML-0011 and QZ14-041-1, the EOR provides final construction reports for Engineered Structures, which includes requirements for maintenance as needed, once the structures are complete (ongoing).

9. 2020 & 2021 – VGC should consider a monitoring program to assist in early warning and detection of any movements in mass earth structures. Such a program might use permanent survey points, slope inclinometers, piezometers, or other tools to measure internal/external movements and pore water pressures. Such a monitoring program should be developed with the assistance of and be implemented with the oversight of a qualified professional.

    a. VGC response: Monitoring programs have been developed, are in use, and undergoing further refinement by the Technical Services department with the oversight of a qualified professional. In addition to routine visual inspection, monitoring for physical stability include the following (ongoing):

        - Pit wall and dump biweekly survey using unmanned aerial vehicle or drone
        - Extensometer installation on active lifts of the waste rock storage areas with regular movement calculations conducted.

10. 2020 & 2021 – For any stockpiles, cut slopes, and/or fill slopes with over-steepened slopes that do not require immediate rectification (due to proximity to structures, roadways, active work areas, etc.) VGC should still cordon off the area above and/or below the over-steepened slope depending on what would be accessible to site staff.

    a. VGC response: As noted in the 2021 audit report, over-steepened sections identified in previous years at the secondary stockpile perimeter ditch were addressed in 2021. Additional areas were cordoned off in response to the previous audit and these areas will be checked in the snow free period and upgraded/repaired if deemed necessary. Management of other over-steepened slopes will continue in 2022 (ongoing).

11. 2020 & 2021 – [related to Secondary Stockpile] It is recommended that VGC tie the perimeter ditch into the collection sump.

    a. VGC response: The section identified had been connected in response to the prior audit; however, it is acknowledged that clean out and maintenance is required. This work is currently contemplated to take place in Q2, 2022. As noted in the 2021 annual report, work was completed in 2021 to armor a portion of the perimeter interception ditch and tie into the collection sump (Q2 2022).

5.3.3 Reporting Adequacy, Consistency with Requirements, and Recommendations

Table 45 summarizes consistency with requirements gaps and/or deficiencies identified with the materials storage and stockpile management areas monitoring program.

The notable non-consistency with requirements is the absence of documented visual inspections. These inspections should be recorded and documented as required in the EMSAMP document. It is unclear if the frequency of required inspections is being executed. Stantec understands that reclamation stockpiles pose minimal consequence of failure and therefore do not have monitoring equipment installed. However, documenting weekly (during development) and monthly (established stockpiles) visual inspections should occur. There is no documentation of visual inspections completed in the monthly or annual reports of the Secondary (90-Day stockpile), and so it is unclear if they are being completed.

The EMSAMP documents require weekly inspections of WRSA rock drain discharge areas, once fully operational. As per the 2021 annual report, about 275 m of the PG WRSA Rock Drain was built in 2021, with 100 m of rock drain development remaining. Construction of the EP WRSA rock drain commenced in March 2021. Though these structures are not built to full specification, they are operational, and weekly monitoring would be required.

Of the 11 physical stability recommendations from the annual stability inspections, recommendations #1, 2, 4, and 5 were scheduled for completion within the time frame of this environmental audit. The remaining recommendations are ongoing, planned for future implementation, or are listed as completed by VGC.

- Recommendation 1 is not addressed in the available documentation, with no mention of the secondary stockpile ditch.
- Recommendation 2 is not addressed in the available documentation. Stantec understands that this work may have been impacted by ongoing travel restrictions.
- Recommendation 4 is addressed with ongoing short-term activities being executed and long-term activities that have been completed.
- Recommendation 5 is not addressed in the available documentation. Stantec understands that this work may have been impacted by ongoing travel restrictions.

Table 45 Materials Storage and Stockpile Management Areas Monitoring Program Consistency with Requirements and Recommendations

Consistency with requirements Gaps and/or Deficiencies	Recommendations
It is unclear whether daily WRSA crest inspections, weekly WRSA toe and developing stockpile inspections, monthly established stockpile and detailed WRSA inspections are being executed. Records specifying visual and drone inspections of structures are to be maintained along with daily and weekly records detailing the location and type of materials placed in the WRSAs, as per EMSAMP.	Include an appendix in Annual and Monthly reporting that summarizes frequencies and all the visual observations made on stockpile structures.
Stantec understands that piezometer MW19-PGW1b was damaged and intended to be fixed in 2021. The status of this piezometer was not reported in the Q3 2020 (August monthly report) and Q2 2022 (April monthly report).	Include status of broken piezometers in all monthly reports if not decommissioned.
Piezometer MW19-EPW1b reading in Q1 of 2021 (February monthly report) was missed in monthly report without reasoning.	Provide reasoning for missed piezometer readings.
Though not built to full specification, the WRSA rock drains are operational, and it is unclear if they are being inspected weekly as per EMSAMP.	Conduct and provide weekly inspection records of the WRSA rock drain discharge areas in the monthly or annual reports.
Follow up and close out of physical stability recommendations 1, 2 and 5 not documented in annual or monthly reports.	Provide documentation detailing the follow up and response actions for addressing recommendations.

5.4 Heap Leach Facility Monitoring

5.4.1 Documents Reviewed

The following documents in Table 46 were reviewed to audit Heap Leach Facility monitoring.

Table 46 Heap Leach Facility Monitoring Program Document Review

Document	Version Reviewed	Sections Applicable During Construction Phase	Sections Applicable During Operations Phase
Quartz Mining License QML-0011	Amendment June 29, 2022	13.0 – Reporting and Inspections	13.0 – Reporting and Inspections
EMSAMP	2020-01	N/A	18.0 – Heap Leach and Process Facilities
2020 Annual Report for Water Licence QZ14-041-1 and Quartz Mining License QML-0011	N/A	3.4 – Groundwater 4.3 – Heap Leach Facility and Process Facilities 4.5 – Engineer's Physical Stability Annual Inspection	3.4 – Groundwater 4.3 – Heap Leach Facility and Process Facilities 4.5 – Engineer's Physical Stability Annual Inspection
2021 Annual Report for Water Licence QZ14-041-1 and Quartz Mining License QML-0011	N/A	3.4 – Groundwater 4.3 – Heap Leach Facility and Process Facilities 4.5 – Engineer's Physical Stability Annual Inspection	3.4 – Groundwater 4.3 – Heap Leach Facility and Process Facilities 4.5 – Engineer's Physical Stability Annual Inspection
2020 Annual Inspection of Eagle Gold HLF	REV A	2.0 – 2020 Annual Inspection	2.0 – 2020 Annual Inspection
2021 Annual Inspection of Eagle Gold HLF	REV 0	2.0 – 2021 Annual Inspection	2.0 – 2021 Annual Inspection
2020 Physical Stability Inspection	1	5.0 – Heap Leach Facility 18.0 – Recommendations	5.0 – Heap Leach Facility 18.0 – Recommendations
2021 Physical Stability Inspection	0	5.0 – Heap Leach Facility 20.0 – Recommendations	5.0 – Heap Leach Facility 20.0 – Recommendations
Type A Water Use License QZ14-041-1 Monthly Report, One Monthly Report per Quarter from July 2020 to June 2022	N/A	N/A	2.3.3 – In-Heap Pond 4.1 – Groundwater Monitoring

5.4.2 Monitoring Program Implementation and Data QA/QC

This section compares the Heap Leach Facility (HLF) monitoring program described in the EMSAMP to the field programs and data collected and provided for the purpose of the audit over the audit period.

Heap Leach Facility monitoring activities summarized in documents shown in Table 46 were checked for consistency with requirements with monitoring frequency and methods described in the EMSAMP. The details for the non-consistency with requirements, such as missing monitoring results and exceedances of objectives/standards, AMP thresholds, or other deficiencies in carrying out the monitoring programs are identified in Table 48 and discussed in Section 5.4.3.

Table 47 Heap Leach Facility Monitoring Program Implementation

Monitoring Method	EMSAMP Monitoring Requirements	Consistency with Requirements (Yes/No)	Notes
Visual Inspections	• Weekly (HLF Embankment) • Weekly (Leach Pad Liner and embankment) • Weekly (Stacked Leach Ore) • Weekly (Solution Collection and Recovery System) • Daily (Leak Detection and Recovery System Monitoring Ports) • Weekly (Monitoring Vault) • Weekly (Event Pond Liners) • Monthly (Conveyors and Radial Stacker) • Daily (General HLF Components and Events Pond)	No	Execution of daily, weekly, visual inspections not documented or discussed in annual or monthly reports. It is unclear if all required visual inspections are completed based on information Stantec has received.
Piezometer	• Continuous (Embankment, In Heap) • Daily (Heap leap pad during freshet) • Monthly (Other)	No	Piezometer MW19-HLF1a listed in EMSAMP is not reported in the August 2020 monthly report. Piezometer MW10-AG3 was not reported decommissioned in the November and August 2020 monthly reports. The following piezometers listed in EMSAMP, were only installed in Q3 2022: MWXX-AGR6, MW10-AG3A, MWXX-HLF2a, MWXX-HLF2b, MWXX-HLF3a, MWXX-HLF3b, MWXX-HL4a, MWXX-HLF4b.

Table 47 Heap Leach Facility Monitoring Program Implementation

Monitoring Method	EMSAMP Monitoring Requirements	Consistency with Requirements (Yes/No)	Notes
Inclinometer	• Continuous (Embankment) • Monthly (Other)	Yes	Inclinometer INC-1, installed on the dam embankment has continuous data reported in the 2020 and 2021 Independent annual inspection reports.
Fluid Levels (Events Pond)	• Daily (If available storage is reached) • Weekly (Otherwise)	Yes	Reported daily in monthly reports.
Geochemical sampling of pregnant and barren process solution	Quarterly	No	Records of geochemical sampling of pregnant and barren solution not found in available documentation.
HLF and Dam Inspection (by an Engineer)	Annually	Yes	2020 and 2021 Annual Inspections of Eagle Gold HLF.
Physical Stability Inspection	Annually	Yes	2020 and 2021 Physical Stability Inspections.
Event Driven Inspection	Following an unusual event (heavy rainfall, freshet, earthquake)	N/A	No event driven inspection occurrence discussed in routine reporting reviewed for the audit.
Dam Safety Review (DSR)	Every 5 years	N/A	Dam Safety Review (DSR) not required during time scope of audit.
Surveillance and Inspection of Adsorption, Desorption, and Recovery (ADR) Plant	Regularly	N/A	ADR Plant surveillance and inspection checklist laid out in EMSAMP documents outside scope of this physical stability section of the environmental audit. Stantec assumes this is documented by VGC supervisor and operator and records filed on site.

In addition to the EMSAMP monitoring requirements listed above, the QML-0011 requires VGC to respond to recommendations resulting from the annual stability inspection that are related to the HLF. From the two (2) annual inspection completed, by Allnorth in 2020 and 2021, Stantec identified a total of sixteen (16) separate recommendations relevant to the HLF, listed below:

1. 2020 – [regarding Heap Leach Facility] Continue to monitor the cut slopes around the perimeter of the HLF for erosion. Maintain the upper bench and remove sloughing material as required.

    a. VGC response: This area will be monitored and repaired with the continued construction and eventual stacking of ore into the Phase 1B expansion area. The Engineer of Record for the HLF has subsequently provided the Phase 1B as built report and the annual HLF inspection report which assessed HLF conditions in greater detail. The deficiencies identified by the EOR will be addressed as necessary 2021 (Q4 2020, 2021).

2. 2020 – [regarding Heap Leach Facility] Consider re-grading temporary access road (slope towards interception ditch) above HLF to prevent pooling water forming. Monitor soft/deflecting areas of temporary access road above HLF, particularly above HLF liner anchor trench.

    a. VGC response: The temporary access road area will be monitored in the spring of 2021 to establish if re-grading is necessary. This section of the HLF will ultimately be reworked to allow for the construction of Phase 2 of the HLF H2 2021. The Engineer of Record for the HLF is currently preparing the Phase 1B as built report which will include commentary and recommendations on areas of the current configuration of the HLF which may require additional maintenance or upgrade. Any deficiencies identified by the EOR will be addressed as necessary in H1 2021 (Q1/Q2 2021).

3. 2020 – [regarding Heap Leach Facility] Check Phase 1B Interception Ditch design and complete construction if needed for sections that are lined but not armored. Check design for sloping requirements to outfall and confirm whether installed ditch meets design and monitor ditch for potential of pooling water.

    a. VGC response: The Engineer of Record for the HLF is currently preparing the Phase 1B as built report which will include commentary and recommendations on areas of the current configuration of the HLF which may require additional maintenance or upgrade. Any deficiencies identified by the EOR will be addressed as necessary in H1 2021 (Q1/Q2 2021).

4. 2020 – [regarding ADR] Review engineering requirements for the North Toe Ditch to confirm ditch size and need for rock armoring. Toe ditch is currently tied into the roadside ditch, which should also be reviewed for engineering requirements. Recommend reviewing hydraulic design of both ditches to determine what is necessary.

    a. VGC response: Review of design will be completed if surface runoff is observed to be above the carrying capacity of the ditch. To date, no observations of uncontrolled surface runoff has been observed in this ditch (As necessary).

5. 2021 – [regarding Heap Leach Facility] Check Phase 1B Interception Ditch and monitor sediment collection. Clear sediment collection at drain sump.

    a. VGC response: Construction of the Phase 2 area of the HLF (i.e., upgradient of the Phase 1B Interception Ditch) will commence in late Q1/early Q2 2022. This work will include conversion of the Phase 1B Interception Ditch into an anchor trench for liner deployment once the Phase 2 Interceptor Ditch is operational. These construction activities will entirely mitigate this concern; however, if the ditch and sump will be operational through the freshet period due to construction timing it will be inspected and cleaned out to ensure that it can function effectively (Q1 to Q3 2022).

6. 2021 – [regarding Event Pond] Repair excavator damage to HLF spillway liner.

    a. VGC response: The concrete cloth to complete this repair has been purchased and is on site. The repair work will commence when conditions allow (i.e., consistently warmer than ~-20ºC) and in advance of freshet (Q1/Q2 2022).

7. 2021 – [regarding Event Pond] Clear crushed material out of Event Pond spillway mouth. If equipment access is needed for the South-East corner of the pond, consider constructing additional road accesses as appropriate.

    a. VGC response: The material will be removed Q1 2022. If ongoing access across the spillway is deemed necessary beyond that time, a crossing system will be installed that does not impact the carrying capacity of the spillway (e.g., rig mats) (Q1 2022).

8. 2020 & 2021 – [regarding Heap Leach Facility] Continue to monitor the toe slope below the HLF for rill erosion.

    a. VGC response: This area has been reviewed by the Technical Services and Process Departments of VGC and the EOR and, as proposed by the EOR, coarse fill (6” minus rock) will be backfilled into this area. As shown in Figure 23 of the 2021 annual report (VGC, 2021), the embankment face has been reseeded and is showing good vegetation growth in all other areas (Q2 2022).

9. 2020 & 2021 – [regarding Event Pond] Monitor minor erosion of cut slopes and maintain as required.

    a. VGC response: Revegetation work was undertaken in 2020 to stabilize this area. The minor erosion on the cut slopes above the Events Pond will continue to be monitoring and will be maintained if deemed necessary by the EoR for the HLF (as necessary).

10. 2020 & 2021 – [regarding Event Pond] Monitor pooling water above the North side of the Event Pond and regrade area to prevent pool formation or install a water handling system (sump pumps, etc.).

    a. VGC response: The area will continue to be monitored on an ongoing basis to determine if the installation of a water handling system or additional grading to improve drainage is warranted (as necessary).

11. 2020 & 2021 – [regarding Event Pond] Monitor material deposits on HLF spillway and Event Pond to ensure the spillway and pond designs are not compromised through either blockage of flow or reduced pond capacity.

    a. VGC response: The spillways for the HLF and Events Pond were inspected by the EOR and it was determined that the minor material deposits would not impact their functionality as the accumulated material would be washed out in a major event and not reduce capacity (N/A).

12. 2020 and 2021 – VGC should assign a qualified, on site, individual to be responsible for monitoring and documentation of any mass earth structures that have significant risks in the case of a failure. The individual should develop a standard operating procedure for the monitoring and risk management of these structures. This individual should be responsible for coordination with a qualified professional to review monitoring data for concerns and trends, if they are not qualified themselves.

    a. VGC response: Monitoring of structures is completed by the Technical Services Department under the direction of the Technical Services Superintendent working closely with the EOR for the areas while following standard operating procedures. The Technical Services Superintendent is the EOR for a number of the Engineered Structures on the Mine site. The results of monitoring and the documentation developed are provided with VGC's annual reports as required by the Quartz Mining Licence (QML-0011) and Water Use License (QZ14-041-1) (ongoing).

13. 2020 & 2021 – VGC should continue to assign individuals to document and be responsible for the monitoring and construction of any structures to determine if the structures are constructed in accordance with design. Any variations between design documents and final construction should be included in final record drawings.

    a. VGC response: Monitoring of structures including construction review to meet design specifications is done by the Technical Services department under the direction of the Technical Services Superintendent working closely with the EOR for the areas. Construction reports and as-built drawings document variations or minor modification from IFC designs (ongoing).

    b. Additionally, VGC has updated the Waste Rock and Overburden Facility Management Plan, that includes QA/QC plan and related OMS Manual to support this work (completed Feb 2022).

14. 2020 & 2021 – Any finalized construction of mass earth structures should include a final construction report that includes any operational and maintenance requirements (if any) to ensure stability of the structure.

    a. VGC response: As per both QML-0011 and QZ14-041-1, the EOR provides final construction reports for Engineered Structures, which includes requirements for maintenance as needed, once the structures are complete (ongoing).

15. 2020 and 2021 – VGC should consider a monitoring program to assist in early warning and detection of any movements in mass earth structures. Such a program might use permanent survey points, slope inclinometers, piezometers, or other tools to measure internal/external movements and pore water pressures. Such a monitoring program should be developed with the assistance of and be implemented with the oversight of a qualified professional.

    a. VGC response: Monitoring programs have been developed, are in use, and undergoing further refinement by the Technical Services department with the oversight of a qualified professional. In addition to routine visual inspection, monitoring for physical stability includes the following (ongoing):

        - Vibrating wire piezometer water level readings in the HLF dam foundation bedrock and dam fill just above the western and eastern underdrains to determine pore water pressures; and,
        - Slope inclinometer readings in the HLF dam crest.

16. 2020 and 2021 – For any stockpiles, cut slopes, and/or fill slopes with over-steepened slopes that do not require immediate rectification (due to proximity to structures, roadways, active work areas, etc.) VGC should still cordon off the area above and/or below the over steepened slope depending on what would be accessible to site staff.

    a. VGC response: As noted in the 2021 audit report, over-steepened sections identified in previous years at the secondary stockpile perimeter ditch were addressed in 2021. Additional areas were cordoned off in response to the previous audit and these areas will be checked in the snow free period and upgraded/repaired if deemed necessary. Management of other over-steepened slopes will continue in 2022 (ongoing).

5.4.3 Reporting Adequacy, Consistency with Requirements, and Recommendations

Table 48 summarizes the consistency with requirements gaps and/or deficiencies identified with the Heap Leach Facility monitoring program.

The notable non-consistency with requirements is the absence of documented routine (visual) inspections. These inspections should be recorded and documented as per the EMSAMP document. Based on the available information, it is unclear if monitoring of all HLF structures is completed at required frequencies.

There is a lack of consistency between the piezometer instruments listed in the EMSAMP document (2020-01) and those with reported water tables in the monthly reports. Piezometer MW19-HLF1a listed in the EMSAMP, is listed without a water level in the August 2020 monthly report. Piezometer MW10-AG3, is reported decommissioned in the Q1 2021 monthly report and there after, however there is no mention of its decommissioning in the November and August 2020 monthly reports. The following piezometers listed in 2020 EMSAMP have only been installed in Q3 2022: MWXX-HLF2a, MWXX-AGR6 MWXX-HLF2b, MWXX-HLF3a, MWXX-HLF3b, MWXX-HL4a, MWXX-HLF4b. These piezometers have therefore not been documented in the monthly reports within the audit timeframe.

Of the sixteen (16) physical stability recommendations from the annual inspection reports, recommendations #1, 2, 3, 6, 7 and 8 were scheduled for completion within the time period of this environmental audit. The remaining recommendations are listed as ongoing, scheduled for future implementation, or complete by VGC.

- Recommendation 1 is addressed in greater detail within the 2021 annual HLF inspection report completed by the EoR. The EoR recommends monitoring the downstream slope for rill erosion and placing rip-rap along the groin of the HLF spillway access road and embankment.
- Recommendation 2 was also addressed in the 2021 annual inspection report. VGC has responded to complete this work post freshet 2022.
- Recommendation 3 is not addressed in the 2020 or 2021 annual inspection reports, and review of the Phase 1B Interception Ditch design is not documented.
- Recommendation 6 is addressed in the 2021 EoR annual inspection which indicates that concrete cloth armoring has been placed on the emergency spillway.
- Recommendation 7 has not been addressed in the available documentation.
- Recommendation 8 is still being addressed. Visible vegetation along the HLF toe is reducing erosion and rilling in the interim Proposed backfilled coarse fill (6” minus rock) into the area is not addressed to be complete in available information.

Table 48 Heap Leach Facility Monitoring Program Consistency with Requirements and Recommendations

Consistency with Requirements Gaps and/or Deficiencies	Recommendations
Routine (visual) inspections (daily, weekly) not reported. It is unclear if all visual inspections are completed for all components of the HLF at their required frequency based on the annual and monthly reports.	Include an appendix in Annual and Monthly reporting that summarizes the observations from visual inspections.
Based on the 2021 annual report, three Vibrating Wire Piezometers (VWPs) installed in the In-Heap Pond, appear to be collecting data, but it is unclear if they are being monitored continuously. These piezometers, along with the embankment piezometers (P1, P2 and P3) are not included in the EMSAMP revision.	Provide continuous data plots of In-Heap piezometers in monthly and annual reports. Include records of In-Heap and embankment piezometers in the next EMSAMP revision.
The following piezometers/groundwater wells listed in EMSAMP are not reported in the annual or monthly reports due to being installed in Q3 2022: MWXX-AGR6, MW10-AG3A, MWXX-HLF2a, MWXX-HLF2b, MWXX-HLF3a, MWXX-HLF3b, MWXX-HL4a, MWXX-HLF4b.	Provide documentation of piezometers that are still to be installed in the monthly and annual reports, listed in the EMSAMP. Update the EMSAMP as required.
Records of pregnant and barren solution sampling not available in monthly and annual reports.	Include documentation of pregnant and barren solution sampling in the geochemical sampling sections of the monthly and annual reports.
Follow up and close out of physical stability recommendation 3, 7 and 8 not documented in annual or monthly reports.	Provide documentation detailing the follow up and response actions for addressing recommendation.

6 Solid Waste and Hazardous Materials Management

6.1 Documents Reviewed

Documents in Table 49 were reviewed for the solid waste and hazardous materials management section of the audit. As this aspect of site environmental management is carried out in the field and documented by handwritten reports required at various frequencies (daily, weekly, monthly, quarterly), Stantec modified the audit approach to review representative inspection logs and reports presented in the following section.

Table 49 Waste Management Documents Reviewed

Document	Version Reviewed	Sections Applicable to Operations Phase
Solid Waste and Hazardous Materials Management Plan	2017-02	All sections

6.2 Monitoring Program Implementations and Data QA/QC

Implementation of the Solid Waste and Hazardous Materials Management Plan (during operations) was and is carried out through scheduled inspections and related documentation of inspections. Field inspections are carried out, according to the frequencies specified in the Solid Waste and Hazardous Materials Management Plan by VGC Environmental Technicians, and reports are reviewed by site VGC Environmental Coordinators for items that require corrective action by operations staff or senior management. Corrective actions are tracked in a dedicated log and updated upon completion. Table 50 presents the waste logs and inspection reports reviewed for this audit.

Table 50 Waste Logs and Inspection Reports Reviewed

Waste Category	Frequency	Record	Record Date/Period
Hazardous Waste	As Required	Completed hazardous waste manifest	July 13, 2020
Wet/Dry Waste	As Required	Incinerator Operations Log	July 26–Sept 1, 2020
Wet/Dry Waste	Weekly	Incinerator Maintenance Log	May–June 2019
Hazardous Waste	Daily	Hazardous Substance Inspection Checklist (Fuel Stations/Propane Tanks	Week of July 21, 2020
Solid Waste/Fuel	Weekly	Environmental QA/QC Inspection (includes inspection of site waste management, fuel management and spill kits)	Week of July 10 and 27, 2020
Brush	As Required	Control Burn Log	January–August 2020

6.3 Reporting Adequacy, Consistency with Requirements, and Recommendations

The review of relevant logs and inspection reports listed in Table 50 indicates that in the majority of instances logs are filled out adequately and inspection reports show no concerns. The review did, however, find that burn logs are occasionally missing information about timing of burn events and that inspection reports repeatedly found sorting of hazardous and of non-hazardous waste "unsatisfactory". Repeated "unsatisfactory" notations suggest a systemic issue rather than a temporary lapse in procedures, and updates to the Solid Waste and Hazardous Material Management Plan is recommended. Table 51 summarizes the gaps and recommendations identified.

Table 51 Waste Management Consistency with Requirements and Recommendations

Consistency with Requirements Gaps and/or Deficiencies	Recommendations
Burn Log miss time information occasionally	Management should periodically check logs and address missing information.
Sorting of hazardous waste repeatedly found unsatisfactory	The Solid Waste and Hazardous Materials Management Plan should be reviewed and sections relevant to hazardous waste management updated.
Sorting of non-hazardous waste repeatedly found unsatisfactory	The Solid Waste and Hazardous Materials Management Plan should be reviewed and sections relevant to non-hazardous solid waste management updated

7 Spill Response

7.1 Documents Reviewed

Documents in were reviewed for the spill response section of the audit. Spill response training, procedures and reporting measures were audited against the 2017-02 and 2021-01 versions of the Spill Response Plan. Version 2021-01 updates terminology from StrataGold to Victoria Gold, adds additional reporting (e.g., to First Nation of Na-Cho Nyak Dun) and expands contaminated soil characterization comparted to the 2017-02 version. There do not appear to be fundamental changes in approach and procedures for dealing with spills or spill kit locations.

Table 52 Spill Response Documents Reviewed

Document	Version Reviewed	Sections Applicable to Operations Phase
Spill Response Plan	2017-02	All
Spill Response Plan	2021-01	All
Water Licence QZ14-041 Quartz Mining License QML- 0011 2020 Annual Report	N/A	N/A
Water Licence QZ14-041 Quartz Mining License QML- 0011 2021 Annual Report	N/A	NA

7.2 Spill Response Plan Implementation Program Implementations and Data QA/QC

 provides the audit results of the spill response program. The table only covers the reporting period and does not include spills prior to July 1, 2020 or after June 30, 2022.

Table 53 Audit Results of Spill Response Program

Year	No. of Reportable Spills	Response Procedures Implemented	Reporting	Training and Prevention
2020	• Process solution 1 • Diesel 1 • Oil 2 • Coolant 1 • Sewage 1	• The spill reports provided indicate that spills were responded to in accordance with the Spill Response Plan • Contaminated materials were place in the HLF, land treatment farm, or treated with lime depending on the material involved	• Spill reports indicate that all but one spill were reported to spill report line within timelines prescribed in Spill Contingency Plan • One oil spill report identified the spill as reportable but did not indicate if required reporting occurred.	• For the process solution and diesel spills the reporting includes a root cause analysis and identification of measures to prevent similar future spills.
2021	• Process solution 3 • Oil 2 • Coolant 2 • Sewage 2 • Ammonia nitrate solution 1	• The spill reports provided indicate that spills were responded to in accordance with the Spill Contingency Plan • Contaminated materials were place in the HLF, land treatment farm, treated with lime, or in the case of ammonia nitrate placed in blast locations. Contaminated oil absorbent pads were shipped off site.	• Spill reports indicate that spills were reported to spill report line within timelines prescribed in Spill Contingency Plan	• For the process solution spills, the reporting includes a root cause analysis and identification of measures to prevent similar future spills.
2022	• Process solution 2 • Diesel 2 • Oil 8 • Coolant 1	• The spill reports provided indicate that spills were responded to in accordance with the Spill Contingency Plan • Contaminated materials were place in the or land treatment farm	• Spill reports indicate that spills were reported to spill report line within timelines prescribed in Spill Contingency Plan	• For the process solution spills the reporting includes a root cause analysis and identification of measures to prevent similar future spills.

7.3 Reporting Adequacy, Consistency with requirements, and Recommendations

The documentation available for the audit indicates that spill response and clean up follow the approved Spill Contingency Plan and that reporting is generally timely and with adequate information. There are two oil spill reports during the reporting period that do not indicate if the spill was reported to the Spill Line. One diesel spill report is missing basic information such as the final contaminated material disposal location. These spills were comparatively small. Additional observations include:

- Process solution spilled outside the lined heap leach containment area during the audit period (July 1, 2020 to June 30, 2022), whereas the previous audit did not identify process solution spills.
- There is a marked increase in the first half year of 2022 in oil spills compared to 2021 and 2020 but also 2019 and 2018 (reported in previous audit). There does not appear to pattern as spills occurred in different places and circumstances. Some involved improper handling of containers, other failed hoses, or other equipment.

Above observations suggest there may be a trend towards more process solution spills and towards more oil spills. Stantec is aware that VGC has added earthworks and drainage in 2022 and already has implemented mitigations for process solution spillage. VGC should consider providing additional training in oil spill prevention. Table 54 summarizes observations and recommendations.

Table 54 Spill Response Consistency with Requirements and Recommendations

Consistency with Requirements Gaps and/or Deficiencies	Recommendations
Two spill reports did not indicate if spill line was called	Management should review reports and address missing information.
Process solution spilled outside the heap leach containment area	Monitor the effectiveness of the mitigation measures already put in place.
Number of oil spills increased in first half of 2022	Provide additional spill prevention training.

8 Reclamation and Closure

This most recent version of the Reclamation and Closure Plan (RCP) (Version 2020-01) during the audit period was submitted to YWB and the EMR in October 2020 in accordance with Clause 148 (b) of QZ14-041-1 and Clause 7.2 of QML-0011 that requires an update to the RCP every 2 years. The 2020 RCP included an updated Reclamation Cost Estimate, comprised of Current, 2-Year Peak Liability and End of Mine (EOM) security calculations. On June 27, 2022, the Government of Yukon concluded its assessment of the closure-related risk and liabilities at the Eagle Gold Mine and issued its *Reason for Decision: Financial Security Determination for the Eagle Gold Mine Site (QML-0011)*. The 2020 RCP is currently in the regulatory review process.

The scope of this audit does not include assessing the content of RCP 2020-01. The audit focus is limited to the *"progress and success of reclamation and closure efforts completed to date"*; as outlined in QML-0011 (Part VI, 12.2.d). Planned reclamation and closure efforts for the 2020-2022 period are initially outlined in the approved 2018 RCP (2018-03), then again in the 2020 RCP submission (2020-01). Planned reclamation activities included select progressive reclamation efforts, as well as advancing various closure research programs. No mine areas were expected to undergo final closure during this time. Reclamation progress and performance results are evaluated based on information presented in the 2020 and 2021 Annual Reports, which are required by QML-0011 to capture completed reclamation activities/research, results, and plans for upcoming activities. The EMSAMP includes monitoring and management frameworks that are relevant to closure and post-closure phases of the project, but does not include requirements for progress updates of progressive reclamation and/or closure research programs.

8.1 Documents Reviewed

The documents listed in Table 55 were reviewed in evaluating the 2020 and 2021 progressive reclamation and reclamation research efforts completed.

Table 55 Reclamation and Closure Documents Reviewed

Document	Version Reviewed	Sections Applicable During Operations Phase
Eagle Gold Mine, Reclamation and Closure Plan	2018-03	Section 7 Progressive Reclamation Section 10 Reclamation and Closure Research Programs
Eagle Gold Mine, Reclamation and Closure Plan	2020-01	Section 7 Progressive Reclamation Section 10 Reclamation and Closure Research Programs
Environmental Monitoring Surveillance and Adaptive Management Plan (EMSAMP)	2020-01	Section 12 Vegetation Section 13 Soils
2020 Annual Report for Eagle Gold Project Water Licence QZ14-041-01 and Quartz Mining License QML-0011	April 2021	Section 6 Reclamation and Closure Appendices M, N, O, P, W, X, Y
2021 Annual Report for Eagle Gold Project Water Licence QZ14-041-01 and Quartz Mining License QML-0011	April 2022	Section 6 Reclamation and Closure Appendices M, N, U1, U2, U3

8.2 Program Implementation and Results

8.2.1 Progressive Reclamation

Section 7 of the approved 2018-03 Reclamation and Closure Plan identifies three opportunities and approximately timelines for progressive reclamation at the Mine:

- **Platinum Gulch WRSA** - Bottom-up placement of waste rock at the Platinum Gulch WRSA to its final configuration, placement of an engineered cover will commence near the end of the 3-year waste rock deposition period (approx. 2019-2022), and construction of a field scale proto Passive Treatment System (PTS) will follow (approx. 2023) once construction of the engineered cover is completed.
- **Eagle Pup WRSA** – Construction of the engineered cover is scheduled to commence in the first year of closure, but work may begin prior to this time if final contouring of the WRSA is completed.
- **Ice-Rich Overburden Storage Area** – Revegetation planned for inactive areas to minimize sediment movement during rainfall and runoff events

While not listed in Section 7 of the RCP (2018-03), revegetation planning is discussed throughout the document as key reclamation activity and research program. A summary of revegetation progress is discussed in Section 8.2.1.4, and revegetation research studies are presented Section 8.2.2.1.

8.2.1.1 Platinum Gulch WRSA

The 2020 and 2021 Annual Reports summarize completed waste rock placement at the Platinum Gulch (PG) WRSA for each reporting year and describe bottom-construction sequencing as proposed in the 2018 RCP. The 2021 Annual Report identifies a 10 m increase to the design surface was completed by the EOR to provide additional capacity, and a total capacity of 1,025 kt remains in the two lower lifts.

In 2020 a pilot-scale trial cover was completed on the 1370 masl bench and instrumented with two monitoring stations, one on the bench plateau and one on the southeast facing slope. Recommendations for an additional trial cover and monitoring station on a north facing slope were made in 2021.

Progressive reclamation at the PG WRSA appears to be largely on track with sequencing described in the 2018 RCP, however the timing for final waste rock placement at PG WRSA, additional cover construction (trials or larger areas), and/or PTS construction planned for the near time was not found in the RCP (2020-01) or the 2020 and 2021 Annual Reports. Additional detail on the progress of engineered cover and PTS research is in Section 8.2.2. Initial research results presented in the documents reviewed do not identify any major alterations to the existing closure concepts, although research programs are in early phases.

8.2.1.2 Eagle Pup WRSA

The Annual Reports note that waste rock placement at the EP WRSA began in 2021, construction of the engineered cover at the WRSA is not expected until closure. This is consistent with timing suggested in the 2018 RCP.

8.2.1.3 Ice-Rich Overburden Storage Area

Total quantities of material placed at this facility were not found in the Annual Reports, although a lack of significant quantities of ice-rich overburden encountered is noted. VGC staff have indicated this facility has not been constructed.

8.2.1.4 Revegetation Program

The 2020 RCP states: *"the objective of the initial revegetation program is to design and implement erosion control measures using revegetation and bioengineering techniques that would act as interim methods to control potential erosion and to also inform final reclamation decisions with respect to appropriate seed mixes and revegetation methods".*

Active revegetation activities commenced in at the Site in 2019 with treatment at five areas and additional areas treatments have been applied at other areas in 2020 and 2021. The 2020 and 2021 Annual Reports document the areas, methods and treatment details for each reporting year. Treatments and associated erosion control measures noted in these reports document a mix of hand and broadcast seeding, tree planting, pole drains, wattle fencing, coco-matting, fascine installations and willow staking. Variations in species mix and application densities also are noted across the 2020 and 2021 Annual Reports.

Appendix O of the 2021 Annual Report provides valuable notes on the observed surface material conditions (e.g. texture, organic matter, stones), topsoil placement and other relevant observations. Some initial recommendations made by VGCs consultant for additional surface preparation (e.g. decompaction, topsoil addition) and treatment timing are developed based on results of the 2019 treatments, and establishment of permanent monitoring plots are suggested to complete annual assessments and provide a consistent framework for evaluating work completed to date and informing future refinements.

VGC has made progress with revegetation activities consistently through 2019-2022. It is recommended that a formal monitoring program is developed to adequately capture treatment results. This may be incorporated into the operational vegetation monitoring program evaluated in Section 4.1. Due to the timelines associated with establishing a sustainable vegetation cover that contributes to surface stability and erosion control, and/or future land use targets (i.e. wildlife habitat), success will be determined by evaluating future monitoring results.

Select revegetation research topics have been identified by VGC and their consultants, these are presented in 8.2.2.1.

8.2.2 Reclamation and Closure Research

Section 10 of the approved 2018-03 Reclamation and Closure Plan identifies six research study topics:

- Revegetation Trials
- Engineered Covers
- Vegetation Rooting Study
- Passive Water Treatment
- Heap Biological Detoxification and in-Heap Bioreactor Research Program
- Groundwater Arsenic Attenuation Study

Progress and reported findings from each of these research studies is summarized in the sections below.

8.2.2.1 Revegetation Trials

The 2018 RCP identifies historical revegetation trials completed by Laberge Environmental Services (2012) on the Peso Mineral Exploration Site near the Eagle Gold Project area. Monitoring results in Section 10 of the 2018 RCP reported several findings:

- *All seeded plots with no treatments supported no to very sparse vegetative cover and stressed growth,*
- *The plots with the amendments 'biochar and compost' are still providing the most robust and dense vegetation cover and growth.*
- *Alpine Bluegrass, Tufted Hairgrass, Glaucous Bluegrass, Tickle Grass, Sheep Fescue, Alder and hedysarum have been identified in the revegetation trial plots and several areas exhibiting good overall health.*

Laberge (2012) also notes that for successful plant growth and survival at the Peso site, some form of amendment is required, and the blocks with the healthiest and most robust plants were located on the forest margin where moisture retention was thought to be increased.

Additional candidate trial sites are identified in the 2018 RCP for future work in boreal high, boreal low and riparian ecosystems, although no specific timelines or treatment methods are described. The 2020 RCP summarizes comparable observations for the Peso plots, highlighting the trials completion following the 2018 monitoring program and their successfully establishing a vegetation cover on acidic, highly mineralized soils.

Although there is no overarching revegetation plan presented in the 2018 and 2020 RCPs, the Project has an active revegetation program focusing on short-term erosion control that has included revegetation efforts at a number of areas each year from 2019-2021. This work is described in Section 8.2.1.4 and provides numerous informal trial sites for observation, although the audit could not find a summary of planned monitoring to capture observations and results to inform future efforts and refine a site-wide revegetation design in the RCP.

Since 2018, additional research trials sites were established in 2020 to evaluate the success of three native species on two trial plot locations with north and south facing aspects. Year 1 (2021) monitoring results are presented in Appendix N of the 2021 Annual Report, but given the early stage of this trial observations and recommendations are limited.

8.2.2.2 Engineered Covers

The stated objective of the research program for closure cover designs is to build confidence in the initial long-term cover system design performance analyses in terms of net water percolation and to inform eventual large-scale closure cover system construction. Research tasks and audit comments associated with engineered covers are outlined in Table 56.

Table 56 Overview of Engineered Covers Research Program and Audit Comments

Task	Summary Progress and Reported Findings	Audit Comments
Task 1: Update the conceptual model of cover performance	As outlined in the 2020 RCP: *The base case cover system considered for closure of the HLF and WRSAs is conceptually expected to behave as a store and release system where 20 to 50% of effective precipitation will infiltrate the cover system to underlying waste or spent ore.* No major updates to the conceptual model of cover performance are noted to date. Evaluation of the existing concept was completed in 2021 and reported with cover trial monitoring results (2021 Annual Report, Appendix W).	No comment.
Task 2: Develop a material characterization plan for candidate cover system materials	A cover material characterization program was completed in September 2021 and summarized in the 2021 Annual Report (Appendix X). The program focused on overburden stockpiles at the site and suitability for use in cover construction. Findings indicated the existing overburden stockpiles included materials comparable to those used in cover trials on the 1370 bench of PG WRSA and would likely perform similarly in net percolation reduction. Soil in multiple stockpiles was low in organic matter and considered likely to require amendments for successful revegetation. Materials required for construction of a low permeability layer (i.e. barrier layer) appear limited in volume within the current site stockpiles.	This task has progressed as planned in the 2018 RCP. An updated material volume balance using the results of this program and existing cover concept, as well as, additional soil replacement requirements for reclamation, was not found in the 2020 RCP or 2021/22 Annual Reports.
Task 3: Conduct a material characterization of HLF and WRSA waste materials;	The 2018 RCP notes that representative samples of spent heap leach and waste rock material will be collected when deemed the material available from the existing facilities is appropriately representative and submitted for geotechnical characterization. The 2020 RCP suggests this may occur in 2021 and 2022. Annual Reports do not provide progress on this item.	Although waste material characterization is likely occurring, testing/results and reporting with respect to the implications for closure should be included in Annual Reports.
Task 4: Conduct enhanced meteorological monitoring on various slope aspects;	Pilot scale trial cover was constructed at the PG WRSA in September 2020. The trial cover included two instrumented station locations, on the plateau and inter-bench slope. Each location includes soil and meteorological data collection equipment.	In general, these tasks have advanced as proposed in the 2018 RCP and initial performance results suggest the net percolation targets are achievable.

Table 56 Overview of Engineered Covers Research Program and Audit Comments

Task	Summary Progress and Reported Findings	Audit Comments
Task 5: Conduct closure cover system field trials for performance monitoring	Findings in the 2021 Annual Report (Appendix W) suggested trial cover was performing within the expected range for net water percolation (20%-50%) using a store and release concept. Recommendations following the first year of monitoring results included: • Installation of a performance monitoring station on a north-facing aspect of the WRSA to capture differences in water content, net radiation, and snow depth across different aspects of the landform. • Completion of a comprehensive annual field saturated hydraulic conductivity testing campaign to capture differences in this parameter across the cover system field trial, and track cover system evolution over time. • Investigation of how a compacted layer of overburden could reduce NP rates further (as required)	Annual Reports and future RCP iterations should include ongoing performance updates and proposed schedule for additional pilot trial locations (as applicable).
Task 6: Assess the effect of high pH water treatment solids on the heap cover	This research program will assess suitability of the mine water treatment solids for use as heap cover material. A proposed timeline and/or progress updates were not found for this work in the 2020 RCP or Annual Reports.	Proposed timelines for this work should be included in future RCP iterations and Annual Reports.

8.2.2.3 Vegetation Rooting Study

The objective of the vegetation rooting study is to gather information on plant rooting depth and develop optimal requirements for cover thicknesses to encourage maximum evapotranspiration from covers. A detailed study plan outlining literature review, soil and vegetation sampling and analyses and field trial monitoring is included in the 2020 RCP.

No proposed timelines, progress results or research findings were found in review of the 2020 RCP or 2020 and 2021 Annual Report. VGC staff have indicated this research program has not commenced.

8.2.2.4 Passive Water Treatment

PTS are proposed for a number of mine areas at closure. As stated in the 2018 RCP, the objective of the PTS reclamation research program is to address uncertainties associated with the removal rate coefficients and thermodynamic minimums possible for the predicted water quality at closure. A detailed research plan and schedule was provided with the 2018 RCP and updated in the 2020 RCP including the timeline in Table 57.

Table 57 Overview of Passive Water Treatment Research Program outlined in 2020 RCP

Phase	Start Date	End Date
Phase 1: Information Gathering	September 2012	2020
Phase 2: Indoor Pilot Scale	2019	2021
Phase 3: Outdoor Pilot Scale	2021	2022
Phase 4: On-site Demonstration Scale	2022	2023
Phase 5: Full Scale Implementation	TBD	Into post-closure

The 2021 Annual Report provides progress updates and initial results from Phase 1-2 of this work. The preliminary tasks focused on the PG WRSA PTS and included desktop literature/site data review, site investigation to assess key inputs (e.g., subsurface conditions, borrow sources for constructed wetland treatment system (CWTS) substrate, wetland plant survey and collection), develop concept design and sizing, and identify constructability constraints. Appendix Y of the 2021 Annual Report provides summary detail on the completed work and recommendations for next steps which include a series of off-site bench scale testing.

Work completed to date is summarized clearly in the 2021 Annual Report. No proposed timeline for bench-scale testing (i.e., Phase 2: Indoor Pilot Scale) was noted in the audit review. Findings of completed work are preliminary but did not identify any critical flaws in the existing RCP concepts to employ a PTS at the PG WRSA.

8.2.2.5 Heap Biological Detoxification and in-Heap Bioreactor Research Program

The 2020 RCP notes that the Water Use Licence QZ14-041 outlines a requirement “to verify the proposed biological detoxification of the heap, including incorporation of data gathered through the operation of the HLF and information from the use of similar technology at heap facilities operated in similar climatic conditions.” The licence also requires “a phased program, similar to that provided for the PTSs, for the proposed in-heap bioreactor treatment system including the assessment of the ability to maintain reducing condition in the long term and the potential for rebound and/or release of metals.” The 2018 and 2020 RCP include a research plan outline and background for this issue in Appendix C of both submissions.

The 2020 RCP discusses a pilot bioreactor program with participation from the Yukon Industrial Research Chair – Northern Mine Remediation which has used mine influenced water discharging from the PG WRSA and catchment area in evaluating the impact of ambient freeze-thaw stresses on sulfate reducing bacteria and metals removal. It is unclear if this work is intended to inform future work for the HLF.

No proposed timelines for this research program are provided with the description in the 2020 RCP or 2021 Annual Report.

8.2.2.6 Groundwater Arsenic Attenuation Study

The Section 10 of the 2018 and 2020 RCPs describes historical data showing dissolved arsenic concentrations at the mine area which exceed applicable territorial and federal water quality guidelines. The RCPs outline the following research activities:

- Utilize the existing groundwater information to establish the processes that could likely be controlling constituent migration. Geochemical modeling would be used to derive saturation indices that could indicate the sinks that are currently responsible for metals removal.
- Potential sources of constituents such as the WRSAs would be monitored to determine if the WRSAs are inducing chemistry changes in groundwater that could shift the chemical equilibrium to either favor or reduce the processes that are currently affecting arsenic or other metals' migration
- Known or modeled migration pathways would be further evaluated to determine if specific lithologies provide mechanisms that can be quantified to yield predictions of migration potential or reduction in migration potential under planned operating conditions.

No proposed timeline, progress updates or findings were found in the 2020 or 2021 Annual Reports.

8.3 Reporting Adequacy, Consistency with Requirements and Recommendations

Reporting on planned and completed progressive reclamation and reclamation research is required to be completed within the Reclamation and Closure Plan updates and the Annual Report. In large part this information was found in review of the 2020 RCP, 2020 Annual Report and 2021 Annual Report.

Progressive Reclamation is not addressed directly in the 2020 and 2021 Annual Reports, but can be inferred from the summary of completed construction activities as they related to closure (e.g. construction of the Platinum Gulch WRSA). Based on the Annual Reports progressive reclamation has been occurring as planned and waste rock placement has allowed VGC to advance cover trials at the Platinum Gulch WRSA. VGC and their consultants have also successfully completed revegetation efforts each year from 2019-2021. This will provide valuable information for refining site preparation, topsoil replacement and revegetation designs if proper monitoring and reporting is completed. Stantec recommends VGC consider incorporating these revegetation sites into a formal monitoring program to provide a consolidated location for performance results rather than a series of technical memorandums appended to Annual Report submissions.

Progress and success of reclamation research is difficult to discern from the reviewed documents. Although the 2020 RCP and Annual Reports identify and provide written discussion on reclamation research, items such as research task schedules, progress updates and/or key findings were not found for all reclamation research programs. The Engineered Covers and Passive Water Treatment programs appear to have made positive progress, although the timelines in the 2020 RCP and 2021 Annual Report appear slightly delayed from the initial schedule provided in the 2018 RCP. Timelines and milestones associated with the remaining research programs were not found. Stantec recommends VGC develop a

summary schedule for all reclamation and closure research programs, as outlined in Schedule C, Condition 4.1.c. of the QML-0011. Additionally, the next iteration of the RCP should include comment on research program findings to date, and if/how this impacts the existing closure concepts for the different mine areas.

Table 58 Closure Deficiencies and Recommendations

Consistency with Requirements Gaps and/or Deficiencies	Recommendation/Corrective Action
VGC and their consultants have successfully completed revegetation efforts each year from 2019-2021. This will provide valuable information for refining site preparation, topsoil replacement and revegetation designs if proper monitoring and reporting is completed. Stantec recommends VGC consider incorporating these revegetation sites into the ongoing vegetation monitoring programs or equivalent.	Stantec recommends VGC consider incorporating the revegetation sites in a formal monitoring program to provide a consolidated location for performance results rather than a series of technical memorandums for different areas that are appended to Annual Report submissions.
Progress and success of reclamation research is difficult to discern from the reviewed documents. Although the 2020 RCP and Annual Reports identify and provide written discussion on reclamation research, items such as research task schedules, progress updates and/or key findings were not found for all reclamation research programs.	Stantec recommends VGC develop a summary schedule for all reclamation and closure research programs, as outlined in Schedule C, Condition 4.1.c. of the QML-0011. Additionally, the next iteration of the RCP should include comment on research program findings to date, and if/how this impacts the existing closure concepts for the different mine areas.

9 On Site Environmental Audit

This section presents the design intent, format, and observations/findings of the on-site Environmental Audit conducted September 28-30, 2022, at the Victoria Gold Mine in the Yukon. Conducting an Environmental Audit every two years is a requirement of Section 12.0 of Quartz Mining License QML-0011, dated June 29, 2022. The Audit was conducted by Environmental Auditor Michael Patterson B.Sc. B.Env. of Stantec.

Access to the site was via plane from Trail to Vancouver to Whitehorse to Mayo, and then by vehicle with the Corporate Environmental Manager for VGC. Prior to arrival on site, a number of required safety and training protocols from VGC were completed. Accommodations and meals were provided by VGC at their mine site Camp. On-site tours and inspections were led by the Corporate Environmental Manager, or the Environmental Manager. Tours of specific site operations were most often led by the Manager of the specific operation, with participation from Environmental personnel.

In addition to conducting the on-site audit, the on-site auditor supported the Stantec review team by responding to specific team requests for site photographs or specific site locations (i.e., GPS coordinates). Site photographs are provided in Appendix A.

A Close-out Meeting, to present the draft findings/observations was held for Mine Management on September 30th. Present at the Meeting were: Lindsay Rear, Corporate Environmental Manager, Bill Bowden, Environmental Manager, and Andrew Balance, Acting General Manager Mine Operations.

9.1 Documents Reviewed

The primary documentation, as outlined by VGC in their Audit Scope are listed below. This list is consistent with the documents listed in Section 2.0 of Quartz Mining License QML-0011.

Table 59 Environmental Protection and Environmental Permits and Management Plans

Document	Version Reviewed	Sections Applicable
Environmental Monitoring, Surveillance and Adaptive Management Plan	Version 2020-01 dated February 2020	All
Water Management Plan, 2020-01	2020-01	All
Solid Waste and Hazardous Materials Management Plan	2017-02	All
Spill Response Plan	2021-01	All
Wildlife Protection Plan	2017-01	All
Eagle Gold Mine 2020 Environmental Audit Report	November 30, 2020	All
Quartz Mining License QML-0011	June 29, 2022	All

9.2 Audit Findings

The site audit produced a total of six exception-based audit findings which are described in detail below. Exception-based audit findings are those where the practices undertaken at the site did not match the requirement of the audit criteria (those components as generally identified in sections 2 to 8 of this report).

9.2.1 Finding #1

Reclamation and Closure Plans – Section 7.2 of QML-0011 Dated June 29, 2022 requires the following: "The Licensee must submit to the Director an updated reclamation and closure plan on or before October 1st, 2016 and every two (2) years thereafter, commencing after the Effective Date of this Licence". The Effective date of the current licence is March 24, 2016. The permit identifies in Section 4.1 that the "Reclamation and Closure Plan, Version 2018-03", is the Approved Plan.

However, Section 7.2 of the License requires the submission of an updated reclamation and closure plan every two (2) years thereafter. Section 8.1 of the License requires: "the Licensee must implement each approved plan as of the date each plan becomes an approved plan" and in Section 8.2 "The Licensee must undertake reclamation at the site in accordance with the approved reclamation and closure plan."

It is unclear how VGC can achieve and implement all of the requirements of a 2018 Reclamation and Closure Plan (which predates the July 1, 2020 start of commercial production) to accommodate normal annual mining variations in production and operations.

It is understood that the Reclamation and Closure Plan RCP 2020-01 was not approved, and that RCP 2022-01 was submitted to the Yukon Department of Energy, Mines and Resources for approval October 3, 2022.

9.2.2 Finding #2

Elevated visual turbidity in Haggart Creek following rainfall event on September 29-30, 2022. As shown in Photo 14 – "Haggart Creek Below Mine – After Overnight Rainfall, with input from Site Ditching (Sept. 30, 2022)" visual observations suggest that the turbidity of the ditch effluent would be influencing the turbidity of Haggart Creek. While not a regulatory monitoring site, VGC should evaluate whether this ditch source can cause exceedances of regulatory standards downstream. It should also be noted that visual inspections of Dublin Gulch during the audit visit, upstream of mine workings, suggested that elevated turbidity upstream of mine affected disturbances was present.

9.2.3 Finding #3

The close-up photograph Photo 12 – "Coarse Sediment Buildup at Staff Gauge W-21" indicates a significant buildup of coarse material within this reach of the stream channel. This buildup of material would be expected to significantly affect any flow rating curves developed for this location. The buildup of coarse sediment would make the conversion of staff gauge readings to flows unreliable. The staff gauge should be maintained as needed.

9.2.4 Finding #4

The 2020 Annual report notes in Section 5.2.2 – Cyanide Management, that fencing would be erected to reduce Wildlife Access to the Events Pond. The 2021 Annual report notes that this fencing will be erected in 2022. As indicated in photo 24: “Eagle Pit looking West Across Eagle Creek and Dublin Gulch to Event Pond, Heap Leach Facility and ADR – dated September 29, 2022” there is no fencing erected around the pond, as of the date of the audit.

9.2.5 Finding #5

It was noted during the audit that some of the Management Plans are dated as much as five years ago (2017). Specifically, the current Wildlife Protection Plan is dated 2017-01, which predates the start of commercial production. As indicated in Schedule C, Part 1 of Quartz Mining License QML-0011, it states: “For greater certainty, if there is no approved plan that addresses the activity to be carried out, the activity cannot be carried out until a plan is approved for the conduct of the activity.” Based on information gathered during the audit, it was not evident that a schedule for updating Management Plans is in place that considers changes to mine operations and environmental conditions at the site.

9.2.6 Finding #6

Photographs 18 and 19 were taken on September 28th and 29th, respectively and show the Camp Site Gasoline and Diesel Fuel Storage Area, after a small precipitation event and during a fuel delivery operation. Adjacent to the fuel handling and storage area is a water management ditch that eventually reports to the receiving environment. Site personnel have indicated that the Storage Area was constructed with a buried liner for secondary containment of the fuel storage tanks. However, due to the general slope of the surrounding area, spillage or releases from the storage tanks or vehicles being refuelled may flow to the adjacent water management ditch, and potentially to the receiving water. This risk may be greater in winter when the ground is frozen and less permeable.

10 Summary and Recommendations

Stantec conducted this audit and prepared this report with the objective of assessing whether VGC's environmental management plans and regulatory controls set out in the Quartz Mining Licence (QML)-0011 are implemented in and about the mine, and that the environmental management systems and controls are functioning as intended.

Stantec has audited VGCs implementation of environmental and physical stability monitoring programs against the versions of the management plans, including EMSAMP, Water Management Plan and Wildlife Protection Plan, in effect during the reporting period (July 1, 2020 to June 30, 2022) for consistency with these plans and with regulatory standards and thresholds set out in these plans.

Overall, the implementation of VGC's environmental management system can be described as adequate and no immediate concerns for water quality and quantity, aquatic habitat, air quality, soils, vegetation, wildlife and wildlife habitat, stability of physical structures and waste management have been identified.

Gaps, deficiencies and recommendations for improvements discussed above are shown in Table 60 for all disciplines.

Table 60 Summary of Findings

Consistency with requirements Gaps and/or Deficiencies	Recommendations
Meteorology	
The meteorology data quality management process is unclear. Spare parts for the meteorology station should be readily available at the Eagle Gold site. The site documentation for each meteorology monitoring site should be collected and documented. Records of maintenance activities.	• Reference industry standards followed for data quality management in the next annual report. • Keep spare climate station sensors on-site for rapid deployment should sensors/equipment begin to fail, or data gaps are noted. • For each meteorology station, information should be compiled for its location, list of instrumentation, sensor height above ground, description of surrounding ground cover, description of potential biases, photos in each of the four cardinal directions. • Each station should have a logbook in which the various maintenance activities can be recorded.

Table 60 Summary of Findings

Consistency with requirements Gaps and/or Deficiencies	Recommendations
Air Quality	
The air quality data quality management process is unclear Spare parts for the air quality stations should be readily available at the Eagle Gold site The site documentation for each air quality monitoring site should be collected and documented. Records of maintenance activities Annual report was missing the results from the particulate matter metals analyses Annual report did not include the laboratory reports	• Reference industry standards followed for data quality management in the next annual report and the EMSAMP. • Keep spare parts for the air quality monitoring stations on-site for rapid deployment should sensors/equipment begin to fail, or data gaps are noted. • For each air quality monitoring station, information should be compiled for its location, list of instrumentation, sensor height above ground, description of surrounding ground over, description of potential biases, photos in each of the four cardinal directions. • Include a summary of the quarterly results for the particulate matter metals analyses in the subsequent annual reports. • Include the air quality laboratory reports as appendices to the subsequent annual reports.
Surface Water Hydrology	
EMSAMPs reference RISC (2009) as the document which was used to develop hydrology data collection. This document is out of date; Version 2.0 of that document was published in 2018.	The EMSAMP surface water hydrology program should be updated to reflect Version 2 of the hydrometric standards (RISC 2018).
The annual reports and the monthly reports do not consistently document the monitoring activities or status of each of the 29 surface water hydrology stations. Consistency with requirements can not always be determined.	Recommend including the full list of 29 sites from the EMSAMP in each of the annual and monthly reports, and summarizing the current status of each (e.g., automated monitoring ongoing, not active, not discharging, manual flow measurement collected this month). Consistency with requirements can not be determined if status is not documented.
For automated stations, winter and freshet time periods were not clearly delineated as to allow for demonstration of consistency with requirements as outlined in the EMSAMPs.	Recommend one of two changes: 1 Document approximate dates of freshet start and logger deployment each year in the monthly and annual reports to delineate winter, freshet, and open water periods (each of which have different monitoring requirements), or 2 Update the EMSAMP requirements for the freshet period to better acknowledge i) the subjectivity of determining freshet period and/or ii) the difficulty of obtaining flow measurements during freshet flows.
The EMSAMPs list general tasks to be completed at each field visit and during QA/QC (Section 2.3.1). Completion of these tasks, including grading of each hydrometric station, was discussed in general in annual reports but documentation was not provided for audit review, for each station per requirements of RISC (2018).	Provide summary information regarding the completion of the tasks and QA/QC steps associated with each field visit in the annual reports, and/or indicate (in reporting) that these data have been documented internally and are available upon request. This could be done through “station datasheets” for each of the stations, with a full station history log. Formal grading of each station (per RISC 2018) would be a good addition demonstrating QA/QC completion.

Table 60 Summary of Findings

Consistency with requirements Gaps and/or Deficiencies	Recommendations
QA/QC related to field and analytical tasks (e.g., benchmark surveys, station condition, field processes, photos, equipment calibration) were not documented.	Recommend that QA/QC processes in accordance with Section 2.3.1 in EMSAMP 2020-01, EC 2001, RISC 2018 are documented and provided in reporting.
Surface Water Quality	
2020 Annual Report – Section 3.2.2 QA/QC Program Sample IDs.	This was corrected in the 2021 Annual Report. Continue corrective action in future reports.
Reported surface water quality detection limits did not align with the EMSAMP for hardness (0.6 mg/L reported and 0.5 mg/L in EMSAMP), total and dissolved barium (0.00010 mg/L reported and 0.00005 mg/L in EMSAMP), and total and dissolved strontium (0.0002 mg/L reported and 0.0001 mg/L in EMSAMP).	Discuss with laboratory (e.g., ALS) to reduce detection limit for the listed parameters. If the upper detection limit is not achievable a description/rationale should be included in the report and the EMSAMP be updated. I
2021 Annual Report – QA/QC total samples not consistent in report body, tables, and appendices	Review database inputs/outputs and quality review procedures and reports.
Selected Monthly Reports – Describe QA/QC data as Section 3.3.5 of the EMSAMP states QA/QC results will be reported on for each month of the sampling program.	Include tabulated results of surface water quality samples including identifying which samples are QA/QC in monthly reports.
Ground Water Quantity and Quality	
Some wells included in the monthly report are not part of the EMSAMP.	• Reporting should only include the wells listed in the EMSAMP.
Groundwater quantity and quality monitoring from some wells was performed less frequently than the schedule prescribed in EMSAMP.	• A number of factors, including those beyond the control of VGC may result in a scheduled monitoring not being performed (e.g. frozen conditions, weather, equipment malfunction, unsafe condition, construction). The monthly reporting needs to consistently provide the rationale for missed monitoring in tabular format and if any corrective action will be or has been taken. Corrective actions could include monitoring well repair, replacement, improved accessibility, etc. and should be relevant to the specific well concern.
The Q3 2020 data was not provided in the monthly reports.	• Include the Q3 2020 groundwater quantity and quality data in the monthly report.
No continuous water level data provided in monthly reports.	• VGC should consider including the continuous water level data hydrographs in the monthly reports. This would enable an ongoing analysis of groundwater levels which might identify changes which could lead to a circumstance of noncompliance with the permit. • If the continuous water level data will not be included in the monthly reports, a statement should be included indicating that the continuous water level data will be included and reviewed as part of the annual report.

Table 60 Summary of Findings

Consistency with requirements Gaps and/or Deficiencies	Recommendations
EMSAMP (S. 5.2) presents groundwater quality parameters to be analyzed in the monitoring program. It is not clear in the monthly reports if all parameters are being analyzed.	• Review water license conditions and laboratory records to confirm if required parameters were analyzed and provide in monthly reports. • Include all analyzed parameters and laboratory reports in monthly reporting.
No data interpretation is provided in the monthly reports.	• VGC should consider completing ongoing data analysis and interpretation in their monthly reports. This will enable the early identification of any trends which could lead to a circumstance of noncompliance with the permit. • If data interpretation is not planned to be included in the monthly reports, a statement should be included indicating that data review and interpretation consistent with the requirements of the EMSAMP will be provided in the annual reports.
EMSAMP (S. 5.3.2 and 5.3.3) describes the field QA/QC program for groundwater quality monitoring, which includes collection and analysis of trip blanks, field blanks and duplicates. The field QA/QC program is not included in the monthly reports.	A statement should be included in the monthly reports that the field QA/QC program was implemented consistent with EMSAMP and a complete analysis of the QA/QC will be provided in the annual reports.
Geochemical Monitoring	
2020 and 2021 Annual Report – Sample type description of surficial material static testing for construction use	Include details on the material sample collected (i.e., surficial, or bedrock) and why these samples were collected (i.e., 1 per 100,000 m^3 material moved or distinct geological unit).
2020 and 2021 Annual Report – Appended analytical data	Include all analytical data in appendices.
2020 and 2021 Annual Report – QA/QC samples	Collect field replicate samples of operational monitoring samples, include discussion of result (including relative percent differences) in report body, and append dataset.
2020 and 2021 Annual Report – Details of blast rounds	Include details of blast rounds to demonstrate consistency with EMSAMP. Include geological logs of blast holes.
2020 Annual Report – Reported mined tonnage of previous year	Annual waste rock samples are collected based on the tonnage mined from the previous year. Recommend including previous year tonnage when describing annual waste rock samples.
2020 Annual Report – Monthly seep sample survey	Include details of monthly seep sample survey in report.
2020 and 2021 Annual Report – Shake flask extraction size fraction	Check with off-site laboratory (ALS) if shake flask extraction is conducted on <2 mm and <1 cm size fraction.
2020, 2021, and 2022 Monthly Reports – QA/QC samples	Collect field replicate samples, include relative percent differences, and discuss results in the report body. Explicitly describe which samples are duplicates of respective parent sample.

Table 60 Summary of Findings

Consistency with requirements Gaps and/or Deficiencies	Recommendations
Aquatic Resources – Benthic Macroinvertebrates Monitoring	
Multiple versions of monitoring plans may result in confusion or be a potential source of method errors.	It is recommended that the EMSAMP be updated to reflect the EEM Study Design as the current version is out of date with respect to the current study design and analytical methods for benthic invertebrate sampling.
Frequency of monitoring not discussed in EEM	EEM only describes 2021 monitoring, with no mention of what the sampling interval will be (e.g., annual, biannual)
Reporting – no indication of whether field procedures were followed as per the EEM	Provide more detail on how samples were gathered in future reports. No discussion on sampling difficulties, sources of error, or whether amendments to sampling design were done in the field.
Reporting - Lab QA/QC procedures and results – not provided in report or appendices	Provide lab QA/QC procedures and results in appendix
Data analysis – missing statistical analyses comparing sites and contemporary data to pre-construction data	Conduct (or describe if completed) the required ANOVAs and multiple comparison tests as required by the EEM
Data analysis – missing some supporting statistical analyses described in the EEM, with no comment on why it was not done	Conduct (or describe if completed) the necessary analyses or provide rationale as to why it was not done.
Reporting – only qualitative comparisons between sites and years discussed	There is sufficient data from sites and between years to conduct quantitative statistical analysis to determine significant difference between impact and reference sites and trends between years.
Reporting – no discussion of need for adaptive management actions; no statistical analyses performed to inform adaptive management	Discuss adaptive management considering quantitative analysis of site data and trend analysis
Reporting – no analysis or discussion of environmental variables or outlier effects on benthic invertebrate results.	Discuss all potential factors that may introduce error in results.
Aquatic Resources – Fish and Fish Habitat Monitoring	
Multiple versions of monitoring plans may result in confusion or be a potential source of method errors.	It is recommended that the EMSAMP be updated to reflect the EEM Study Design, as the current version is fish and fish habitat monitoring.
Field methods – additional sampling methods used, but not described in EEM	The EEM only includes electrofishing as a sampling method, but seine nets and minnow traps were used in the field. Recommend expanding the sampling methods section of the EEM to include these other methods.
Field methods – single pass open sites	Although not required by the MDMER and not a deficiency of the annual monitoring programs, multi- pass depletion estimates in closed sites would provide more accurate and repeatable results and be better for long-term monitoring and statistical analyses

Table 60 Summary of Findings

Consistency with requirements Gaps and/or Deficiencies	Recommendations
Field methods – Follow up fish and fish habitat surveys conducted in September instead of July or August when fish communities are likely more stable and fish sampling is more efficient	Although not a deficiency of the annual monitoring programs, sampling should be conducted in summer when fish community is most stable and sampling efficiency is highest.
Lab QA/QC procedures and results – not provided in report or appendices	Provide lab QA/QC procedures and results in appendix
Data analysis – missing references to completing statistical analyses comparing sites and contemporary data to pre-construction data	Conduct the required ANOVAs and multiple comparison tests as required by the EEM (e.g., append appropriate statistical analyses in excel format)
Reporting – no mention of why sampling did not occur in 2020	Speak to limitations or rationale if methods are excluded or change from the stated plan in the EEM
Reporting – only qualitative comparisons between sites and years discussed	There is sufficient data from sites and between years to conduct quantitative statistical analysis to determine significant difference between impact and reference sites and trends between years.
Reporting – no analysis or discussion of environmental variables, fish results, or outlier effects on benthic invertebrate results.	Discuss all potential factors that may introduce error or skew results.
Reporting – no mention of adaptive management trigger or threshold exceedances	Reports should specify whether any of the adaptive management thresholds in the EMSAMP/EEM were exceeded and if any of the adaptive management measures were required and implemented each year
Vegetation and Soil Monitoring	
Unclear wording of EMSAMP with respect to frequency of vegetation and soil sampling	Confirm whether both vegetation and soil sampling can be performed every two years. If acceptable by regulator adopt such a sampling and reporting frequency.
Missing concentration information in Annual Report tables and figures.	Ensure that tables and figures presenting plant metals concentrations indicate whether results are wet weight or dry weight concentrations.
The NRC (2005) MTLs used as screening benchmarks for vegetation metals concentrations only included values for mammals (cattle and rodents).	Consider including the NRC (2005) MTLs for poultry as screening benchmarks for birds.
To date the Annual Reports have focused predominantly on comparing vegetation and soil metals concentrations to benchmark levels, and have not addressed whether concentrations have increased since the mine began operating.	Consider performing a more detailed evaluation/depiction of metal concentrations in plants and soils over time via the use of statistics (examine for feasibility) and figures that differentiate results by year. Include in this comparison the historic pre-mine 2009 vegetation and soil results.
The vegetation community assessment has evaluated which species are present at each plot; however, community composition (percent cover by those species present) was not recorded.	Consider including percent cover for those species present at a plot, to possibly facilitate a more quantitative/detailed evaluation of changes in community composition over time.
Alternate species of plants have been sampled from the EMSAMPs preferred species of willow, sedge, bluejoint and northern rough fescue.	Identify a priority list of alternate species for sampling at each plot if the target species described in the EMSAMP are not available.

Table 60 Summary of Findings

Consistency with requirements Gaps and/or Deficiencies	Recommendations
Plant metals results are for unwashed samples. This makes it difficult to discern whether an increase in concentrations at a given location in a given year reflect greater bioaccumulation, or a greater amount of adhered dust and time since rainfall.	Determine the objectives of the monitoring program and adjust the field program accordingly. For the purpose of discerning if there are small statistically significant increases in plant metals concentrations over time, switch to analysis of rinsed plant samples. For the purpose of collecting data for human health and wildlife risk assessment continue to collect and analyze unwashed plant samples. Alternatively, continued to analyse unwashed samples and archive plant material for later washing and re-analysis if unwashed results indicate an increase in concentrations and one wishes to ascertain if that is due to dust adhesion versus bioaccumulation.
Soil sampling over the 0–0.5 m horizon may be too deep to detect changes in shallower soils resulting from dustfall deposition.	Soil monitoring should be expanded to include separate samples of the LFH layer and shallow mineral layer.
Wildlife Protection Monitoring	
Section 3.3 of the WPP includes a requirement to facilitate wildlife movement by providing wildlife crossing and escape points along snowbanks and open ditches. The Annual Reports do not provide information regarding how wildlife crossing points are selected, the distance between crossing points, how frequently crossing points are maintained, and what snow depth triggers the creation of crossing points in snowbanks.	Stantec recommends that the Annual Report include information on the implementation of measures listed in Section 3.3 of the WPP.
Section 3.4 of the WPP includes a requirement to complete a wildlife habitat feature survey prior to clearing activities. The Annual Reports do not provide information on the methods, types of wildlife features surveyed, survey locations, or whether this work was carried out by a qualified professional.	Stantec recommends that information on the location(s), timing, methods, and results of wildlife habitat feature surveys be included in the Annual Report.
Section 3.4 of the WPP includes a requirement to consult with the appropriate regulator (e.g., Yukon Environment, Canadian Wildlife Services) and develop management strategies if clearing activities cannot be scheduled to occur outside the breeding bird window. The annual reports do not indicate if this consultation was carried out and does not provide information on the management strategy developed.	Stantec recommends that information on regulatory consultation, and the location(s), timing, methods, and results of pre-clearing nest surveys be included in the Annual Report.

Table 60 Summary of Findings

Consistency with requirements Gaps and/or Deficiencies	Recommendations
Section 4.1 of the WPP includes a requirement to report all detections of Species at Risk to the Yukon Conservation Data Centre. Information provided in the annual and quarterly reports is insufficient to determine if this has been completed.	Stantec recommends that the Annual Report clearly indicates that this requirement has been completed.
The number of wildlife mortalities reported in the annual and quarterly reports are different, and the reports do not provide information on species, location, or possible cause of death.	Stantec recommends that wildlife mortalities be fully documented using the Wildlife Incident Form (WPP Appendix D) and the species identified by a Qualified Professional either in-person or using a photograph.
There is no linkage between the two sections of the annual report that document wildlife monitoring (Sections 3.9.4 and Section 5.2.2).	Stantec recommends that Section 3.9.4 of the Annual Report include a reference to wildlife monitoring reported in Section 5.2.2 of the Annual Report.
The locations and nature of wildlife detections as reported in the quarterly reports are not clear.	All wildlife detections should be fully documented either using the Wildlife Incident Form (WPP Appendix D) or the Wildlife Observation Form (WPP Appendix E). Stantec also recommends that location names be standardized where possible, and that coordinates of wildlife detections be recorded to allow more accurate mapping of wildlife detections.
Permafrost Monitoring	
Regular Visual Inspections not documented or reported.	Include an appendix in Annual and Monthly reporting that summarizes the observations from regular visual inspections to identify and quantify any deformation associated with melting of permafrost, such as but not limited to, cracks, subsidence, sinkholes, and sloughing on existing foundations and slope overlay permafrost. Summarize those visual inspections executed during the freshet, prolonged rainy periods, and rising trend in any thermistors.
Thermistor BH-BGC11-42 in the 2020 Q4 (November 2020) quarterly report and thermistor BH-BGC10-7 in the 2021 Q3 (July 2021) quarterly report not included in summary tables of quarterly readings.	Include reasoning for missed readings if none were taken for that quarterly period.
Open Pit Monitoring	
Daily visual inspections not reported.	Include an appendix in Annual and Monthly reporting that documents the results of daily visual inspections as per EMSAMP. VGC Annual reports state full visual inspections are completed on a weekly basis; however, EMSAMP states visual inspections of open pit slopes are to completed daily and to be documented in shift log reports, along with daily and weekly records.

Table 60 Summary of Findings

Consistency with requirements Gaps and/or Deficiencies	Recommendations
Piezometers installed within the pit location (DEEP-08, DEEP-06, and DEEP-04) and documented in section 4.1 (Eagle Pit) of the 2021 annual report, are not documented in section 3.4 (Groundwater) where groundwater well monitoring is documented. These pit piezometers are also not documented in the monthly reports as well the EMSAMP document.	Provide dates of commissioning and relevant information of new and existing piezometers in all applicable sections of the annual and monthly reports. Update EMSAMP revision to show relevant piezometers.
Data for two (2) extensometers, (Extensometers 3 and 4) installed on SB8 instability are not reported in the 2020 annual report.	Provide dates of commissioning and decommissioning for all instrumentation in annual and monthly reports.
There are multiple instrumentation types listed in EMSAMP documentation that monitor displacement in various forms. Currently prisms and extensometers are serving this purpose and others are deemed not required due to normal operating (stable) conditions (robotic theodolites, TDR cables, slope inclinometers, fixed slope radar, mobile slope radar).	Modify the EMSAMP, or provide cross references to other VGC materials, to identify the displacement monitoring instrumentation to be used for normal operating (stable) conditions and instrumentation to be used for unstable conditions or as contingency to existing instrumentation.
Materials Storage and Stockpile Management Areas Monitoring	
It is unclear whether daily WRSA crest inspections, weekly WRSA toe and developing stockpile inspections, monthly established stockpile and detailed WRSA inspections are being executed. Records specifying visual and drone inspections of structures are to be maintained along with daily and weekly records detailing the location and type of materials placed in the WRSAs, as per EMSAMP.	Include an appendix in Annual and Monthly reporting that summarizes frequencies and all the visual observations made on stockpile structures.
Stantec understands that piezometer MW19-PGW1b was damaged and intended to be fixed in 2021. The status of this piezometer was not reported in the Q3 2020 (August monthly report) and Q2 2022 (April monthly report).	Include status of broken piezometers in all monthly reports if not decommissioned.
Piezometer MW19-EPW1b reading in Q1 of 2021 (February monthly report) was missed in monthly report without reasoning.	Provide reasoning for missed piezometer readings.
Though not built to full specification, the WRSA rock drains are operational, and it is unclear if they are being inspected weekly as per EMSAMP.	Conduct and provide weekly inspection records of the WRSA rock drain discharge areas in the monthly or annual reports.
Follow up and close out of physical stability recommendations 1, 2 and 5 not documented in annual or monthly reports.	Provide documentation detailing the follow up and response actions for addressing recommendations.

Table 60 Summary of Findings

Consistency with requirements Gaps and/or Deficiencies	Recommendations
Heap Leach Facility Monitoring	
Routine (visual) inspections (daily, weekly) not reported. It is unclear if all visual inspections are completed for all components of the HLF at their required frequency based on the annual and monthly reports.	Include an appendix in Annual and Monthly reporting that summarizes the observations from visual inspections.
Based on the 2021 annual report, three Vibrating Wire Piezometers (VWPs) installed in the In-Heap Pond, appear to be collecting data, but it is unclear if they are being monitored continuously. These piezometers, along with the embankment piezometers (P1, P2 and P3) are not included in the EMSAMP revision.	Provide continuous data plots of In-Heap piezometers in monthly and annual reports. Include records of In-Heap and embankment piezometers in the next EMSAMP revision.
The following piezometers/groundwater wells listed in EMSAMP are not reported in the annual or monthly reports due to being installed in Q3 2022: MWXX-AGR6, MW10-AG3A, MWXX-HLF2a, MWXX-HLF2b, MWXX-HLF3a, MWXX-HLF3b, MWXX-HL4a, MWXX-HLF4b.	Provide documentation of piezometers that are still to be installed in the monthly and annual reports, listed in the EMSAMP. Update the EMSAMP as required.
Records of pregnant and barren solution sampling not available in monthly and annual reports.	Include documentation of pregnant and barren solution sampling in the geochemical sampling sections of the monthly and annual reports.
Follow up and close out of physical stability recommendation 3, 7 and 8 not documented in annual or monthly reports.	Provide documentation detailing the follow up and response actions for addressing recommendation.
Waste Management	
Burn Log miss time information occasionally	Management should periodically check logs and address missing information.
Sorting of hazardous waste repeatedly found unsatisfactory	The Solid Waste and Hazardous Materials Management Plan should be reviewed and sections relevant to hazardous waste management updated.
Sorting of non-hazardous waste repeatedly found unsatisfactory	The Solid Waste and Hazardous Materials Management Plan should be reviewed and sections relevant to non-hazardous solid waste management updated
Spill Response	
Two spill reports did not indicate if spill line was called	Management should review reports and address missing information.
Process solution spilled outside the heap leach containment area	Monitor the effectiveness of the mitigation measures already put in place.
Number of oil spills increased in first half of 2022	Provide additional spill prevention training.

Table 60 Summary of Findings

Consistency with requirements Gaps and/or Deficiencies	Recommendations
Closure	
VGC and their consultants have successfully completed revegetation efforts each year from 2019-2021. This will provide valuable information for refining site preparation, topsoil replacement and revegetation designs if proper monitoring and reporting is completed. Stantec recommends VGC consider incorporating these revegetation sites into the ongoing vegetation monitoring programs or equivalent.	Stantec recommends VGC consider incorporating the revegetation sites in a formal monitoring program to provide a consolidated location for performance results rather than a series of technical memorandums for different areas that are appended to Annual Report submissions.
Progress and success of reclamation research is difficult to discern from the reviewed documents. Although the 2020 RCP and Annual Reports identify and provide written discussion on reclamation research, items such as research task schedules, progress updates and/or key findings were not found for all reclamation research programs.	Stantec recommends VGC develop a summary schedule for all reclamation and closure research programs, as outlined in Schedule C, Condition 4.1.c. of the QML-0011. Additionally, the next iteration of the RCP should include comment on research program findings to date, and if/how this impacts the existing closure concepts for the different mine areas.

11 Closure and Limitations

Stantec has compiled this report for the 2022 Environmental Audit of the Eagle Gold Mine as required by Condition 12.0 of the mine's Quartz Mining Licence QML-0011 issued by the Government of Yukon. Stantec makes no representation or warranty with respect to this report, other than the work was undertaken by trained professional and technical staff in accordance with generally accepted engineering and scientific practices current at the time the work was performed. Any information or facts provided by others and referred to or utilized in the preparation of this report was assumed by Stantec to be accurate. The audit was undertaken exclusively for the purpose outlined herein and was limited to those details specifically referenced in this memo. This report cannot be used or applied under any circumstances to another location or situation or for any other purpose without further evaluation of the data and related limitations. If there are questions or comments regarding this work, please contact the undersigned.

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APPENDIX A

Appendix A Site Audit Photographs

A.1 Air Quality and Weather Monitoring

Photo 1 **Air Quality Monitoring Station AQ2 – (Outside of Building) – Near Eagle Creek**

September 29, 2022

Photo 2 **Air Quality Monitoring Station AQ2 –(Inside of Building) – Near Eagle Creek**

September 29, 2022

Photo 3 **Camp Meteorological Station – MET-1**

Near Eagle Creek

Photo 4 **Potato Hills Air Quality Station AQ-1**

September 29, 2022

Photo 5 **PASS – Passive Air Sampling System**

Located in Exploration Area East of Victoria Gold Mine Operation.

September 29, 2022

Photo 6 **MAPTREK Sentry Lightning Detection System, Showing Sensor**

Location – Above Eagle Pit

September 29, 2022

A.2 Hydrology Monitoring

Photo 7 **Station Marker W4 for Haggart Creek below Dublin Gulch**

September 29, 2022

Photo 8 **Staff Gauge for Site W4 on Haggard Creek below Dublin Gulch Confluence**

September 29, 2022

Photo 9 **Station Marker W4-Mix for Site Haggart Creek Mixing Zone below Dublin Gulch**

September 29, 2022

Photo 10 **Station Marker W21 for Dublin Gulch below Events Pond**

September 29, 2022

Photo 11 **Staff Gauge at Station W21 (Dublin Gulch below Events Pond). Note buildup of coarse gravels within stream channel**

September 29, 2022

Photo 12 **Close-up of Coarse Sediment Buildup at Staff Gauge W-21 (Dublin Gulch below Events Pond)**

September 29, 2022

Photo 13 **Haggart Creek Below Mine near Station W4– After Overnight Rainfall, with input from Site Ditching**

September 30, 2022

Photo 14 **Dublin Gulch Upstream Reference Station W1. Turbid water following overnight rainfall**

September 30, 2022

Photo 15 **Dublin Gulch at W1-Upstream of Mine – following overnight rainfall**

September 30, 2022

Photo 16 **Sediment Control Ponds south of Eagle Pup Waste Rock Storage Area and Dublin Gulch**

September 28, 2022

A.3 Fuel Handling and Storage

Photo 17 **Gasoline and Diesel Fuel Storage Tanks. Note drainage ditch beyond tanks on photo right-centre**

September 28, 2022

Photo 18 **Diesel Fuel Delivery to Storage Tank. Note drainage ditch just ahead of truck, no secondary containment**

September 29, 2022

A.4 Inert Waste Storage

Photo 19 **Eagle Pit – Entrance to Inert Waste Storage Area**

September 28, 2022

Photo 20 **Eagle Pit – Inert Waste Storage Area**

September 28, 2022

A.5 Mining Operations

Photo 21 **Eagle Pit showing Blasting and Drilling Pattern**

September 29, 2022

Photo 22 **Eagle Pit Showing Stockpile Area**

September 29, 2022

Photo 23 **Eagle Pit Looking West Across Eagle Creek and Dublin Gulch to Event Pond, Heap Leach Facility, and ADR**

September 29, 2022

Photo 24 **Heap Leach Facility (HLF) Phase 1 – Note Sprinklers in HLF, and Primary Crusher in Background**

September 28, 2022

Photo 25 **HLF Under Construction, Looking south-southwest from South End of Phase 3**

September 28, 2022

Photo 26 **Heap Leach Facility (HLF) Phase 2 – Looking East from south end of Phase 3**

September 28, 2022

Photo 27 **Heap Leach Facility Underdrain Collection System**

September 30, 2022

Table 1: Third Party Audit Findings and Victoria Gold Response

Consistency with requirements, Gaps and/or Deficiencies	Recommendation	VGC Response
METEOROLOGY		
The meteorology data quality management process is unclear. Spare parts for the meteorology station should be readily available at the Eagle Gold site. The site documentation for each meteorology monitoring site should be collected and documented. Records of maintenance activities.	• Reference industry standards followed for data quality management in the next annual report. • Keep spare climate station sensors on-site for rapid deployment should sensors/equipment begin to fail, or data gaps are noted. • For each meteorology station, information should be compiled for its location, list of instrumentation, sensor height above ground, description of surrounding ground cover, description of potential biases, photos in each of the four cardinal directions. • Each station should have a logbook in which the various maintenance activities can be recorded.	Future Annual Reports will reference any relevant industry standards followed for data quality management. Service personnel from the manufacturer (Campbell Scientific) are engaged on an annual basis to perform maintenance and calibration on both the Camp and Potato Hills weather stations. This professional service, which includes sensor testing and replacement as necessary, ensures that the weather stations are working optimally for the majority of the year. Additionally, a supply of spare sensors that do not require manufacturer expertise to replace (i.e., temperature and pressure) are kept on site for installation by VGC personnel. These sensors are utilized to supplement periods when weather station dedicated sensors are malfunctioning. Standard sensors for the weather stations require proprietary expertise to install and require a visit from Campbell Scientific. A maintenance log to compliment the annual Campbell Scientific maintenance report will be developed and kept moving forward. VGC will consider the inclusion of a general description and photo record of the station to provide an easy reference for the station condition for new/unfamiliar staff in the maintenance log.
AIR QUALITY		
The air quality data quality management process is unclear. Spare parts for the air quality stations should be readily available at the Eagle Gold site. The site documentation for each air quality monitoring site should be collected and documented. Records of maintenance activities. Annual report was missing the results from the particulate matter metals analyses. Annual report did not include the laboratory reports.	• Reference industry standards followed for data quality management in the next annual report and the EMSAMP. • Keep spare parts for the air quality monitoring stations on-site for rapid deployment should sensors/equipment begin to fail, or data gaps are noted. • For each air quality monitoring station, information should be compiled for its location, list of instrumentation, sensor height above ground, description of surrounding ground over, description of potential biases, photos in each of the four cardinal directions. • Include a summary of the quarterly results for the particulate matter metals analyses in the subsequent annual reports. • Include the air quality laboratory reports as appendices to the subsequent annual reports.	Future Annual Reports and updates to the EMSAMP will reference any relevant industry standards followed for data quality management. VGC has an air quality management plan that outlines monitoring methodologies on site. It incorporates standard operating procedures and operating manuals that include QA/QC and calibration methodologies for air quality monitoring devices on the Project. Regular calibrations are performed on the continuous air quality monitors and repairs are actioned as necessary As with the climate station maintenance program, the third-party equipment supplier (ADVM) is contracted by VGC to perform regular site visits to evaluate the operation of air quality monitoring equipment on the Project. The service agreement with ADVM also includes data QA/QC and validation on continuous air quality data on a monthly, quarterly, and annual basis. The expertise required to install and repair air quality monitoring devices on the project means site visits from a subject expert are necessary. These site visits include supplying all spare parts necessary to ensure the continued operation of the monitoring equipment thus keeping spare parts on the Project site are considered unnecessary. A maintenance log will be developed and kept moving forward. VGC will consider the inclusion of a general description and photo record of the station to provide an easy reference for the station condition for new/unfamiliar staff in the maintenance log. Quarterly metals results are presented in monthly water licence reports as well as quarterly air quality reports. The selection of Monthly Reports reviewed for the purposes of auditing the air quality monitoring program are assumed to have not included the

Consistency with requirements, Gaps and/or Deficiencies	Recommendation	VGC Response
		specific Monthly Reports that would have provided the auditor with this information. The review of the quarterly air quality reports required under the Air Emissions Permit was not within the scope of the Environmental Audit. VGC practice has been to not include laboratory reports as an appendix to the Annual Report if the laboratory data had already been provided in the Monthly Reports submitted to regulators.
SURFACE WATER HYDROLOGY		
EMSAMPs reference RISC (2009) as the document which was used to develop hydrology data collection. This document is out of date; Version 2.0 of that document was published in 2018.	• The EMSAMP surface water hydrology program should be updated to reflect Version 2 of the hydrometric standards (RISC 2018).	VGC will review the updated standard and determine if it provides greater clarity or guidance for current monitoring practices and modify the program, and the ESMAMP, as necessary.
The annual reports and the monthly reports do not consistently document the monitoring activities or status of each of the 29 surface water hydrology stations. Consistency with requirements can not always be determined.	• Recommend including the full list of 29 sites from the EMSAMP in each of the annual and monthly reports, and summarizing the current status of each (e.g., automated monitoring ongoing, not active, not discharging, manual flow measurement collected this month). Consistency with requirements can not be determined if status is not documented.	VGC provides data for all hydrology monitoring stations that are active in the Monthly and Annual Reports. As stations become active due to infrastructure development, they are added to the reporting structure. Currently VGC reports on 22 of the 29 surface water hydrology stations; the remaining sites will be added as they become active.
For automated stations, winter and freshet time periods were not clearly delineated as to allow for demonstration of consistency with requirements as outlined in the EMSAMPs.	Recommend one of two changes: 1 Document approximate dates of freshet start and logger deployment each year in the monthly and annual reports to delineate winter, freshet, and open water periods (each of which have different monitoring requirements), or 2 Update the EMSAMP requirements for the freshet period to better acknowledge i) the subjectivity of determining freshet period and/or ii) the difficulty of obtaining flow measurements during freshet flows.	The occurrence of freshet is not uniform across the site and the timing of onset is specific to each hydrometric station, which reflects a strong aspectual and physiographic influence on the duration, intensity, and timing of snowmelt. Further, the determination of the onset of freshet is subjective, as melt may occur rapidly or episodic (due to cold snaps and refreezing). In general, based on regular reconnaissance of the stream reaches during April, the hydrometric stations are deployed as soon as possible (once the station is essentially ice-free and when there are minimal effects of channel-ice on water levels); thus, the onset of freshet can be assumed to coincide with the deployment of loggers. To meet licence conditions, our opinion of the onset of freshet for each hydrograph will be annotated on the figures. The EMSAMP will be updated to reflect the subjectivity of determining freshet. In general, as noted in the EMSAMP, flows are obtained if they can be measured in a safe manner.
The EMSAMPs list general tasks to be completed at each field visit and during QA/QC (Section 2.3.1). Completion of these tasks, including grading of each hydrometric station, was discussed in general in annual reports but documentation was not provided for audit review, for each station per requirements of RISC (2018).	• Provide summary information regarding the completion of the tasks and QA/QC steps associated with each field visit in the annual reports, and/or indicate (in reporting) that these data have been documented internally and are available upon request. This could be done through “station datasheets” for each of the stations, with a full station history log. Formal grading of each station (per RISC 2018) would be a good addition demonstrating QA/QC completion.	Section 2.3.1 within the EMSAMP outlines 7 tasks to be performed during site visits. Currently all of these tasks are completed as required. It is acknowledged that the field monitoring sheets and the hydrology monthly tracker document do not explicitly document the completion of these tasks. VGC will add a maintenance log to its tracking files to document issues encountered and repairs. Currently maintenance activities are documented within field sheets.
QA/QC related to field and analytical tasks (e.g., benchmark surveys, station condition, field processes, photos, equipment calibration) were not documented.	• Recommend that QA/QC processes in accordance with Section 2.3.1 in EMSAMP 2020-01, EC 2001, RISC 2018 are documented and provided in reporting.	Hydrology data (measurement panels, photos, station condition, etc.) is documented in field monitoring sheets. A summary of benchmark surveys, QA/QC and maintenance recommendations will be included in the Annual Report. All hydrology data is reviewed on a monthly and annual basis and hydrographs are professionally produced by a consulting hydrologist on an annual basis.
SURFACE WATER QUALITY		
2020 Annual Report – Section 3.2.2 QA/QC Program Sample IDs.	• This was corrected in the 2021 Annual Report. Continue corrective action in future reports.	This recommendation will be actioned by VGC in future reporting.

Consistency with requirements, Gaps and/or Deficiencies	Recommendation	VGC Response
Reported surface water quality detection limits did not align with the EMSAMP for hardness (0.6 mg/L reported and 0.5 mg/L in EMSAMP), total and dissolved barium (0.00010 mg/L reported and 0.00005 mg/L in EMSAMP), and total and dissolved strontium (0.0002 mg/L reported and 0.0001 mg/L in EMSAMP).	• Discuss with laboratory (e.g., ALS) to reduce detection limit for the listed parameters. If the upper detection limit is not achievable a description/rationale should be included in the report and the EMSAMP be updated.	VGC will engage ALS to determine if the ALS method detection limits currently utilized are industry standard and sufficiently below any applicable water quality objectives, in which case the revised EMSAMP will reflect this; if the current detection limits are not sufficiently below applicable water quality objectives, then VGC will request that ALS decrease their detection limits.
2021 Annual Report – QA/QC total samples not consistent in report body, tables, and appendices	• Review database inputs/outputs and quality review procedures and reports.	This recommendation will be actioned by VGC in future reporting.
Selected Monthly Reports – Describe QA/QC data as Section 3.3.5 of the EMSAMP states QA/QC results will be reported on for each month of the sampling program.	• Include tabulated results of surface water quality samples including identifying which samples are QA/QC in monthly reports.	VGC appends QA/QC sample results to the monthly reports utilizing identifying codes to determine the type of QA/QC and are thus considered to be reported on. The approach, results and discussion related to the program is then provided as an appendix to the Annual Report and is prepared by a third-party consultant. VGC considers this approach to be consistent with the intention of the EMSAMP.
GROUND WATER QUANTITY AND QUALITY		
Some wells included in the monthly report are not part of the EMSAMP.	• Reporting should only include the wells listed in the EMSAMP.	VGW will ensure that only wells relevant to the EMSAMP are included in Monthly and Annual Reports.
Groundwater quantity and quality monitoring from some wells was performed less frequently than the schedule prescribed in EMSAMP.	• A number of factors, including those beyond the control of VGC may result in a scheduled monitoring not being performed (e.g. frozen conditions, weather, equipment malfunction, unsafe condition, construction). The monthly reporting needs to consistently provide the rationale for missed monitoring in tabular format and if any corrective action will be or has been taken. Corrective actions could include monitoring well repair, replacement, improved accessibility, etc. and should be relevant to the specific well concern.	VGC will provide rationale within Monthly Reports for scheduled groundwater well monitoring events that do not occur as prescribed in the EMSAMP. These notes will be made in the comments section of each summary table provided in Monthly Reports.
The Q3 2020 data was not provided in the monthly reports.	• Include the Q3 2020 groundwater quantity and quality data in the monthly report.	It is believed that the information reviewed by the auditor did not include the specific monthly report in which this data was provided. The Q3 groundwater quality information and COAs were included in the September 2020 Monthly Report.
No continuous water level data provided in monthly reports.	• VGC should consider including the continuous water level data hydrographs in the monthly reports. This would enable an ongoing analysis of groundwater levels which might identify changes which could lead to a circumstance of noncompliance with the permit. • If the continuous water level data will not be included in the monthly reports, a statement should be included indicating that the continuous water level data will be included and reviewed as part of the annual report.	There is no specific permit requirement related to a change in groundwater levels on the mine site. Further, VGC believes that consideration of this data on an annual basis is more appropriate given that changes in surface water flows are reviewed monthly and significant changes that cannot be explained either by precipitation trends or project discharges would then trigger an analysis of potential groundwater flow impacts. VGC will review and incorporate continuous water level data and hydrographs into the Annual Report, as has been done in previous years and will reference that this will be done in each Monthly Report.
EMSAMP (S. 5.2) presents groundwater quality parameters to be analyzed in the monitoring program. It is not clear in the monthly reports if all parameters are being analyzed.	• Review water license conditions and laboratory records to confirm if required parameters were analyzed and provide in monthly reports. • Include all analyzed parameters and laboratory reports in monthly reporting.	VGC has a groundwater ALS analyses package that is tailored to ensuring the EMSAMP required analytes are taken. VGC will continue to provide COA results within Monthly Reports when groundwater quality sampling is undertaken.
No data interpretation is provided in the monthly reports.	• VGC should consider completing ongoing data analysis and interpretation in their monthly reports. This will enable the early identification of any trends which could lead to a circumstance of noncompliance with the permit. • If data interpretation is not planned to be included in the monthly reports, a statement should be included indicating that data review and interpretation consistent with the requirements of the EMSAMP will be provided in the annual reports.	Currently analysis of groundwater data occurs within the Annual Report. Data interpretations on a monthly basis is a future goal of VGC as resources allow.

Consistency with requirements, Gaps and/or Deficiencies	Recommendation	VGC Response
EMSAMP (S. 5.3.2 and 5.3.3) describes the field QA/QC program for groundwater quality monitoring, which includes collection and analysis of trip blanks, field blanks and duplicates. The field QA/QC program is not included in the monthly reports.	• A statement should be included in the monthly reports that the field QA/QC program was implemented consistent with EMSAMP and a complete analysis of the QA/QC will be provided in the annual reports.	This recommendation will be actioned by VGC in future reporting.
GEOCHEMICAL MONITORING		
2020 and 2021 Annual Report – Sample type description of surficial material static testing for construction use.	• Include details on the material sample collected (i.e., surficial, or bedrock) and why these samples were collected (i.e., 1 per 100,000 m^3 material moved or distinct geological unit).	This recommendation will be actioned by VGC in future reporting.
2020 and 2021 Annual Report – Appended analytical data.	• Include all analytical data in appendices.	VGC provides this data within Monthly Reports; the practice has been that if analytical data has been provided each monthly then it is not necessary to provide again with the Annual Report
2020 and 2021 Annual Report – QA/QC samples.	• Collect field replicate samples of operational monitoring samples, include discussion of result (including relative percent differences) in report body, and append dataset.	VGC performs a QA/QC monitoring plan for all blast hole chip composite samples. The Technical Services Department takes blanks and duplicates at a rate of ~ 17% of all samples which is well above Industry Standard. VGC commits to developing a QA/QC plan for construction rock and waste rock characterization programs
2020 and 2021 Annual Report – Details of blast rounds.	• Include details of blast rounds to demonstrate consistency with EMSAMP. Include geological logs of blast holes.	Details are maintained on lithology and physical characteristics of blast rounds in five distinct categories that are related to metasediments and granodiorite. These records can be provided upon request however VGC believes presenting them in the Annual Report provides no significant value or context for the results.
2020 Annual Report – Reported mined tonnage of previous year.	• Annual waste rock samples are collected based on the tonnage mined from the previous year. Recommend including previous year tonnage when describing annual waste rock samples.	The section in future Annual Reports providing details regarding waste rock geochemical sampling will include the total tonnage of waste mined to ensure that it is clear whether EMSAMP specified sampling frequency has been achieved.
2020 Annual Report – Monthly seep sample survey.	• Include details of monthly seep sample survey in report.	To date, except for the flow from the rock drains, seeps emanating from the WRSAs have not been observed. Water samples are collected downstream of the toes of the WRSA, after flows from the rock drain have emerged from the toe of the dumps. Weekly drone inspections occur at the PG and EP WRSA to evaluate potential changing conditions including those related to seepage related instabilities. Details of these observations, when coupled with drone imagery analysis, is impractical to provide on a monthly basis; However, VGC will work towards including more detail regarding seep surveys in Annual Reports.
2020 and 2021 Annual Report – Shake flask extraction size fraction.	• Check with off-site laboratory (ALS) if shake flask extraction is conducted on <2 mm and <1 cm size fraction.	VGC will engage ALS to determine methodology of Shake flask extraction testing.
2020, 2021, and 2022 Monthly Reports – QA/QC samples.	• Collect field replicate samples, include relative percent differences, and discuss results in the report body. Explicitly describe which samples are duplicates of respective parent sample.	QA/QC samples are collected at a rate above industry standard for blast hole chip composite samples. VGC commits to performing QA/QC samples on waste rock characterization and construction rock samples. QA/QC samples will be noted within the Monthly Reports starting 2023.
AQUATIC RESOURCES – BENTHIC MACROINVERTIBRATES MONITORING		
Multiple versions of monitoring plans may result in confusion or be a potential source of method errors.	• It is recommended that the EMSAMP be updated to reflect the EEM Study Design as the current version is out of date with respect to the current study design and analytical methods for benthic invertebrate sampling.	The EMSAMP will be updated to provide more detail on sampling methods as per the EEM study submitted, including frequency of monitoring, methodologies and potential sources of error. EEM study designs are submitted and monitoring is performed on a three year schedule. This replaces the methodologies and frequencies outlined in the EMSAMP.
Frequency of monitoring not discussed in EEM.	• EEM only describes 2021 monitoring, with no mention of what the sampling interval will be (e.g., annual, biannual).	

Consistency with requirements, Gaps and/or Deficiencies	Recommendation	VGC Response
Reporting – no indication of whether field procedures were followed as per the EEM.	• Provide more detail on how samples were gathered in future reports. No discussion on sampling difficulties, sources of error, or whether amendments to sampling design were done in the field.	The methodologies sections of the EEM report discusses monitoring methodologies. Pertinent sampling difficulties did not exist with the exception of grayling presence in Spring. Sources of error (i.e., water velocity and sampling substates of similar characteristics) were discussed within the Interpretative Monitoring Report. It is acknowledged that the full report was not included within the 2021 Annual Report; however, the completion of the report, in accordance with the MDMER, occurred after the submission deadline for the WUL/QML Annual Report and it will be provided in the 2022 Annual Report.
Reporting – Lab QA/QC procedures and results – not provided in report or appendices.	• Provide lab QA/QC procedures and results in appendix.	Lab QA/QC procedures are documented within Appendix C of the first Interpretative Monitoring Report submitted to Environment and Climate Change Canada (ECCC) and will be included within the 2022 Annual Report.
Data analysis – missing statistical analyses comparing sites and contemporary data to pre-construction data.	• Conduct (or describe if completed) the required ANOVAs and multiple comparison tests as required by the EEM.	This is not a requirement of the submitted Study Design. This is the first EEM and the design and methodology was approved under the submitted design to ECCC. There were no previous EEM studies to compare data; previous studies were not completed under the same methodology. Statistical analyses are not required under the MDMER however qualitative comparisons were performed.
Data analysis – missing some supporting statistical analyses described in the EEM, with no comment on why it was not done.	• Conduct (or describe if completed) the necessary analyses or provide rationale as to why it was not done.	Analyses stated in the methodology section of the Interpretative Report as well as the Study Design document were completed and reported on. Data is presented is Section 5 and Appendix C of the first Interpretative Monitoring Report.
Reporting – only qualitative comparisons between sites and years discussed.	• There is sufficient data from sites and between years to conduct quantitative statistical analysis to determine significant difference between impact and reference sites and trends between years.	It is not a requirement to perform temporal statistical analyses under the MDMER. The differences between methodologies for programs prior to official EEMs is different than EEM monitoring methodologies. Once VGC has initiated the second Project EEM under similar methodologies, VGC will engage the selected external consultant to evaluate the merit of comparing results between study timeframes as opposed to reference and exposure study design.
Reporting – no discussion of need for adaptive management actions; no statistical analyses performed to inform adaptive management	• Discuss adaptive management considering quantitative analysis of site data and trend analysis	The EEM Study Design replaced the EMSAMP methodologies once the MDMER and EEM program timelines were triggered. Adaptive management actions follow MDMER protocols. If two EEM studies exhibit differences between reference and exposure sites then the third study design is regulated and prescribed by ECCC to determine potential causes. ECCC makes decisions and recommendations for the Project to mitigate and manage effects being observed. Potential effects and differences between reference and exposure sites observed were not attributed to Mine related influences. Further discussions and summaries will be presented within the 2022 Annual Report and will be discussed in relation to management practices laid out within the EMSAMP.
Reporting – no analysis or discussion of environmental variables or outlier effects on benthic invertebrate results.	• Discuss all potential factors that may introduce error in results.	In situ measurements were performed during sampling. Section 4 (in situ WQ comparisons) and Appendix C of the first Interpretative Monitoring Report states the habitat characteristics and an analysis performed to compare in situ water quality and habitat characteristics.
AQUATIC RESOURCES – FISH AND FISH HABITAT MONITORING		
Multiple versions of monitoring plans may result in confusion or be a potential source of method errors.	• It is recommended that the EMSAMP be updated to reflect the EEM Study Design, as the current version is fish and fish habitat monitoring.	This recommendation will be actioned by VGC in the next iteration of the EMSAMP.
Field methods – additional sampling methods used, but not described in EEM	• The EEM only includes electrofishing as a sampling method, but seine nets and minnow traps were used in the field. Recommend expanding the sampling methods section of the EEM to include these other methods.	Moving forward seine netting will not be used as it was determined it was not effective at collecting fish. Potential Minnow traps use was outlined in section 2.4.2 of the Interpretative Monitoring Report.

Consistency with requirements, Gaps and/or Deficiencies	Recommendation	VGC Response
Field methods – single pass open sites	• Although not required by the MDMER and not a deficiency of the annual monitoring programs, multi- pass depletion estimates in closed sites would provide more accurate and repeatable results and be better for long-term monitoring and statistical analyses	High flows experienced in spring precludes this type of monitoring study due to deep and fast moving water. Water velocity and turbid conditions complicate closed station methodologies and present health and safety concerns and thus were determined to be inappropriate for the study design.
Field methods – Follow up fish and fish habitat surveys conducted in September instead of July or August when fish communities are likely more stable and fish sampling is more efficient	• Although not a deficiency of the annual monitoring programs, sampling should be conducted in summer when fish community is most stable and sampling efficiency is highest.	The timing of the fish surveys will be re-examined in the second EEM study design submission. Sexually major endpoints must be collected in spring for Sculpin. Since Grayling were not captured in spring, VGC discussed with ECCC and went above and beyond industry standard to perform a second grayling monitoring program in fall which, based on previous studies, is the most likely timing to find Grayling within Haggart Creek.
Lab QA/QC procedures and results – not provided in report or appendices	• Provide lab QA/QC procedures and results in appendix	Appendix B of the EEM Interpretative Monitoring Report documents QA/QC procedures and results. This information will be provided in the 2022 Annual Report for the QML and WUL.
Data analysis – missing references to completing statistical analyses comparing sites and contemporary data to pre-construction data	• Conduct the required ANOVAs and multiple comparison tests as required by the EEM (e.g., append appropriate statistical analyses in excel format)	There was not enough data for statistically significant sculpin comparisons due to the sample size from previous monitoring. This is not a requirement of MDMER and comparisons between historical non EEM studies is difficult to perform due to differing methodologies.
Reporting – no mention of why sampling did not occur in 2020	• Speak to limitations or rationale if methods are excluded or change from the stated plan in the EEM	It is acknowledged that the EMSAMP included consideration of sampling in 2020; however, the EEM Study Design was finalized after the EMSAMP effective date and subsequently updated the sampling schedule so that it was initiated in 2021.
Reporting – only qualitative comparisons between sites and years discussed	• There is sufficient data from sites and between years to conduct quantitative statistical analysis to determine significant difference between impact and reference sites and trends between years.	As discussed above in the benthics section, methods and frequency between historical EMSAMP monitoring programs and EEM study designs do not follow the same methodologies lending low merit to statistically significant comparisons. Qualitative comparisons were performed to provide possible commentary on the data sets.
Reporting – no analysis or discussion of environmental variables, fish results, or outlier effects on benthic invertebrate results.	• Discuss all potential factors that may introduce error or skew results.	Water quality and quantity were discussed as potential skewing variables. Fish results are discussed in section 6 of the EEM Interpretative Monitoring Report. The methodology section of the report also reviews variables used in the analyses. Habitat variables in the future could be flushed out for future considerations.
Reporting – no mention of adaptive management trigger or threshold exceedances	• Reports should specify whether any of the adaptive management thresholds in the EMSAMP/EEM were exceeded and if any of the adaptive management measures were required and implemented each year	Potential required management actions, outlined in the EMSAMP, resultant of findings in the EEM interpretative report will be discussed in the 2022 Annual Report. The EEM Interpretative Report utilizes critical effect sizes to inform on results and potential required management actions related to the MDMER. MDMER triggers such as differences to age, growth, reproduction and liver size are used to trigger further studies. Fish Condition related to body weight and length also have the potential to trigger further studies.
VEGETATION AND SOIL MONITORING		
Unclear wording of EMSAMP with respect to frequency of vegetation and soil sampling	• Confirm whether both vegetation and soil sampling can be performed every two years. If acceptable by regulator adopt such a sampling and reporting frequency.	This recommendation will be actioned by VGC in the next iteration of the EMSAMP. Currently vegetation monitoring occurs on an annual basis while soil sampling occurs once every two years.
Missing concentration information in Annual Report tables and figures.	• Ensure that tables and figures presenting plant metals concentrations indicate whether results are wet weight or dry weight concentrations.	This recommendation will be actioned by VGC in the next Annual Report.
The NRC (2005) MTLs used as screening benchmarks for vegetation metals concentrations only included values for mammals (cattle and rodents).	• Consider including the NRC (2005) MTLs for poultry as screening benchmarks for birds.	This recommendation will be discussed with the professional conducting vegetation sampling and, if deemed appropriate, comparisons to the poultry benchmarks will be added.

Consistency with requirements, Gaps and/or Deficiencies	Recommendation	VGC Response
To date the Annual Reports have focused predominantly on comparing vegetation and soil metals concentrations to benchmark levels, and have not addressed whether concentrations have increased since the mine began operating.	• Consider performing a more detailed evaluation/depiction of metal concentrations in plants and soils over time via the use of statistics (examine for feasibility) and figures that differentiate results by year. Include in this comparison the historic pre-mine 2009 vegetation and soil results.	VGC will endeavor to include this analysis within future monitoring programs.
The vegetation community assessment has evaluated which species are present at each plot; however, community composition (percent cover by those species present) was not recorded.	• Consider including percent cover for those species present at a plot, to possibly facilitate a more quantitative/detailed evaluation of changes in community composition over time.	VGC will engage the qualified external professional performing the monitoring and request that they evaluate if this metric will provide merit to results.
Alternate species of plants have been sampled from the EMSAMPs preferred species of willow, sedge, bluejoint and northern rough fescue.	• Identify a priority list of alternate species for sampling at each plot if the target species described in the EMSAMP are not available.	VGC will engage the qualified external professional performing the monitoring and request that they identify a list of alternate species for sampling.
Plant metals results are for unwashed samples. This makes it difficult to discern whether an increase in concentrations at a given location in a given year reflect greater bioaccumulation, or a greater amount of adhered dust and time since rainfall.	• Determine the objectives of the monitoring program and adjust the field program accordingly. For the purpose of discerning if there are small statistically significant increases in plant metals concentrations over time, switch to analysis of rinsed plant samples. For the purpose of collecting data for human health and wildlife risk assessment continue to collect and analyze unwashed plant samples. Alternatively, continued to analyse unwashed samples and archive plant material for later washing and re-analysis if unwashed results indicate an increase in concentrations and one wishes to ascertain if that is due to dust adhesion versus bioaccumulation.	VGC will engage the qualified external professional performing the monitoring and request that they consider this recommendation and advise if refinement of the program is necessary.
Soil sampling over the 0–0.5 m horizon may be too deep to detect changes in shallower soils resulting from dustfall deposition.	• Soil monitoring should be expanded to include separate samples of the LFH layer and shallow mineral layer.	VGC will engage the qualified external professional performing the monitoring and if deemed appropriate and feasible, the scope will be added.
WILDLIFE PROTECTION MONITORING		
Section 3.3 of the WPP includes a requirement to facilitate wildlife movement by providing wildlife crossing and escape points along snowbanks and open ditches. The Annual Reports do not provide information regarding how wildlife crossing points are selected, the distance between crossing points, how frequently crossing points are maintained, and what snow depth triggers the creation of crossing points in snowbanks.	• Stantec recommends that the Annual Report include information on the implementation of measures listed in Section 3.3 of the WPP.	The VGC Site Services Department maintains the access road and snow banks to effectively allow wildlife to pass. Currently wildlife passage surveys and access road cut out surveys and inspections are performed on a monthly basis. VGC will include this information in future Annual Report as appropriate.
Section 3.4 of the WPP includes a requirement to complete a wildlife habitat feature survey prior to clearing activities. The Annual Reports do not provide information on the methods, types of wildlife features surveyed, survey locations, or whether this work was carried out by a qualified professional.	• Stantec recommends that information on the location(s), timing, methods, and results of wildlife habitat feature surveys be included in the Annual Report.	Currently surveys are conducted by the operations survey crews when disturbance limits are laid out. Specific documentation on these activities is not kept however VGC will ensure future wildlife surveys are documented.
Section 3.4 of the WPP includes a requirement to consult with the appropriate regulator (e.g., Yukon Environment, Canadian Wildlife Services) and develop management strategies if clearing activities cannot be scheduled to occur outside the breeding bird window. The annual reports do not indicate if this consultation was carried out and does not provide information on the management strategy developed.	• Stantec recommends that information on regulatory consultation, and the location(s), timing, methods, and results of pre-clearing nest surveys be included in the Annual Report.	VGC performs Active Migratory Bird Nest Surveys (AMBNS) during periods legislated by the Migratory Birds Convention Act if clearing cannot be avoided within the summer window. Details of AMBNS will be provided within the 2022 Annual Report. VGC utilizes a qualified external professional for advice on matters related to protected nesting birds as required.
Section 4.1 of the WPP includes a requirement to report all detections of Species at Risk to the Yukon Conservation Data Centre. Information provided in the annual and quarterly reports is insufficient to determine if this has been completed.	• Stantec recommends that the Annual Report clearly indicates that this requirement has been completed.	This recommendation will be actioned by VGC in the next Annual Report.
The number of wildlife mortalities reported in the annual and quarterly reports are different, and the reports do not provide information on species, location, or possible cause of death.	• Stantec recommends that wildlife mortalities be fully documented using the Wildlife Incident Form (WPP Appendix D) and the species identified by a Qualified Professional either in-person or using a photograph.	VGC will ensure that wildlife mortalities are documented in accordance with the WPP.
There is no linkage between the two sections of the annual report that document wildlife monitoring (Sections 3.9.4 and Section 5.2.2).	• Stantec recommends that Section 3.9.4 of the Annual Report include a reference to wildlife monitoring reported in Section 5.2.2 of the Annual Report.	This recommendation will be actioned by VGC in the next Annual Report.
The locations and nature of wildlife detections as reported in the quarterly reports are not clear.	• All wildlife detections should be fully documented either using the Wildlife Incident Form (WPP Appendix D) or the Wildlife Observation Form (WPP Appendix E). Stantec also recommends that location names be standardized where possible,	During the initial construction and operations phase of the Project, VGC found that operational staff would less frequently record observations of wildlife with the template considered in the WPP hence a shorter version was prepared and distributed throughout the site. The forms associated with both wildlife observations and incidents

Consistency with requirements, Gaps and/or Deficiencies	Recommendation	VGC Response
	and that coordinates of wildlife detections be recorded to allow more accurate mapping of wildlife detections.	will be updated in the next iteration of the WPP to ensure that relevant data is recorded and that the form is a format that is more likely to be completed by site personnel. VGC is considering utilizing a two sided card that includes a site map so the locations can be more consistently reported as GPS locations are not practical for a workforce the size of Eagle.
PERMAFROST MONITORING		
Regular Visual Inspections not documented or reported.	• Include an appendix in Annual and Monthly reporting that summarizes the observations from regular visual inspections to identify and quantify any deformation associated with melting of permafrost, such as but not limited to, cracks, subsidence, sinkholes, and sloughing on existing foundations and slope overlay permafrost. Summarize those visual inspections executed during the freshet, prolonged rainy periods, and rising trend in any thermistors.	The majority of clearing and grubbing work associated with the Project and in particular with WRSAs has been completed. Significant permafrost destabilization has not been noted to date. Test pitting programs are performed when clearing and grubbing activities occur in areas without extensive geotechnical knowledge. Monthly surveys are performed by professional external surveyors in active work areas and weekly drone inspections are performed to review changing conditions associated with potential permafrost destabilization (amongst other potential geotechnical considerations). A displacement map developed from drone surveys can be included on a quarterly basis in the applicable Monthly Reports. This will be coupled with a greater assessment of thermistor trends as necessary.
Thermistor BH-BGC11-42 in the 2020 Q4 (November 2020) quarterly report and thermistor BH-BGC10-7 in the 2021 Q3 (July 2021) quarterly report not included in summary tables of quarterly readings.	• Include reasoning for missed readings if none were taken for that quarterly period.	VGC will endeavor to include all applicable thermistor data or rationale for missed readings in all future reporting.
OPEN PIT MONITORING		
Daily visual inspections not reported.	• Include an appendix in Annual and Monthly reporting that documents the results of daily visual inspections as per EMSAMP. VGC Annual reports state full visual inspections are completed on a weekly basis; however, EMSAMP states visual inspections of open pit slopes are to completed daily and to be documented in shift log reports, along with daily and weekly records.	Daily visual inspections of active mining areas are completed by geotechnical professionals from the VGC Technical Services Department. Inspection notes are completed when irregularities or exceptions are observed within active work area. VGC will include a visual inspection log with the 2022 Annual Report. This data is not considered necessary for the purposes of Monthly Reporting.
Piezometers installed within the pit location (DEEP-08, DEEP-06, and DEEP-04) and documented in section 4.1 (Eagle Pit) of the 2021 annual report, are not documented in section 3.4 (Groundwater) where groundwater well monitoring is documented. These pit piezometers are also not documented in the monthly reports as well the EMSAMP document.	• Provide dates of commissioning and relevant information of new and existing piezometers in all applicable sections of the annual and monthly reports. Update EMSAMP revision to show relevant piezometers.	VGC will provide an update on installed and operating piezometers within the 2022 Annual Report and future Annual Reports. The EMSAMP will also be updated to include all functional piezometers.
Data for two (2) extensometers, (Extensometers 3 and 4) installed on SB8 instability are not reported in the 2020 annual report.	• Provide dates of commissioning and decommissioning for all instrumentation in annual and monthly reports.	VGC will provide a summary within Annual Reports of installation and decommission of extensometers on site.
There are multiple instrumentation types listed in EMSAMP documentation that monitor displacement in various forms. Currently prisms and extensometers are serving this purpose and others are deemed not required due to normal operating (stable) conditions (robotic theodolites, TDR cables, slope inclinometers, fixed slope radar, mobile slope radar).	• Modify the EMSAMP, or provide cross references to other VGC materials, to identify the displacement monitoring instrumentation to be used for normal operating (stable) conditions and instrumentation to be used for unstable conditions or as contingency to existing instrumentation.	The EMSAMP will be updated to indicate what type of monitoring methods are currently being used for normal operating (stable) conditions and the types of instrumentation to be used for unstable conditions.
MATERIALS STORAGE AND STOCKPILE MANAGEMENT AREAS MONITORING		
It is unclear whether daily WRSA crest inspections, weekly WRSA toe and developing stockpile inspections, monthly established stockpile and detailed WRSA inspections are being executed. Records specifying visual and drone inspections of structures are to be maintained along with daily and weekly records detailing the location and type of materials placed in the WRSAs, as per EMSAMP.	• Include an appendix in Annual and Monthly reporting that summarizes frequencies and all the visual observations made on stockpile structures.	When issues are identified during visual inspections, field notes are then produced to summarize the inspection. Weekly drone flights are reviewed for changing conditions and instabilities. Information related to these programs will be summarized in future Annual Reports.

Consistency with requirements, Gaps and/or Deficiencies	Recommendation	VGC Response
Stantec understands that piezometer MW19-PGW1b was damaged and intended to be fixed in 2021. The status of this piezometer was not reported in the Q3 2020 (August monthly report) and Q2 2022 (April monthly report).	• Include status of broken piezometers in all monthly reports if not decommissioned.	Future Monthly Reports will include the status of all piezometers that have not previously been identified as decommissioned. An annual update will be performed to summarize locations that have been decommissioned or are operating.
Piezometer MW19-EPW1b reading in Q1 of 2021 (February monthly report) was missed in monthly report without reasoning.	• Provide reasoning for missed piezometer readings.	This recommendation will be actioned by VGC in future reporting.
Though not built to full specification, the WRSA rock drains are operational, and it is unclear if they are being inspected weekly as per EMSAMP.	• Conduct and provide weekly inspection records of the WRSA rock drain discharge areas in the monthly or annual reports.	This recommendation will be actioned by VGC in future Annual reporting.
Follow up and close out of physical stability recommendations 1, 2 and 5 not documented in annual or monthly reports.	• Provide documentation detailing the follow up and response actions for addressing recommendations.	The All North Physical Stability Inspection Report is included within Annual Reports and includes discussion of the status of items previously identified by their engineering professionals which VGC considers appropriate for closing out matters. If VGC identifies omissions by All North (due to VGC correcting a previously identified recommendation) in future reports they will be discussed in the Annual Report.
HEAP LEACH FACILITY MONITORING		
Routine (visual) inspections (daily, weekly) not reported. It is unclear if all visual inspections are completed for all components of the HLF at their required frequency based on the annual and monthly reports.	• Include an appendix in Annual and Monthly reporting that summarizes the observations from visual inspections.	Routine visual inspections are completed in accordance with shift cycle reports completed by the VGC Process Department However, a specific tracking sheet has not been developed to date. VGC commits to updating their inspection process to include documentation on specific inspections.
Based on the 2021 annual report, three Vibrating Wire Piezometers (VWPs) installed in the In-Heap Pond, appear to be collecting data, but it is unclear if they are being monitored continuously. These piezometers, along with the embankment piezometers (P1, P2 and P3) are not included in the EMSAMP revision.	• Provide continuous data plots of In-Heap piezometers in monthly and annual reports. Include records of In-Heap and embankment piezometers in the next EMSAMP revision.	The EMSAMP will be revised to reflect the current distribution of piezometers. Summary data for the VWPs installed within the HLF will be provided within Annual Reports. Piezometers are currently checked on a monthly basis.
The following piezometers/groundwater wells listed in EMSAMP are not reported in the annual or monthly reports due to being installed in Q3 2022: MWXX-AGR6, MW10-AG3A, MWXX-HLF2a, MWXX-HLF2b, MWXX-HLF3a, MWXX-HLF3b, MWXX-HL4a, MWXX- HLF4b.	• Provide documentation of piezometers that are still to be installed in the monthly and annual reports, listed in the EMSAMP. Update the EMSAMP as required.	The EMSAMP will be updated to reflect the current status of all active monitoring wells. All the piezometers/wells noted (with the exception of MW10-AG3) were installed in October 2022. MW10-AG3 was decommissioned. Documentation of these installations will be included in the Annual Report.
Records of pregnant and barren solution sampling not available in monthly and annual reports.	• Include documentation of pregnant and barren solution sampling in the geochemical sampling sections of the monthly and annual reports.	Sampling and recording of cyanide concentrations of the pregnant and barren solution are completed internally each shift to inform cyanide addition rates. This information is not considered relevant for the purposes of ongoing monitoring otherwise. VGC is however increasing the frequency of full suite analysis of pregnant and barren solution to support the refinement of geochemical source term predictions used in the site water quality model. This information will be provided to the external consultant responsible for geochemical source term derivation and water quality modeling and will be summarized in their reports as appropriate.
Follow up and close out of physical stability recommendation 3, 7 and 8 not documented in annual or monthly reports.	• Provide documentation detailing the follow up and response actions for addressing recommendation.	The All North Physical Stability Inspection Report is included within annual reports and includes discussion of the status of items previously identified by their engineering professionals which VGC considers appropriate for closing out matters. If VGC identifies omissions by All North (due to VGC correcting a previously identified recommendation) in future reports they will be discussed in the Annual Report.
WASTE MANAGEMENT		
Burn Log miss time information occasionally	• Management should periodically check logs and address missing information.	VGC site management will endeavor to periodically audit logs and address missing information.
Sorting of hazardous waste repeatedly found unsatisfactory	• The Solid Waste and Hazardous Materials Management Plan should be reviewed and sections relevant to hazardous waste management updated.	VGC periodically provides site wide memorandums and education to the general work force to reinforce proper waste sorting procedures. Hazardous waste sorting facilities have been improved and increased in size as the Project has progressed. Regular inspections and specific nonconformance emails aim to address specific cases observed.

Consistency with requirements, Gaps and/or Deficiencies	Recommendation	VGC Response
Sorting of non-hazardous waste repeatedly found unsatisfactory	• The Solid Waste and Hazardous Materials Management Plan should be reviewed and sections relevant to non-hazardous solid waste management.	VGC periodically provides site wide memorandums and education to the general work force to reinforce proper waste sorting procedures. Regular inspections and specific nonconformance emails aim to address specific cases observed.
SPILL RESPONSE		
Two spill reports did not indicate if spill line was called	• Management should review reports and address missing information.	VGC will ensure that future Spill Reports are fully completed. Occasionally, a spill has occurred near a shift change which can make timely completion of the required documentation difficult and efforts are being made to ensure that in instances where a shift change is imminent that a higher priority is placed on completing the reporting forms.
Process solution spilled outside the heap leach containment area.	• Monitor the effectiveness of the mitigation measures already put in place.	Corrective actions resultant from Process Solution releases have been implemented to mitigate future occurrences. VGC works with YG, FNNND and Cyanco to implement recommendations from external stakeholders associated with process solution releases. The areas where prior mitigations have been put in place are routinely inspected by VGC personnel and key external stakeholders.
Number of oil spills increased in first half of 2022	• Provide additional spill prevention training.	Spill prevention and response training in a key and constant component of communication from the site Environmental Department to other work groups. These efforts will continue through the life of the mine to support proper spill prevention.
CLOSURE		
VGC and their consultants have successfully completed revegetation efforts each year from 2019-2021. This will provide valuable information for refining site preparation, topsoil replacement and revegetation designs if proper monitoring and reporting is completed. Stantec recommends VGC consider incorporating these revegetation sites into the ongoing vegetation monitoring programs or equivalent.	• Stantec recommends VGC consider incorporating the revegetation sites in a formal monitoring program to provide a consolidated location for performance results rather than a series of technical memorandums for different areas that are appended to Annual Report submissions.	VGC will consider whether a consolidated program can be executed on site with the available resources.
Progress and success of reclamation research is difficult to discern from the reviewed documents. Although the 2020 RCP and Annual Reports identify and provide written discussion on reclamation research, items such as research task schedules, progress updates and/or key findings were not found for all reclamation research programs.	• Stantec recommends VGC develop a summary schedule for all reclamation and closure research programs, as outlined in Schedule C, Condition 4.1.c. of the QML-0011. Additionally, the next iteration of the RCP should include comment on research program findings to date, and if/how this impacts the existing closure concepts for the different mine areas.	The status of each research task was updated in the Oct 2022 RCP submission, and subsequent RCP revisions (every two years) will include these updates, including a summary schedule.
SITE AUDIT FINDINGS		
Elevated visual turbidity in Haggart Creek following rainfall event on September 29-30, 2022. As shown in Photo 14 – “Haggart Creek Below Mine – After Overnight Rainfall, with input from Site Ditching (Sept. 30, 2022)” visual observations suggest that the turbidity of the ditch effluent would be influencing the turbidity of Haggart Creek. While not a regulatory monitoring site, VGC should evaluate whether this ditch source can cause exceedances of regulatory standards downstream. It should also be noted that visual inspections of Dublin Gulch during the audit visit, upstream of mine workings, suggested that elevated turbidity upstream of mine affected disturbances was present.		Elevated parameters observed in laboratory results are routinely followed up by site environmental personnel to determine if mine site infrastructure is potentially responsible for the observed conditions. Mitigations strategies are implemented if mine influence is suspected in accordance with the adaptive management components of the EMSAMP.
The close-up photograph Photo 12 – “Coarse Sediment Buildup at Staff Gauge W-21” indicates a significant buildup of coarse material within this reach of the stream channel. This buildup of material would be expected to significantly affect any flow rating curves developed for this location. The buildup of coarse sediment would make the conversion of staff gauge readings to flows unreliable. The staff gauge should be maintained as needed.		An annual maintenance program occurs at W21 during benchmark survey work. Sediment build is maintained as possible however the high energy flow environment makes this difficult during certain periods of the year. Flows are evaluated and compared to historical values on an annual basis to inform if data is unreliable.
The 2020 Annual report notes in Section 5.2.2 – Cyanide Management, that fencing would be erected to reduce Wildlife Access to the Events Pond. The 2021 Annual report notes that this fencing will be erected in 2022. As indicated in photo 24: “Eagle Pit looking West Across Eagle Creek and Dublin Gulch to Event Pond, Heap Leach Facility and ADR – dated September 29, 2022” there is no fencing erected around the pond, as of the date of the audit.		Noted. In the interim, VGC uses banger/sound cannons to deter wildlife from the events pond and Heap as well as regular inspections of the areas. In addition, the events pond contains low risk water. The Wildlife Protection Plan (WPP) placed these mitigations on the events pond in case it should be holding significant amounts of process solution at concentrations that could be toxic to animals. There has been minimal risk to date for wildlife to interact with harmful water within the Events Pond given the water quality in the pond.

Consistency with requirements, Gaps and/or Deficiencies	Recommendation	VGC Response
It was noted during the audit that some of the Management Plans are dated as much as five years ago (2017). Specifically, the current Wildlife Protection Plan is dated 2017-01, which predates the start of commercial production. As indicated in Schedule C, Part 1 of Quartz Mining License QML-0011, it states: “For greater certainty, if there is no approved plan that addresses the activity to be carried out, the activity cannot be carried out until a plan is approved for the conduct of the activity.” Based on information gathered during the audit, it was not evident that a schedule for updating Management Plans is in place that considers changes to mine operations and environmental conditions at the site.		Noted, updates will be prioritized as required and in discussion with the Department of Energy, Mines and Resources.
Photographs 18 and 19 were taken on September 28th and 29th, respectively and show the Camp Site Gasoline and Diesel Fuel Storage Area, after a small precipitation event and during a fuel delivery operation. Adjacent to the fuel handling and storage area is a water management ditch that eventually reports to the receiving environment. Site personnel have indicated that the Storage Area was constructed with a buried liner for secondary containment of the fuel storage tanks. However, due to the general slope of the surrounding area, spillage or releases from the storage tanks or vehicles being refuelled may flow to the adjacent water management ditch, and potentially to the receiving water. This risk may be greater in winter when the ground is frozen and less permeable.		Regular inspections, spill trays and lining of the area mitigate the potential for sheens or stains from migrating towards downgradient watercourses. These measures will continue to be implemented.

Equipment Type	Equipment ID	Work Order	Description	Start Date	Status	PM Tasks
PLS Pump	PP-001	W44696	Remove temp controller to keep heat trace on all the time	1/12/2022	F	
PLS Pump	PP-001	W46904	Modify DCS faceplate/control screen to display run	2/14/2022	F	
PLS Pump	PP-001	W50864	Pre-Fab-piping for Install of check valve and flow meter	12/23/2022	F	
PLS Pump	PP-001	W51212	Program all Preg vfds from 35 Hz to 45 Hz	5/3/2022	F	
PLS Pump	PP-001	W51311	Install MTAP at vfd for PdMA testing	7/10/2022	F	
PLS Pump	PP-001	W55286	Install cable tray for new flow meter, press xmitter & dump	10/7/2022	F	
PLS Pump	PP-001	W61898	INSTALL- Piping + Check Valve + Flow Meter	4/5/2023	S	
PLS Pump	PP-001	W61927	Hook up Flow Meter, Transmitter & dump VLV.	5/3/2023	H	
PLS Pump	PP-001	W62481	Weld on brackets to hold 12" cable tray. Will run	9/24/2022	F	
PLS Pump	PP-001	W63126	Replace pressure gauge with pressure transmitter	11/15/2022	F	
PLS Pump	PP-001	W65835	connect and commission pressure transmitter	11/12/2022	F	
PLS Pump	PP-001	W66388	Heat Trace the pressure tx and open valves.	12/13/2022	F	
PLS Pump	PP-001	W66777	Preg 1 Instrument Red Lines	11/27/2022	F	
PLS Pump	PP-001	W67781	Remove insulation up to pressure transmitter for	3/31/2023	N	
PLS Pump	PP-001	W69530	Install Pump	12/16/2022	F	
PLS Pump	PP-001	W70029	Re-install EHT on the removable spool of pipe	12/17/2022	F	
PLS Pump	PP-002	W44695	Remove temp controller to keep heat trace on all the time	1/12/2022	F	
PLS Pump	PP-002	W46905	Modify DCS faceplate/control screen to display run	2/14/2022	F	
PLS Pump	PP-002	W49886	Preg pump 2 down on overcurrent fault. Diag motor	3/25/2022	F	
PLS Pump	PP-002	W49894	Replace Preg pump #2	3/27/2022	F	
PLS Pump	PP-002	W49917	Reset hour counter for Preg pump 2 as of 3/25	4/11/2022	F	
PLS Pump	PP-002	W49926	support the removal and installation of preg pump	3/28/2022	F	
PLS Pump	PP-002	W51312	Install MTAP at vfd for PdMA testing	6/17/2022	F	
PLS Pump	PP-002	W55293	Remove preg pump 2 to inspect.	6/16/2022	F	
PLS Pump	PP-002	W55350	Dissconnect Preg 2 pump motor for FXM pump remove	6/10/2022	F	
PLS Pump	PP-002	W55494	install new PREG pump into well # 2	6/16/2022	F	
PLS Pump	PP-002	W55496	need to splice power cable to new PREG pump before	6/12/2022	F	
PLS Pump	PP-002	W55625	support FXM with the install of the new preg pump	6/16/2022	F	
PLS Pump	PP-002	W60167	troubleshoot motor	8/19/2022	F	
PLS Pump	PP-002	W60930	Pre-Fab-piping for Install of check valve and flow meter	12/24/2022	F	
PLS Pump	PP-002	W60976	Install cable tray for new flow meter, press xmitter & dump	10/7/2022	F	
PLS Pump	PP-002	W61414	Replace Pregnant Solution Pump #2	10/29/2022	F	
PLS Pump	PP-002	W61433	Pregnant Solution Pump Cable Splice	9/7/2022	F	
PLS Pump	PP-002	W61434	Pregnant Solution Pump Electrical Disconnect and Reconnect	9/9/2022	F	
PLS Pump	PP-002	W61919	INSTALL- Piping + Check Valve + Flow Meter	4/5/2023	S	
PLS Pump	PP-002	W61926	Hook up Flow Meter, Transmitter & dump VLV.	5/3/2023	H	
PLS Pump	PP-002	W62482	Weld on brackets to hold 12" cable tray. Will run	9/26/2022	F	
PLS Pump	PP-002	W63127	Replace pressure gauge with pressure transmitter	11/15/2022	F	
PLS Pump	PP-002	W64180	Build a skid to ship out preg pump #2	10/17/2022	F	
PLS Pump	PP-002	W65560	Cable splice to Techno-Sub Pump.	10/26/2022	F	
PLS Pump	PP-002	W65834	connect and commission pressure transmitter	11/12/2022	F	
PLS Pump	PP-002	W66375	Electrical Disconnect and Reconnection	11/8/2022	F	
PLS Pump	PP-002	W66389	Heat Trace the pressure tx and open valves.	11/25/2022	F	
PLS Pump	PP-002	W66419	REPLACE PREG PUMP#2	11/7/2022	F	
PLS Pump	PP-002	W66779	Preg 2 Instrument Red Lines	11/27/2022	F	
PLS Pump	PP-003	W44693	Remove temp controller to keep heat trace on all the time	1/12/2022	F	
PLS Pump	PP-003	W45105	PREG PUMP OFFSITE REPAIR	4/26/2022	F	
PLS Pump	PP-003	W46906	Modify DCS faceplate/control screen to display run	2/14/2022	F	
PLS Pump	PP-003	W47322	remove the PREG pump that has failed in well # 3	2/10/2022	F	
PLS Pump	PP-003	W47324	Assist in cable management while reinstalling pump	2/11/2022	F	
PLS Pump	PP-003	W47341	Re-connect heat trace on Preg#3 discharge line	2/12/2022	F	
PLS Pump	PP-003	W47959	WORK ALREADY COMPLETED: Reconnect/energize preg	2/25/2022	F	
PLS Pump	PP-003	W51313	Install MTAP at vfd for PdMA testing	7/3/2022	F	
PLS Pump	PP-003	W54547	Preg 3 discharge valve 4120-HUS-1009 does not	5/31/2022	F	
PLS Pump	PP-003	W60977	Install cable tray for new flow meter, press xmitter & dump	10/7/2022	F	
PLS Pump	PP-003	W61902	INSTALL- Piping + Check Valve + Flow Meter	4/5/2023	S	
PLS Pump	PP-003	W61928	Hook up Flow Meter, Transmitter & dump VLV.	5/3/2023	H	
PLS Pump	PP-003	W62483	Weld on brackets to hold 12" cable tray. Will run	9/26/2022	F	
PLS Pump	PP-003	W62697	Install heat trace on leak detection line once insulated	9/25/2022	F	
PLS Pump	PP-003	W63128	Replace pressure gauge with pressure transmitter	11/15/2022	F	
PLS Pump	PP-003	W65833	connect and commission pressure transmitter	11/12/2022	F	
PLS Pump	PP-003	W66392	Heat Trace the pressure tx and open valves.	12/17/2022	F	
PLS Pump	PP-003	W66781	Preg 3 Instrument Red Lines	11/27/2022	F	
PLS Pump	PP-003	W67783	Re/Re insulation on pressure transmitter RL7 14Dec	12/19/2022	F	
PLS Pump	PP-004	W39502	Install Pregnant Solution Pump	3/1/2022	F	5130

PLS Pump	PP-004	W44653	Preg pump 4 motor sent for repair - cable splice on site	3/2/2022	F	
PLS Pump	PP-004	W44659	Hard wire the EHT on the preg pump piping	1/1/2022	F	
PLS Pump	PP-004	W45306	Build shipping crate to ship out pump for repair.	1/6/2022	F	
PLS Pump	PP-004	W45310	prep feed cable for preg pump 4 reconnection	1/6/2022	F	
PLS Pump	PP-004	W46907	Modify DCS faceplate/control screen to display run	2/14/2022	F	
PLS Pump	PP-004	W47087	600v Electric Motor Disconnect and Reconnect	3/1/2022	F	
PLS Pump	PP-004	W47735	Assist with Preg Pump Retrieval	2/25/2022	F	
PLS Pump	PP-004	W47821	Ensure dcs 'no flow' bypass is off on Preg 4 & 5	3/12/2022	F	
PLS Pump	PP-004	W50481	Drain valve on Preg Pump leaking.	4/23/2022	F	
PLS Pump	PP-004	W51314	Install MTAP at vfd for PdMA testing	7/3/2022	F	
PLS Pump	PP-004	W60932	Pre-Fab-piping for Install of check valve and flow meter	12/24/2022	F	
PLS Pump	PP-004	W60978	Install cable tray for new flow meter, press xmitter & dump	10/7/2022	F	
PLS Pump	PP-004	W61909	INSTALL- Piping + Check Valve + Flow Meter	4/5/2023	S	
PLS Pump	PP-004	W61929	Hook up Flow Meter, Transmitter & dump VLV.	5/3/2023	H	
PLS Pump	PP-004	W62484	Weld on brackets to hold 12" cable tray. Will run	9/26/2022	F	
PLS Pump	PP-004	W63129	Replace pressure gauge with pressure transmitter	11/20/2022	F	
PLS Pump	PP-004	W65011	Reinstall preg pump 4.	10/29/2022	F	
PLS Pump	PP-004	W65832	connect and commission pressure transmitter	11/12/2022	F	
PLS Pump	PP-004	W66393	Heat Trace the pressure tx and open valves.	11/25/2022	F	
PLS Pump	PP-004	W66700	RL7 INSULATION OF PREG #4 PIPING	12/21/2022	F	
PLS Pump	PP-004	W66783	Preg 4 Instrument Red Lines	11/27/2022	F	
PLS Pump	PP-005	W41343	Install Preg pump 5 Technosub pump	4/26/2022	F	
PLS Pump	PP-005	W44654	Preg pump 5 motor to West Fraser for rebuild	1/5/2022	F	
PLS Pump	PP-005	W45325	Build shipping crate to ship out pump for repair.	1/6/2022	F	
PLS Pump	PP-005	W45482	Replace Preg pump 5 EHT controller	3/12/2022	F	
PLS Pump	PP-005	W45770	Rewire preg pump e-shack lights on to different	1/30/2022	F	
PLS Pump	PP-005	W46908	Modify DCS faceplate/control screen to display run	2/14/2022	F	
PLS Pump	PP-005	W46986	BUILD COVER FOR PREG PUMP BORE HOLE	2/13/2022	F	
PLS Pump	PP-005	W47085	600v Electric Motor Disconnect and Reconnect	8/11/2022	F	
PLS Pump	PP-005	W48997	Pregnant Solution Pump Electrical Disconnect and Reconnect	4/5/2022	F	
PLS Pump	PP-005	W49948	Pregnant Solution Pump Cable Splice	3/31/2022	F	
PLS Pump	PP-005	W50474	make a hatch to cover each of the two holes that have	4/6/2022	F	
PLS Pump	PP-005	W50502	Reset run hours on preg pump 5 as of 4/3 2022 due	4/4/2022	F	
PLS Pump	PP-005	W51315	Install MTAP at vfd for PdMA testing	5/7/2022	F	
PLS Pump	PP-005	W51849	Reverse preg #5 motor polarity	4/27/2022	F	
PLS Pump	PP-005	W53369	Replace Pregnant Solution Pump	5/30/2022	F	5130
PLS Pump	PP-005	W53880	Pregnant Solution Pump Electrical Disconnect and Reconnect	5/29/2022	F	
PLS Pump	PP-005	W54351	Pregnant Solution Pump Cable Splice	5/28/2022	F	
PLS Pump	PP-005	W55881	Splice new preg pump motor onto existing cable	6/19/2022	F	
PLS Pump	PP-005	W55996	Complete- Replace gasket on pump discharge flange	6/21/2022	F	
PLS Pump	PP-005	W56466	Build cover with lid access	6/26/2022	F	
PLS Pump	PP-005	W59145	Troubleshoot preg pump 5 tripping on overload	8/4/2022	F	
PLS Pump	PP-005	W59337	Hook up power to the winch at PREG pump # 5	8/6/2022	F	
PLS Pump	PP-005	W59472	Support FXM with the install of Preg pump 5	8/10/2022	F	
PLS Pump	PP-005	W59503	Disconnect failed preg 5 motor and splice low flow	8/11/2022	F	
PLS Pump	PP-005	W59553	reconnect/ splice preg 5, support FXM with the	8/11/2022	F	
PLS Pump	PP-005	W60979	Install cable tray for new flow meter, press xmitter & dump	10/7/2022	F	
PLS Pump	PP-005	W61915	INSTALL- Piping + Check Valve + Flow Meter	4/5/2023	S	
PLS Pump	PP-005	W61931	Hook up Flow Meter, Transmitter & dump VLV.	5/3/2023	H	
PLS Pump	PP-005	W62485	Weld on brackets to hold 12" cable tray. Will run	9/26/2022	F	
PLS Pump	PP-005	W63130	Replace pressure gauge with pressure transmitter	4/5/2023	S	
PLS Pump	PP-005	W66394	Heat Trace the pressure tx and open valves.	4/15/2023	H	
PLS Pump	PP-005	W66784	Preg 5 Instrument Red Lines	11/27/2022	F	
Barren Pump	PP-047	W33815	Mechanical seal on pump leaking	1/15/2022	F	
Barren Pump	PP-047	W44145	Add heat shrink to T leads from JB into motor	4/7/2022	F	
Barren Pump	PP-047	W75299	4Wk Electric Motor Clean & Inspect	3/25/2023	W	5016
Barren Pump	PP-047	W74581	rebuild barren pump	3/31/2023	I	
Barren Pump	PP-047	W44768	4WK PM-Clean & Inspect Electric Motor	1/10/2022	F	5016
Barren Pump	PP-047	W45965	troubleshoot causes for mechanical seal failures	3/27/2022	F	
Barren Pump	PP-047	W46419	Modify DCS faceplate/control screen to display run hours	2/14/2022	F	
Barren Pump	PP-047	W46510	4WK PM-Clean & Inspect Electric Motor	2/12/2022	F	5016
Barren Pump	PP-047	W48224	4WK PM-Clean & Inspect Electric Motor	3/13/2022	F	5016
Barren Pump	PP-047	W49472	Dis/reconnect pump for FXM work	3/27/2022	F	
Barren Pump	PP-047	W50347	4WK PM-Clean & Inspect Electric Motor	4/7/2022	F	5016
Barren Pump	PP-047	W52316	4WK PM-Clean & Inspect Electric Motor	5/5/2022	F	5016
Barren Pump	PP-047	W53363	Replace Barren pump #1 due to mechanical seal	5/23/2022	F	
Barren Pump	PP-047	W53378	Disconnect and Reconnect Motor for Barren Solution Pump	5/24/2022	F	
Barren Pump	PP-047	W54174	REBUILD BARREN PUMP #1 @ TECHNOSUB	8/30/2022	F	
Barren Pump	PP-047	W54249	4WK PM-Clean & Inspect Electric Motor	6/2/2022	F	5016
Barren Pump	PP-047	W56330	4WK PM-Clean & Inspect Electric Motor	6/30/2022	F	5016
Barren Pump	PP-047	W57537	4WK PM-Clean & Inspect Electric Motor	9/3/2022	F	5016
Barren Pump	PP-047	W62221	4WK PM-Clean & Inspect Electric Motor	10/3/2022	F	5016

Barren Pump	PP-047	W62536	Changing Oil & Sample Barren Solution Motor Bearings	10/7/2022	F	5016
Barren Pump	PP-047	W68376	inspect for oil leaks and repair if necessary.	12/17/2022	F	
Barren Pump	PP-047	W74137	REBUILD BARREN SOLUTION PUMP - SHOP WORK	2/22/2023	H	
Barren Pump	PP-048	W19962	SD- Inspect Bushings and Mech Seal-Change if needed	3/22/2022	F	
Barren Pump	PP-048	W31275	SD- Install 3rd stage	7/23/2022	F	
Barren Pump	PP-048	W39404	Bearing Faults registered on Barren Pump #2 continue to	4/23/2022	F	
Barren Pump	PP-048	W44146	Add heat shrink to T leads from JB into motor	5/18/2022	F	
Barren Pump	PP-048	W75300	4Wk Electric Motor Clean & Inspect	3/25/2023	W	5016
Barren Pump	PP-048	W44769	4WK PM-Clean & Inspect Electric Motor	1/10/2022	F	5016
Barren Pump	PP-048	W46421	Modify DCS faceplate/control screen to display run hours	2/14/2022	F	
Barren Pump	PP-048	W46511	4WK PM-Clean & Inspect Electric Motor	2/13/2022	F	5016
Barren Pump	PP-048	W48254	4WK PM-Clean & Inspect Electric Motor	3/13/2022	F	5016
Barren Pump	PP-048	W50348	4WK PM-Clean & Inspect Electric Motor	4/7/2022	F	5016
Barren Pump	PP-048	W51405	Remove the 2 stage pump and install new 3 stage	5/19/2022	F	
Barren Pump	PP-048	W52317	4WK PM-Clean & Inspect Electric Motor	5/5/2022	F	5016
Barren Pump	PP-048	W53377	Disconnect and Reconnect Motor for Barren Solution Pump	5/19/2022	F	
Barren Pump	PP-048	W54250	4WK PM-Clean & Inspect Electric Motor	6/2/2022	F	5016
Barren Pump	PP-048	W56331	4WK PM-Clean & Inspect Electric Motor	6/30/2022	F	5016
Barren Pump	PP-048	W58996	4WK PM-Clean & Inspect Electric Motor	9/3/2022	F	5016
Barren Pump	PP-048	W61020	Changing Oil & Sample Barren Solution Motor Bearings	9/19/2022	F	5260
Barren Pump	PP-048	W62222	4WK PM-Clean & Inspect Electric Motor	10/3/2022	F	5016
Barren Pump	PP-048	W67792	Oil sweat on motor	12/20/2022	F	
Barren Pump	PP-048	W68377	inspect for oil leaks and repair if necessary	12/19/2022	F	
Barren Pump	PP-048	W71058	Changing Oil & Sample Barren Solution Motor Bearings	6/7/2023	S	5260
Barren Pump	PP-048	W74118	REBUILD BARREN SOLUTION PUMP - SHOP WORK	2/23/2023	H	
Barren Pump	PP-049	W44147	Add heat shrink to T leads from JB into motor	6/6/2022	F	
Barren Pump	PP-049	W75301	4Wk Electric Motor Clean & Inspect	3/25/2023	W	5016
Barren Pump	PP-049	W44770	4WK PM-Clean & Inspect Electric Motor	1/10/2022	F	5016
Barren Pump	PP-049	W46422	Modify DCS faceplate/control screen to display run hours	2/14/2022	F	
Barren Pump	PP-049	W46512	4WK PM-Clean & Inspect Electric Motor	2/13/2022	F	5016
Barren Pump	PP-049	W48255	4WK PM-Clean & Inspect Electric Motor	4/3/2022	F	5016
Barren Pump	PP-049	W51810	4WK PM-Clean & Inspect Electric Motor	5/2/2022	F	5016
Barren Pump	PP-049	W53749	4WK PM-Clean & Inspect Electric Motor	5/30/2022	F	5016
Barren Pump	PP-049	W55810	4WK PM-Clean & Inspect Electric Motor	6/27/2022	F	5016
Barren Pump	PP-049	W57174	4WK PM-Clean & Inspect Electric Motor	7/24/2022	F	5016
Barren Pump	PP-049	W59285	4WK PM-Clean & Inspect Electric Motor	9/3/2022	F	5016
Barren Pump	PP-049	W61021	Changing Oil & Sample Barren Solution Motor Bearings	9/19/2022	F	5260
Barren Pump	PP-049	W62223	4WK PM-Clean & Inspect Electric Motor	10/3/2022	F	5016
Barren Pump	PP-049	W67794	Oil sweat on Motor	12/23/2022	F	
Barren Pump	PP-049	W68378	Inspect for oil leaks and repair if necessary	12/19/2022	F	
Barren Pump	PP-049	W71091	Motor is leaking Oil - Replace	1/26/2023	H	
Barren Pump	PP-049	W72845	Disconnect and Reconnect Motor for Barren Solution Pump.	5/1/2023	H	
Barren Pump	PP-050	W44148	Add heat shrink to T leads from JB into motor	3/15/2022	F	
Barren Pump	PP-050	W75302	4Wk Electric Motor Clean & Inspect	3/25/2023	W	5016
Barren Pump	PP-050	W44771	4WK PM-Clean & Inspect Electric Motor	1/10/2022	F	5016
Barren Pump	PP-050	W46424	Modify DCS faceplate/control screen to display run hours	2/14/2022	F	
Barren Pump	PP-050	W46513	4WK PM-Clean & Inspect Electric Motor	2/13/2022	F	5016
Barren Pump	PP-050	W48256	4WK PM-Clean & Inspect Electric Motor	3/13/2022	F	5016
Barren Pump	PP-050	W50349	4WK PM-Clean & Inspect Electric Motor	4/7/2022	F	5016
Barren Pump	PP-050	W52318	4WK PM-Clean & Inspect Electric Motor	5/5/2022	F	5016
Barren Pump	PP-050	W54251	4WK PM-Clean & Inspect Electric Motor	6/2/2022	F	5016
Barren Pump	PP-050	W56332	4WK PM-Clean & Inspect Electric Motor	6/30/2022	F	5016
Barren Pump	PP-050	W58997	4WK PM-Clean & Inspect Electric Motor	9/3/2022	F	5016
Barren Pump	PP-050	W61022	Changing Oil & Sample Barren Solution Motor Bearings	9/19/2022	F	5260
Barren Pump	PP-050	W62224	4WK PM-Clean & Inspect Electric Motor	10/3/2022	F	5016
Barren Pump	PP-050	W67795	Oil sweat on Motor	12/23/2022	F	
Barren Pump	PP-050	W71669	Motor is leaking Oil - Replace	1/26/2023	H	
Barren Pump	PP-050	W72846	Disconnect and Reconnect Motor for Barren Solution Pump.	3/12/2023	S	
Barren Pump	PP-051	W44149	Add heat shrink to T leads from JB into motor	3/15/2022	F	
Barren Pump	PP-051	W75303	4Wk Electric Motor Clean & Inspect	3/25/2023	W	5016
Barren Pump	PP-051	W44772	4WK PM-Clean & Inspect Electric Motor	1/10/2022	F	5016
Barren Pump	PP-051	W46425	Modify DCS faceplate/control screen to display run hours	2/14/2022	F	
Barren Pump	PP-051	W46514	4WK PM-Clean & Inspect Electric Motor	2/13/2022	F	5016
Barren Pump	PP-051	W48257	4WK PM-Clean & Inspect Electric Motor	3/13/2022	F	5016
Barren Pump	PP-051	W50350	4WK PM-Clean & Inspect Electric Motor	4/7/2022	F	5016
Barren Pump	PP-051	W52319	4WK PM-Clean & Inspect Electric Motor	5/5/2022	F	5016
Barren Pump	PP-051	W54252	4WK PM-Clean & Inspect Electric Motor	6/2/2022	F	5016
Barren Pump	PP-051	W56333	4WK PM-Clean & Inspect Electric Motor	6/30/2022	F	5016
Barren Pump	PP-051	W58998	4WK PM-Clean & Inspect Electric Motor	9/3/2022	F	5016
Barren Pump	PP-051	W59658	Fix the "Nameplate FLA" in Delta V, so Amperage	8/26/2022	F	
Barren Pump	PP-051	W61023	Changing Oil & Sample Barren Solution Motor Bearings	9/19/2022	F	5260
Barren Pump	PP-051	W62225	4WK PM-Clean & Inspect Electric Motor	10/3/2022	F	5016

Barren Pump	PP-051	W67796	Oil sweat on Motor	12/23/2022	F	
Barren Pump	PP-051	W71670	Motor is leaking Oil - Replace	3/17/2023	S	
Barren Pump	PP-051	W72847	Disconnect and Reconnect Motor for Barren Solution Pump.	3/12/2023	S	
Power House	6310-04-000	W30394	1. The circuit breaker for the FACP is not locked; provide	2/27/2022	F	
Power House	6310-04-000	W44336	Reset Power House Fuel Skid Flowmeter	1/2/2022	F	5026
Power House	6310-04-000	W75777	1W Inspect fuel skid for leaks.	3/26/2023	W	6233
Power House	6310-04-000	W44777	Reset Power House Fuel Skid Flowmeter	1/9/2022	F	5026
Power House	6310-04-000	W45190	Reset Power House Fuel Skid Flowmeter	1/16/2022	F	5026
Power House	6310-04-000	W45660	Reset Power House Fuel Skid Flowmeter	1/23/2022	F	5026
Power House	6310-04-000	W46028	Scope required - Replace pump at fuel skid for power house	9/8/2022	F	
Power House	6310-04-000	W46105	Reset Power House Fuel Skid Flowmeter	1/30/2022	F	5026
Power House	6310-04-000	W46417	PARENT- replace FT switches on substation generators	1/25/2022	F	
Power House	6310-04-000	W46518	Reset Power House Fuel Skid Flowmeter	2/6/2022	F	5026
Power House	6310-04-000	W46785	Reset Power House Fuel Skid Flowmeter	2/13/2022	F	5026
Power House	6310-04-000	W47199	Reset Power House Fuel Skid Flowmeter	2/22/2022	F	5026
Power House	6310-04-000	W47533	Reset Power House Fuel Skid Flowmeter	2/27/2022	F	5026
Power House	6310-04-000	W47927	Reset Power House Fuel Skid Flowmeter	3/6/2022	F	5026
Power House	6310-04-000	W48262	Reset Power House Fuel Skid Flowmeter	3/12/2022	F	5026
Power House	6310-04-000	W48760	Reset Power House Fuel Skid Flowmeter	3/13/2022	F	5026
Power House	6310-04-000	W48777	Reset Power House Fuel Skid Flowmeter	3/18/2022	F	5026
Power House	6310-04-000	W49311	Reset Power House Fuel Skid Flowmeter	3/26/2022	F	5026
Power House	6310-04-000	W49800	Reset Power House Fuel Skid Flowmeter	4/4/2022	F	5026
Power House	6310-04-000	W50331	Reset Power House Fuel Skid Flowmeter	4/10/2022	F	5026
Power House	6310-04-000	W50786	Reset Power House Fuel Skid Flowmeter	4/14/2022	F	5026
Power House	6310-04-000	W51056	Reset Power House Fuel Skid Flowmeter	4/25/2022	F	5026
Power House	6310-04-000	W51420	install flow meter in diesel supply line for Gens	8/8/2022	F	
Power House	6310-04-000	W51706	Reset Power House Fuel Skid Flowmeter	5/3/2022	F	5026
Power House	6310-04-000	W51814	Semi annual Running/loading tests of all 3 generators	5/10/2022	F	6016
Power House	6310-04-000	W52330	Reset Power House Fuel Skid Flowmeter	5/30/2022	F	5026
Power House	6310-04-000	W52349	Reset Power House Fuel Skid Flowmeter	5/7/2022	F	5026
Power House	6310-04-000	W52854	Reset Power House Fuel Skid Flowmeter	5/15/2022	F	5026
Power House	6310-04-000	W53149	Reset Power House Fuel Skid Flowmeter	5/23/2022	F	5026
Power House	6310-04-000	W54261	Reset Power House Fuel Skid Flowmeter	6/4/2022	F	5026
Power House	6310-04-000	W54788	Reset Power House Fuel Skid Flowmeter	6/11/2022	F	5026
Power House	6310-04-000	W54805	Reset Power House Fuel Skid Flowmeter	6/25/2022	F	5026
Power House	6310-04-000	W55185	Reset Power House Fuel Skid Flowmeter	6/17/2022	F	5026
Power House	6310-04-000	W55813	Reset Power House Fuel Skid Flowmeter	6/26/2022	F	5026
Power House	6310-04-000	W56313	Reset Power House Fuel Skid Flowmeter	6/30/2022	F	5026
Power House	6310-04-000	W56996	Reset Power House Fuel Skid Flowmeter	8/1/2022	F	5026
Power House	6310-04-000	W58061	Reset Power House Fuel Skid Flowmeter	7/28/2022	F	5026
Power House	6310-04-000	W58463	Reset Power House Fuel Skid Flowmeter	8/8/2022	F	5026
Power House	6310-04-000	W59023	Reset Power House Fuel Skid Flowmeter	9/30/2022	F	5026
Power House	6310-04-000	W59058	Reset Power House Fuel Skid Flowmeter	8/22/2022	F	5026
Power House	6310-04-000	W59736	Reset Power House Fuel Skid Flowmeter	8/30/2022	F	5026
Power House	6310-04-000	W59977	Reset Power House Fuel Skid Flowmeter	8/14/2022	F	5026
Power House	6310-04-000	W59990	Reset Power House Fuel Skid Flowmeter	9/3/2022	F	5026
Power House	6310-04-000	W59999	Reset Power House Fuel Skid Flowmeter	8/28/2022	F	5026
Power House	6310-04-000	W60541	Wajax support for Generator loading	10/31/2022	F	
Power House	6310-04-000	W60718	Reset Power House Fuel Skid Flowmeter	9/12/2022	F	5026
Power House	6310-04-000	W61807	Reset Power House Fuel Skid Flowmeter	10/5/2022	F	5026
Power House	6310-04-000	W63274	Reset Power House Fuel Skid Flowmeter	10/17/2022	F	5026
Power House	6310-04-000	W63725	Reset Power House Fuel Skid Flowmeter	11/13/2022	F	5026
Power House	6310-04-000	W63750	Reset Power House Fuel Skid Flowmeter	10/22/2022	F	5026
Power House	6310-04-000	W63813	Reset Power House Fuel Skid Flowmeter	10/30/2022	F	5026
Power House	6310-04-000	W63866	Semi annual Running/loading tests of all 3 generators	11/14/2022	F	6016
Power House	6310-04-000	W64846	Reset Power House Fuel Skid Flowmeter	11/20/2022	F	5026
Power House	6310-04-000	W65148	Change out failed check valves and pressure test	10/22/2022	F	
Power House	6310-04-000	W65149	Fab up some pipe supports for Powerhouse	10/22/2022	F	
Power House	6310-04-000	W65613	Reset Power House Fuel Skid Flowmeter	11/8/2022	F	5026
Power House	6310-04-000	W66138	Reset Power House Fuel Skid Flowmeter	12/12/2022	F	5026
Power House	6310-04-000	W67272	Reset Power House Fuel Skid Flowmeter	11/30/2022	F	5026
Power House	6310-04-000	W67275	Reset Power House Fuel Skid Flowmeter	11/23/2022	F	5026
Power House	6310-04-000	W67542	Reset Power House Fuel Skid Flowmeter	12/16/2022	F	5026
Power House	6310-04-000	W68181	1WK Sunday Reset Power House Fuel Skid Flowmeter	12/12/2022	F	5026
Power House	6310-04-000	W68836	Reset Power House Fuel Skid Flowmeter	12/25/2022	F	5026
Power House	6310-04-000	W76258	1W Inspect fuel skid for leaks.	4/1/2023	S	6233
Power House	6310-04-000	W76780	1W Inspect fuel skid for leaks.	4/8/2023	S	6233
Power House	6310-04-000	W77198	1W Inspect fuel skid for leaks.	4/15/2023	S	6233

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Document Description

Annual Physical Stability Assessment Report – Victoria Gold – Eagle Gold Project

Project Description:

Visual inspection of the following structures: Open Pit, Platinum Gulch Dump, Eagle Pup Dump, Lower Dublin South (Control) Pond, Primary Crusher, Secondary & Tertiary Crushers, Secondary Stockpile, Adsorption, Desorption and Recovery (ADR) Plant, Heap Leach Facility, Heap Leach Overburden Stockpile, Event Pond, Emergency Pond, Ditches A, B, and C, Heavy Duty Truck Shop, Warehouse Pad, Water Treatment Plant, Orica Laydown, Various Un-named Stockpiles.

REVISION HISTORY

Revision	Status	Date	Prepared By	Checked By	Approved By	Description of Revision
A	IFR	22/10/06	SBB	DW	DW	Issued for Review
0	IFA	22/11/01	SBB	DW	DW	Issued for Approval
1	IAF	22/12/07	SBB	DW	DW	Issued as Final

Status:

PRE	- Preliminary	IFP	- Issued for Procurement
IFR	- Issued for Review and Comment	IFC	- Issued for Construction
IFA	- Issued for Approval	AB	- As Built
IFQ	- Issued for Quotation	IAF	-Issued as Final

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1 BACKGROUND

In September, 2022, Allnorth Consultants Limited (Allnorth) was retained by Victoria Gold Corp. (VGC) to conduct a visual physical stability assessment of their Eagle Gold mining operation located in Mayo Mining District, Yukon, Canada in support of Quartz Mining License QML-0011. Spencer Bergin, EIT of Allnorth conducted the inspection on September 13th through 15th. The inspection was limited to visual inspection and did not include any specific geotechnical or structural testing or evaluation. Visual inspection generally consisted of traversing the structures on foot, and viewing the structures in their entirety from accessible vantage points. Any issues that were discovered were investigated and documented with detailed notes and photographs. The Allnorth inspector was given complete freedom in determining what to look at, and was not restricted access to any locations within the site. Conditions on site were sunny and clear for inspections.

Allnorth previously completed similar inspections in September of 2021, 2020, 2019, and 2018. Some photos taken during these inspections were used for comparison. Some areas had no basis for comparison, as construction was underway during the previous inspection, and has since been completed. Any photos included from the previous inspections are noted.

The mining project was currently extracting, storing, processing, and refining ore at the time of inspection. Construction of all major infrastructure has been completed and development of successive phases of the Heap Leach Facility (HLF), open pit mine and waste rock area expansion continue. Historical records for survey data are limited to certain facilities at this time. As more survey data is collected and made available this can be used for stability monitoring and will likely become part of the physical stability assessment in the future.

2 SCOPE

This report outlines the findings of the physical stability assessment conducted from September 13th – 15th of 2022. This report documents the findings of the physical stability assessment and makes recommendations for remediation, additional inspection or monitoring of the issues identified. The following structures were included in the assessment:

- Lower Dublin South (Control) Pond and outfall,
- Secondary Stockpile (also known as 90 Day Stockpile),
- Heap Leach Facility,
- Heap Leach Overburden Stockpile,
- Open Pit,
- Platinum Gulch Dump,
- Eagle Pup Dump,
- Cut and fill slopes of the Primary, Secondary, and Tertiary Crushers including MSE walls,
- Cut and fill slopes of the Adsorption, Desorption and Recovery Plant,
- Event Pond,
- Emergency Pond,
- Ditches A, B, and C,
- Heavy Duty Truck Shop,
- Warehouse Pad,
- ADR Plant,
- Water Treatment Plant,
- Orica Laydown,

- Various un-named stockpiles

The purpose of the inspection is to identify any visual indicators associated with instability of mass earth structures, including but not limited to tension cracking, bulging, pooled water above the slope or near the toe of the slope, falling material, indications of creep, slumps, deposits of debris, or cracking in bedrock. Additionally, constructed slopes were reviewed for slope angles and compared against the recommend slope angles for known material types on site. Refer to **Appendix A** for a map showing the site plan for the 2022 inspection. A site plan for the 2021, 2020, and 2019 inspections are available in **Appendixes B, C,** and **D** for comparison. A site plan for the 2018 inspection was not available.

3 LOWER DUBLIN SOUTH (CONTROL) POND

3.1 Low Level Outlet Conveyance Channel

The low level outlet conveyance channel from the Lower Dublin South Pond (LDSP) is currently not in use, as water is being pumped direct from the LDSP to the end of Ditch C when water levels are high enough to warrant it. Once the Water Treatment Plant is operational flows may be diverted there instead. Currently the channel is dry and unused (Figure 1).

Figure 1: LDSP – Low Level Outlet Conveyance Channel

3.2 Cut slopes

1. Some saturated material and erosion was noted on the slope of the southwest corner of the Control Pond over the width of the narrow access road in 2019 and 2020 (Figure 2,) but this erosion was rectified with the completion of Ditch A between the 2020 and 2021 inspections (Figure 3). The area is showing signs of cracking as of the 2022 inspection (Figure 4).

Figure 2: LDSP – Erosion on the Southwest slope 2020

Figure 3: LDSP – Erosion rectified on the Southwest slope 2021

Figure 4: LDSP – Cracking on the Southwest slope 2022

2. There was some flow into Ditch A on the Southwest corner of the LDSP from a culvert crossing a former construction access road, which was observed in 2019, 2020 and 2021 (Figure 5, Figure 6, Figure 7) and still present as of this inspection (Figure 8). Liner was installed under the culvert outlet at the time of this inspection to alleviate erosion (Figure 8).

Figure 5: LDSP – Some flow from adjacent culvert 2019

Figure 6: LDSP – Some flow from adjacent culvert 2020

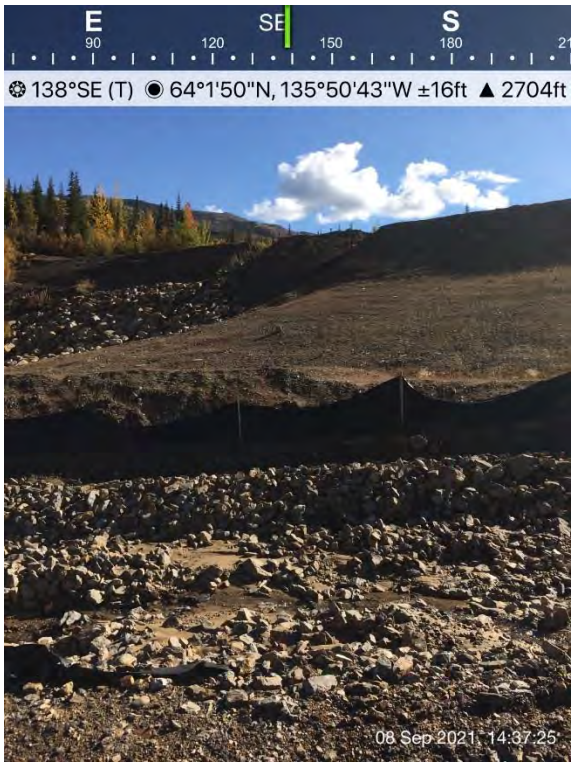

Figure 7: LDSP – Some flow from adjacent culvert 2021

Figure 8: LDSP – Some flow from adjacent culvert 2022

4 SECONDARY STOCKPILE

4.1 Benches and Cut Slopes

1. The Secondary Stockpile (also known as the 90 Day Stockpile) was completed in 2020 (Figure 9). Some over-steepened cut slopes were observed during the 2021 inspection where the slopes had begun to collapse/erode and material was collecting at the base of the slope (Figure 10). This was also the case during this years inspection (Figure 11).

Figure 9: Secondary Stockpile Cut Slopes 2020

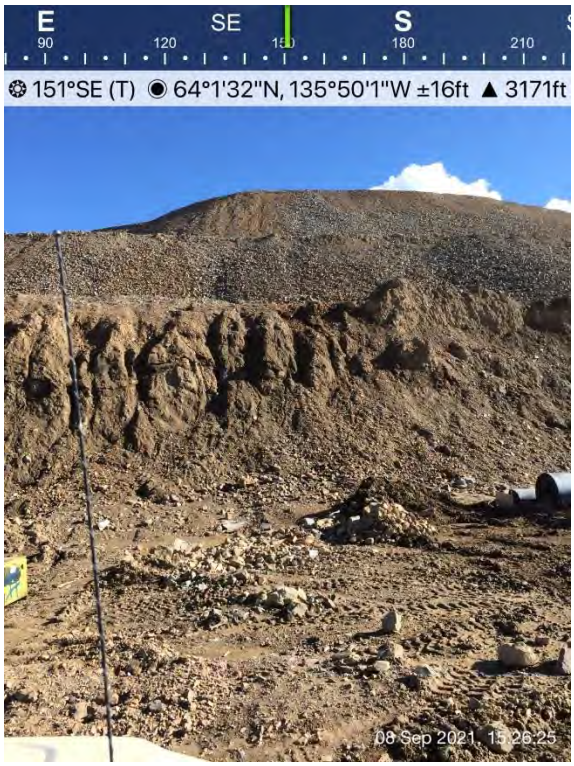

Figure 10: Secondary Stockpile Cut Slopes 2021

Figure 11: Secondary Stockpile Cut Slopes 2022

4.2 Perimeter Interception Ditch

1. A perimeter interception ditch extends around the downhill toe of the Secondary Stockpile area. The construction of this ditch was not complete in 2020 but has since had rock armoring installed (Figure 12, Figure 13). Issues noted in the 2020 inspection including over-steepened and sloughing slopes on the interception ditch appear to have since been addressed. The ditch appears in good condition as of this years inspection (Figure 14).

Figure 12: Perimeter Ditching 2020

Figure 13: Perimeter Ditching 2021

Figure 14: Perimeter Ditching 2022

2. The outlet of one side of the perimeter ditch does not currently tie into the collection sump, this was observed in 2020 as well. (Figure 15, Figure 16, Figure 17).

Figure 15: Unconnected Ditch Section 2020

Figure 16: Unconnected Ditch Section 2021

Figure 17: Unconnected Ditch Section 2022

5 HEAP LEACH FACILITY

5.1 HLF Overview

1. The Heap Leach Facility (HLF) is currently operational. In 2019 the Phase 1A expansion had been constructed as shown in Figure 18. By the time of the 2020 inspection the Phase 1B expansion was largely complete as shown in Figure 19. During the 2021 inspection land was being cleared and graded for the Phase 2 expansion as shown in Figure 20, and for the 2022 inspection liner was installed on part of the cleared area (Figure 21).

Figure 18: Heap Leach Facility Overview 2019

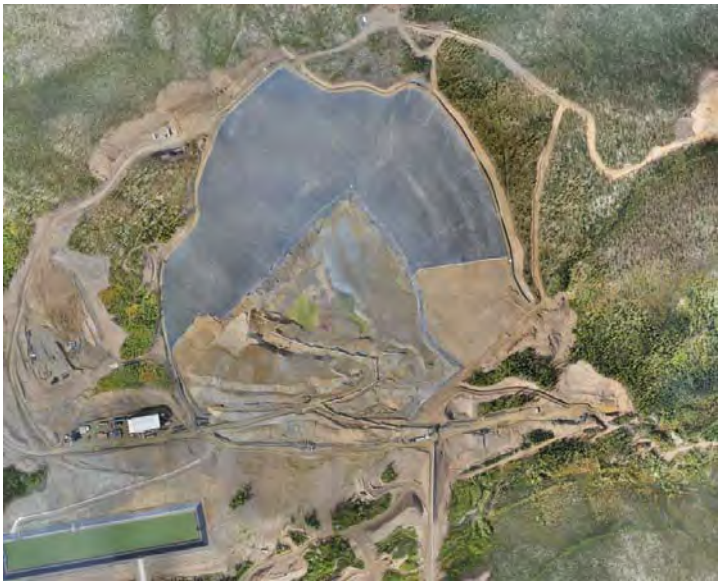

Figure 19: Heap Leach Facility Overview 2020

Figure 20: Heap Leach Facility Overview 2021

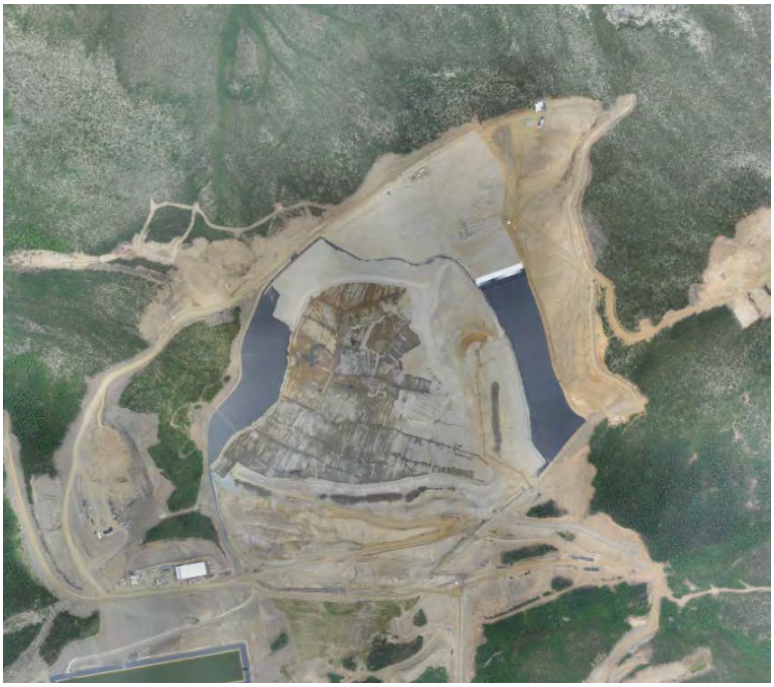

Figure 21: Heap Leach Facility Overview 2022

5.2 Toe Slope

1. Some scouring and rilling was noted along the toe slope below the HLF and above the un-named stockpile area and HLF Underdrain Monitoring Vault in the 2020 inspection (Figure 22). The slope has since been seeded and there appears to be less scouring of material off the toe slope as inspected in 2021 (Figure 23) and 2022 (Figure 24).

Figure 22: Scouring and rilling along toe slope of HLF (2020)

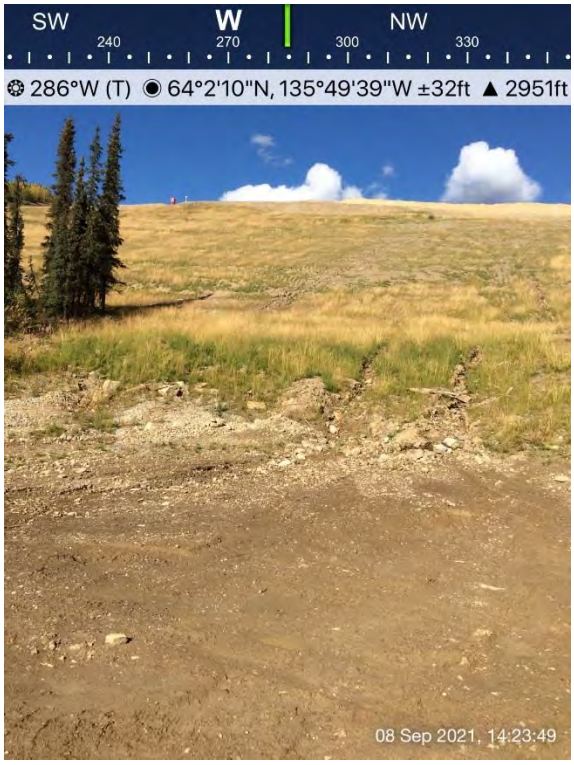

Figure 23: Seeded grass on toe slope of HLF (2021)

Figure 24: Seeded grass on toe slope of HLF (2022)

5.3 HLF Interception Ditch

1. The HLF interception ditch was constructed before the 2022 inspection. The interception ditch has collected silt/material in some sections, almost blocking culverts in some areas (Figure 25).

Figure 25: Material deposited in HLF Interception Ditch (2022)

5.4 Phase 2 Grade Clearing

1. The Phase 2 of the HLF was mostly cleared at the time of inspection with grading nearly finished as well (Figure 26). No issues noted for the cleared area.

Figure 26: Phase 2 graded area

6 HEAP LEACH OVERBURDEN STOCKPILE

1. Overburden from clearing and grading of the HLF expansions has been placed along the North-West back slope of the HLF. Site representatives stated that the HLF overburden pile had shifted and partially collapsed some time in the late summer of 2021, roughly 4 – 5 weeks prior to the 2021 inspection (Figure 27). Since the 2021 inspection the collapsed area has been re-sloped (Figure 28). Some minor cracking was noted on the re-sloped surface (Figure 29). The area had also been seeded with grass by helicopter and the grass was starting to sprout at the time of this inspection.

Figure 27: HLF Overburden Stockpile collapse – plan view 2021

Figure 28: HLF Overburden Stockpile collapse – plan view 2022

Figure 29: HLF Overburden Stockpile collapse – slope cracking 2022

2. Sumps have been constructed downslope from the overburden collapse to collect silt run-off from the collapse (Figure 30). The sumps are holding water and appear soundly constructed (Figure 31)

Figure 30: HLF Overburden sump system 2022

Figure 31: HLF Overburden sump system 2022

7 OPEN PIT

1. The pit walls appear stable, and largely constructed in competent rock (Figure 32). There are some areas with erosion visible from an aerial drone (Figure 33).

Figure 32: Open Pit Walls

Figure 33: Erosion on Pit Walls

2. There is a section at the base of the pit where water collects and is unable to drain, resulting in pooled water (Figure 34).

Figure 34: Phase 1 Pit pooled water

3. There is a section between the open pit and the eagle pup dump where run-off has eroded a cut into the slope above the primary crusher access road (Figure 35, Figure 36).

Figure 35: Open Pit Erosion – Aerial View

Figure 36: Open Pit Erosion – From Base

8 PLATINUM GULCH DUMP

1. Platinum Gulch Dump is currently operational, and the side slopes generally appear to be stable. See Figure 37 and Figure 38 below.

Figure 37: Platinum Gulch Dump (Base)

Figure 38: Platinum Gulch Dump (Aerial View)

2. Some sections of pooling water and cracking were noted on the first level of the dump (Figure 39, Figure 40).

Figure 39: Platinum Gulch Dump Water Pooling

Figure 40: Platinum Gulch Dump Cracking

9 EAGLE PUP DUMP

1. The Eagle Pup Dump was under construction during the 2021 inspection, with drain rock being placed at the base of the slope as shown in Figure 41. The rock drain has since been completed and the dump is in use. Some areas of water pooling can be seen in Figure 42.

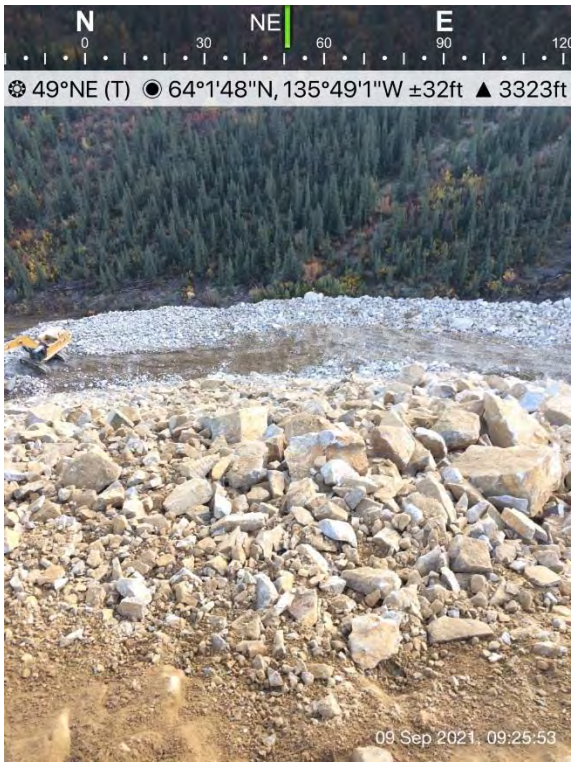

Figure 41: Eagle Pup Dump drain rock 2021

Figure 42: Eagle Pup Dump (Aerial View)

10 PRIMARY CRUSHER

10.1 MSE Walls

1. No apparent damage or deterioration was noted during the inspection of the Primary Crusher MSE wall (Figure 43 - Figure 45). No changes were visually identified from the 2021 inspection.

Figure 43: Primary Crusher MSE Walls

Figure 44: Primary Crusher North-West Wall

Figure 45: Primary Crusher South-East Wall

10.2 Cut and Fill slopes

1. Cut and fill slopes appear to be acceptable, no stability or erosion issues noted. (Figure 46).

Figure 46: North-West fill slopes

11 SECONDARY/TERTIARY CRUSHER

11.1 MSE Wall

1. No apparent damage or deterioration was noted during the inspection of the Secondary/Tertiary Crusher MSE wall (Figure 47, Figure 48). No changes were visually identified from the 2021 inspection.

Figure 47: South side of MSE wall

Figure 48: North side of MSE wall

11.2 Cut Slopes

1. There has been an accumulation of fine sediment on the South slope above the MSE wall, likely from dust coming off the crusher transfer conveyor. Photos taken during the 2021 inspection (Figure 49) show a relatively clear slope, photos taken during the 2022 inspection show the silt build-up since the previous inspection (Figure 50, Figure 51).

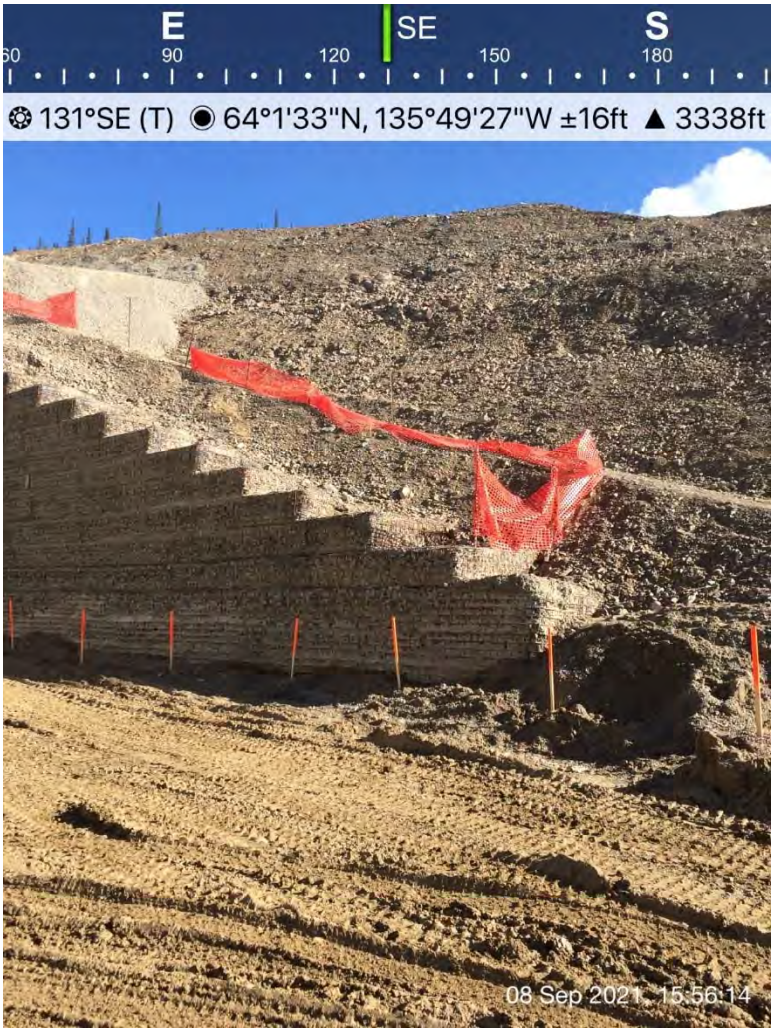

Figure 49: Cut slopes above Secondary/Tertiary Crusher 2021

Figure 50: Cut slopes above Secondary/Tertiary Crusher 2022

Figure 51: Cut slopes above Secondary/Tertiary Crusher 2022

12 ADSORPTION, DESORPTION, AND RECOVERY PLANT (ADR)

12.1 Cut and Fill Slopes

1. Cut slopes behind the ADR area appear to be competent rock, with some minor rilling and unraveling (Figure 52)

Figure 52: Slopes behind ADR (2022)

12.2 North Toe Ditch

1. There is a small V ditch, referred to here as the North Toe Ditch (Figure 53), with sides close to 1:1 cut at the base of a large steep slope which is cut into bedrock; the ditch is not armored and contains loose gravel and fines, although there are no apparent scouring issues. There is also a culvert which has been installed along the ditch alignment.

Figure 53: Typical North Toe Ditch cross section

13 EVENT POND

13.1 Cut/Fill Slopes

1. The event pond was constructed between the 2018 and 2019 inspections, with hillslope unraveling noted in the 2019 inspection.

Figure 54: Overall view of event pond

2. Rill erosion and scour channels on the cut slopes above the event pond and the heap leach spillway were noted in this inspection as shown in Figure 55.

Figure 55: Rill erosion above HLF spillway

13.2 Pooling Water

1. Pooling water appeared to be forming above the North-East corner of the Event Pond at the time of this inspection (Figure 56). Pooling water had also been noted in this location on the 2021 and 2020 inspections (Figure 57, Figure 58).

Figure 56: Pooling water above Event Pond 2022

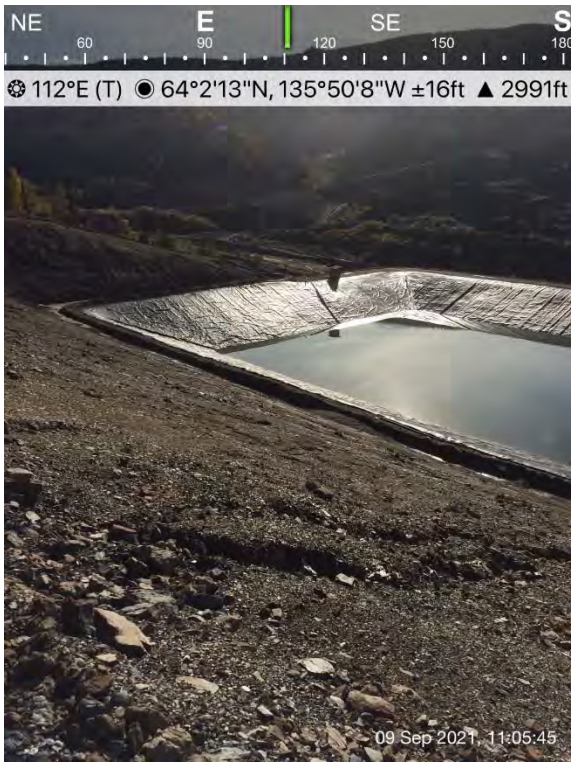

Figure 57: Pooling water above Event Pond 2021

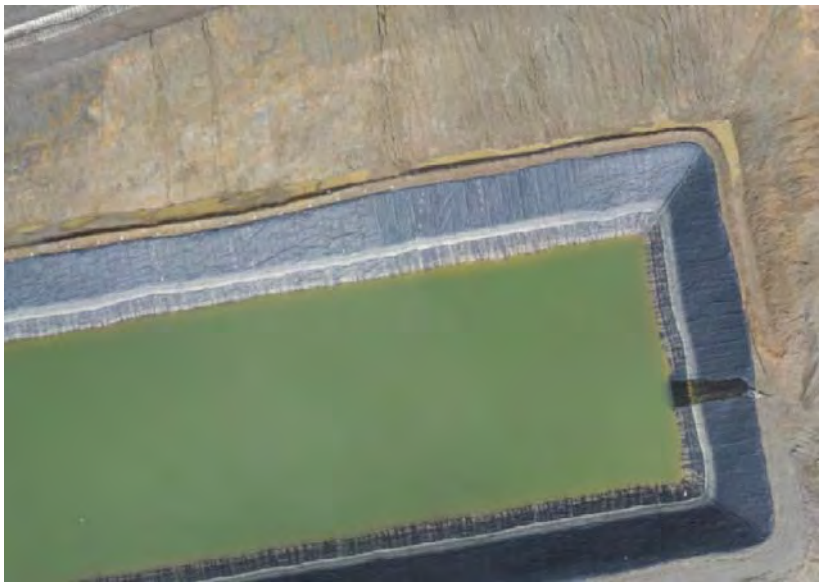

Figure 58: Pooling water above Event Pond 2020

13.3 Heap Leach Spillway

1. As noted in Section 13.1 scouring was observed upslope and downslope of the heap leach spillway, with material being deposited within the spillway. There is also damage to the spillway liner in sections; site representative reported that this was from an excavator clearing the spillway of snow during winter operations. This was noted in the 2021 inspection (Figure 59). At

the time of this inspection some of the damage had been repaired (Figure 60) but there were still damaged sections that had not been repaired (Figure 61).

Figure 59: Heap leach spillway damage (2021)

Figure 60: Heap leach spillway repairs (2022)

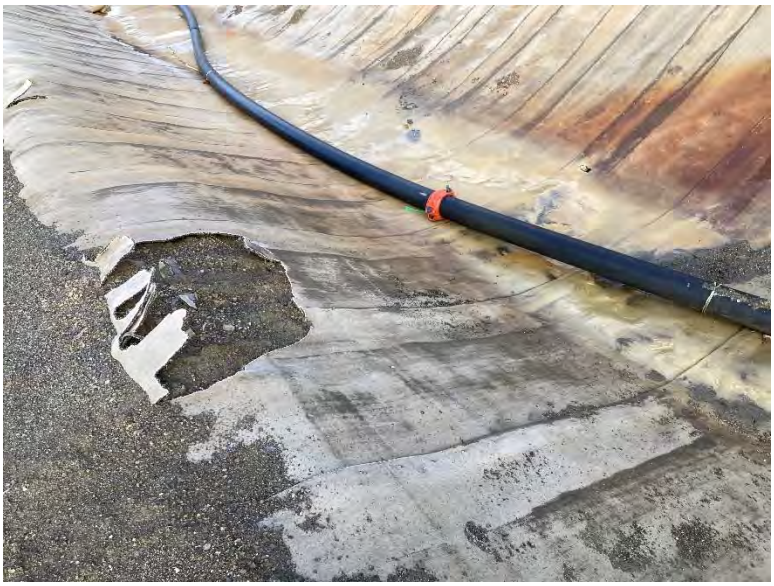

Figure 61: Heap leach spillway damage (2022)

13.4 Events Pond Emergency Spillway

1. The emergency spillway has been temporarily blocked by crushed material by site to provide equipment access to the South-East corner of the pond as there is no other easy equipment access to that area of the pond and crush needed to be placed to prevent damage to the spillway liner (Figure 62).

Figure 62: Events Pond Emergency spillway crush blockage

14 EMERGENCY POND

1. Between the 2021 and 2022 inspections an emergency pond was partially constructed to the East of the LDSP. At the time of this inspection the earthworks were mostly complete, lining had not been installed (Figure 63, Figure 64).

Figure 63: Emergency Pond (Aerial view)

Figure 64: Emergency Pond

15 DITCH A

1. Ditch A carries flow from the Platinum Gulch Dump down to the Control Pond (Figure 65). The ditch was completed at the time of the 2021 inspection.

Figure 65: Ditch A (Base of Platinum Gulch Dump)

2. A culvert for a road crossing near the new Truck shop was observed to be almost completely buried (Figure 66). The secondary culvert was also partially submerged in material.

Figure 66: Ditch A culvert blocked

16 DITCH B

1. Ditch B was completed by the time of the 2021 inspection. Erosion was observed to have created a channel next to Ditch B near the outlet into the LDSP (Figure 67).

Figure 67: Ditch B Erosion (view towards LDSP)

17 DITCH C

1. Diversion Ditch C begins at the 1500mm outlet culvert for the Control Pond and terminates in Haggart Creek. This ditch acts as both an emergency spillway if the Control Pond is filled over capacity or a conveyance channel for water released from the control pond through the low level outlet. At this point Ditch C is not in use as water from the LDSP is being pumped direct to the outlet of Ditch C at Haggart Creek when LDSP water levels are high enough (Figure 68, Figure 69). Once the Water Treatment Plant is operational this water will be diverted for treatment before discharge.

Figure 68: Ditch C Outlet (LDSP Pipeline Discharge)

Figure 69: LDSP Pumping Station

18 HEAVY DUTY TRUCK SHOP

1. The heavy duty truck shop was under construction during the 2021 inspection and completed at the time of this inspection. Some minor rilling was present on the cut slope behind the truck shop (Figure 70).

Figure 70: Truck Shop cut slopes

2. A drain ditch had been cut around the base of the cut slope (Figure 71) but it does not tie into any other ditching, as it is blocked with material (Figure 72).

Figure 71: Truck Shop Drain Ditch

Figure 72: Truck Shop Drain Ditch Blockage

3. There is a section of over-steepened cut slope near the North-West corner of the truck shop pad. Material can be seen collecting at the base of the over steepened slope (Figure 73).

Figure 73: Over Steepened Slope – Truck Shop

19 WAREHOUSE PAD

1. The warehouse pad is located South of the camp and mine admin areas. Cracking was observed at the crest of the slope off the warehouse pad as shown in Figure 74 and Figure 75.

Figure 74: Cracking – Warehouse Pad

Figure 75: Cracking – Warehouse Pad

20 WATER TREATMENT PLANT

1. A water treatment plant was under construction at the time of this inspection, adjacent to Ditch C. Slopes surrounding the water treatment plant pad appear stable (Figure 76).

Figure 76: Water Treatment Plant Slopes

21 ORICA LAYDOWN

1. An unlined, unarmored ditch from the portable structures of the laydown has pools of sediment (Figure 77) but the overall grade of the ditch continues to flow to the sump (Figure 78) uninterrupted.

Figure 77: Orica ditch sediment build-up

Figure 78: Orica ditch sump & drain culvert

2. Since the previous inspection sediment and material has accumulated behind the Orica site trailer from the cut slope behind it.

Figure 79: Orica site trailer sediment build-up

22 UN-NAMED STOCKPILE AREA

1. Several un-named overburden stockpiles have been placed to the south of the HLF and Event Pond. Some of the stockpiles have over-steepened sides (Figure 80, Figure 81), but there is little risk to other infrastructure. The area is currently mostly un-used.

Figure 80: Some stockpiles with steep side slopes

Figure 81: Additional stockpiles with steep side slopes

23 RECOMMENDATIONS

23.1 General

1. VGC should assign a qualified, on site, individual to be responsible for monitoring and documentation of any mass earth structures that have significant risks in the case of a failure. The individual should develop a standard operating procedure for the monitoring and risk management of these structures. This individual should be responsible for coordination with a qualified professional to review monitoring data for concerns and trends if they are not qualified themselves.
    a. Note, VGC has instituted monitoring programs since the 2021 inspection including regular scanning and review of data on the MSE walls, open pit, and the two rock dumps. These programs should be continued with VGC outlining monitoring program protocols in standardized documents, and with all data saved for review.
2. VGC should continue to assign individuals to document and be responsible for the monitoring and construction of any structures to determine if the structures are constructed in accordance with design. Any variations between design documents and final construction should be included in final record drawings.
3. Any finalized construction of mass earth structures should include a final construction report that includes any operational and maintenance requirements (if any) to ensure stability of the structure.
4. VGC should consider a monitoring program to assist in early warning and detection of any movements in mass earth structures. Such a program might use permanent survey points, slope inclinometers, piezometers, or other tools to measure internal/external movements and pore water pressures. Such a monitoring program should be developed with the assistance of and be implemented with the oversight of a qualified professional.
    a. Note, VGC has instituted monitoring programs since the 2021 inspection including regular scanning and review of data on the MSE walls, open pit, and the two rock dumps. These programs should be continued with VGC outlining monitoring program protocols in standardized documents, and with all data saved for review.
5. For any stockpiles, cut slopes, and/or fill slopes with over-steepened slopes that do not require immediate rectification (due to proximity to structures, roadways, active work areas, etc) VGC should still cordon off the area above and/or below the over-steepened slope depending on what would be accessible to site staff.
6. VGC should consider a ditch and culvert monitoring program to ensure ditches and culverts are cleared of sediment build-up before full blockage occurs. Culvert installation should include a flag/post at either end of the culverts to help identify culvert locations in case material build-up obscures culvert locations.

23.2 LDSP (Control Pond)

1. Monitor cut slopes above Ditch A for further erosion, sloughing and cracking.

23.3 Secondary Stockpile

1. Monitor over-steepened slopes, cordon off if accessible by site staff.
2. Tie the perimeter ditch into the collection sump.

23.4 Heap Leach Facility (HLF)

1. Continue to monitor the toe slope below the HLF for rill erosion.
2. Check HLF Interception Ditch and monitor sediment collection. Clear sediment collection at culverts.

23.5 Heap Leach Overburden Stockpile

1. Continue to monitor pile for further movement.

23.6 Open Pit

1. Monitor pooled water at base of pit, remove water via trash pump or other solution as needed.

23.7 Platinum Gulch Dump

1. Monitor pooled water and cracking on first bench.

23.8 Eagle Pup Dump

1. No specific recommendations at this time.

23.9 Primary Crusher and MSE Wall

1. Continue to develop the monitoring program currently in place for the MSE walls.
    a. Note, VGC has instituted a monitoring program since the 2022 inspection (evidence conveyed from site via email) including regular prism scanning and review of data on the MSE walls. These programs should be continued with VGC outlining monitoring program protocols in standardized documents, and with all data saved for review.

23.10 Secondary/Tertiary Crusher and MSE Wall

1. Continue to develop the monitoring program currently in place for the MSE walls.
    a. Note, VGC has instituted a monitoring program since the 2022 inspection (evidence conveyed from site via email) including regular prism scanning and review of data on the MSE walls. These programs should be continued with VGC outlining monitoring program protocols in standardized documents, and with all data saved for review.
2. Monitor sediment build-up above the MSE wall.

23.11 ADR

1. No specific recommendations at this time.

23.12 Event Pond

1. Monitor minor erosion of cut slopes and maintain as required.
2. Monitor pooling water above the North side of the Event Pond and regrade area to prevent pool formation or install a water handling system (sump pumps, etc.).
3. Monitor material deposits on HLF spillway and Event Pond to ensure the spillway and pond designs are not compromised through either blockage of flow or reduced pond capacity.
4. Repair excavator damage to HLF spillway liner.

23.13 Emergency Pond

1. No specific recommendations at this time.

23.14 Ditch A

1. Clear sediment build-up from culvert at the road crossing near the Truck Shop. Monitor culverts for further sediment build-up.

23.15 Ditch B

1. Monitor erosion adjacent to Ditch B near LDSP outflow.

23.16 Ditch C

1. No specific recommendations at this time.

23.17 Heavy Duty Truck Shop

1. Monitor cut slopes for rilling and erosion.
2. Connect drain ditch to other main ditches on site (currently does not connect to anything).
3. Monitor over-steepened slopes near the Truck Shop.

23.18 Warehouse Pad

1. Monitor cracking behind the warehouse pad. Come up with a solution to re-work slope below warehouse pad to eliminate cracking issue.

23.19 Water Treatment Plant

1. No specific recommendations at this time.

23.20 Orica Laydown

1. Monitor perimeter sump for flow interruptions/blockages and consider re-trenching if pooled water observed.
2. Consider re-sloping area behind Orica site trailer to prevent further sediment build-up, remove existing build-up.

23.21 Un-Named Stockpile Area

1. Flag over-steepened slopes in area to protect site staff. Consider dismantling over-steepened slopes depending on proximity to roadways, areas frequented by site staff.

24 CONCLUSION

The structures reviewed in this inspection generally show little evidence of movement or risk indicators. Where risk of movement was identified, the risk is typically low and the consequence of a small instability is managed by minimizing exposure to workers, infrastructure or high value natural resources. Slopes reviewed meet the recommendations for slope angles in most locations.

VGC representatives have noted that they have surveys and monitoring programs for infrastructure where a risk of failure would have significant consequences (i.e. the Open Pit, Platinum Gulch Dump, HLF) but review of that survey data was not included as a part of this inspection. Comparisons to inspection reports from previous years have been noted where relevant.

There are some minor erosional and stability concerns within the project, that can be addressed with some minor planning and maintenance as mining operations continue in order to moderate or eliminate the associated risks.

We trust this report satisfies your requirements at this time and thank you for the opportunity to work with you on the project. If you have questions or concerns do not hesitate to contact our office.

Yours truly,

ALLNORTH CONSULTANTS LIMITED

Prepared By:

Spencer Bergin, EIT

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Date 2022-12-07
PERMIT NUMBER PP 123
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Appendix A Site Plan (2022 Inspection)

Heap Leach Facility (Phase 2)
HLF Over-Burden Collapse
ADR Plant
Heap Leach Facility (Phase 1)
Event Pond
LDSP (Control) Pond
Water Treatment Plant
Un-named Stockpile Area
Emergency Pond
Eagle Pup Dump
Ditch C
Ditch B
Secondary Stockpile
Heavy Duty Truck Shop
Warehouse Pad
Secondary/Tertiary Crushers
Primary Crusher
Open Pit
Ditch A
Platinum Gulch Dump
Orica Laydown

Appendix B Site Plan (2021 Inspection)

Heap Leach Facility
(Phase 1B Expansion)
Former Nu-way Crusher Pad
ADR Plant
Event Pond
LDSP (Control Pond)
Un-named Stockpile Area
Ditch C
Ditch B
Secondary Stockpile
Secondary/Tertiary Crushers
Primary Crusher
Open Pit
Ditch A
Orica Laydown
Platinum Gulch Dump

Appendix C Site Plan (2020 Inspection)

Heap Leach Facility
(Phase 1B Expansion)
Former Nu-way Crusher Pad
ADR Plant
Event Pond
LDSP (Control Pond)
Un-named Stockpile Area
Ditch C
Ditch B
Secondary Stockpile
Secondary/Tertiary Crushers
Primary Crusher
Open Pit
Ditch A
Orica Laydown
Platinum Gulch Dump

Appendix D Site Plan (2019 Inspection)

N
Phase 1 Interception Ditch
Upper Overburden Stockpile
Heap Leach Facility
Phase 1 Heap Leach Facility
Borrow Pit / Future Landfill
ADR Plant
ADR
Event Pond
Events Pond
Stockpile
Unnamed Stockpile Area
Ditch C
Control Pond
Camp
Septic Field
Warehouse
Stockpile
Ditch B
LDSP (Control) Pond
Stockpile
Conveyor
Future EP WRSA
90 Day Stockpile
Stockpile
Secondary and Tertiary Crusher
Camp Road
Power Plant Substation
Waste Management
90 Day Storage
Crushing Circuit
Primary Crusher
Open Pit
Open Pit
Ditch A
Possible Future Ice Rich Material Storage
PG WRSA In Use
Platinum Gulch Dump
Explosives Storage
Orica Laydown
Transmission Line
0
250
500
1,000
Meters

VICTORIA GOLD CORP

VGC Eagle CMP Audit

P&C Project No.: VGE-31-1469

Rev No.	Date	Description	Prepared	Reviewed	Reviewed
			Originator		Client
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A	7 Feb 2023	Issued for Review	ARH	-	-

Document Title

2022 CMP Audit Summary Report

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TERMS OF REFERENCE

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1.3 This Document 4
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Mining Operation: Eagle Gold Mine

Mine Owner: Victoria Gold Corp.

Mine Operator: Victoria Gold (Yukon) Corp.

Name of Responsible Manager: John McConnell, President & CEO

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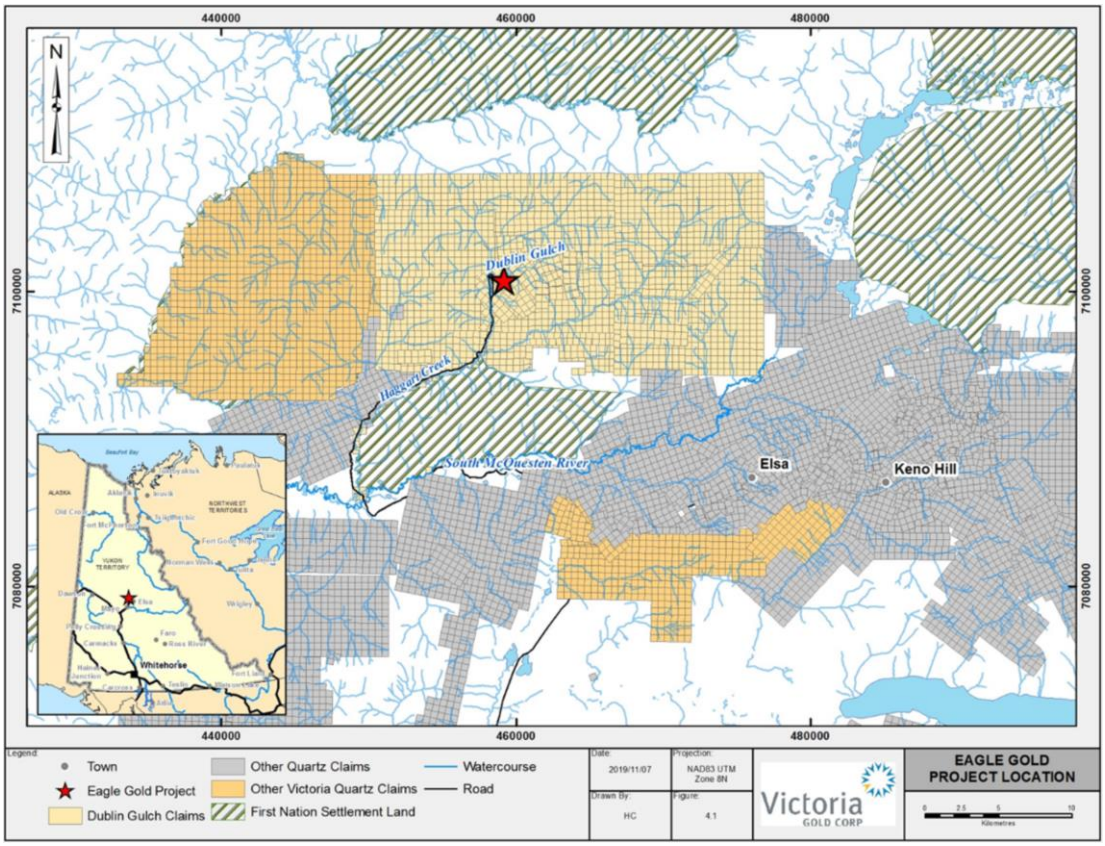
1. INTRODUCTION

1.1 Background

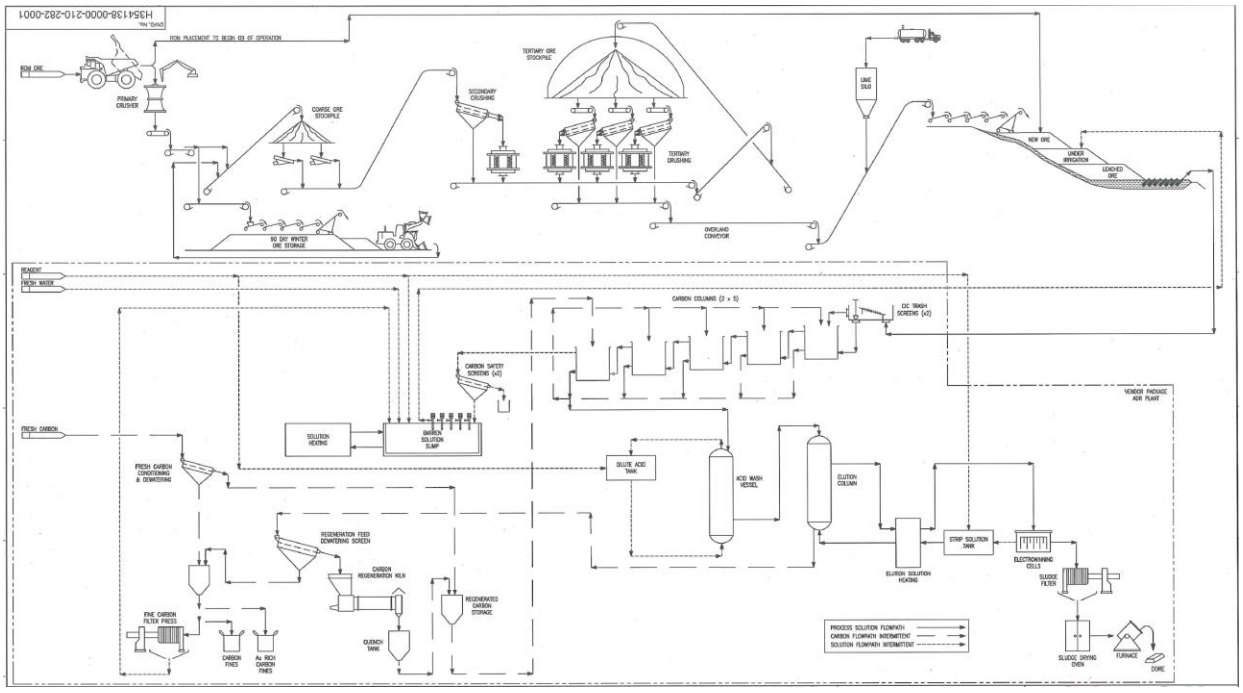
The Eagle Gold deposit is situated within Victoria Gold's Dublin Gulch property. The Eagle deposit is actively being mined using open pit methods. Ore extracted from the open pit is either fed through a three-stage crushing plant (to produce an 80% passing (P80) 6.5 mm product) and transferred by covered conveyor to the heap leach pad (HLP) or trucked as run-of-mine (ROM) ore, that bypasses the crushing plant, to the HLP.

Gold is extracted from ore into a solution by using a sodium cyanide heap leaching process within the HLP. Gold is then recovered from solution by an adsorption-desorption-recovery (ADR) carbon plant.

The Eagle Gold Mine location is presented in the picture below:



The Eagle process flows diagram is presented below:



As a condition of the Water Use License (WUL), License #QZ14-041-1, issued by the Yukon Water Board, Victoria prepared a Cyanide Management Plan. The plan is written to follow the guidelines of the International Cyanide Management Code for the Manufacture, Transport, and Use of Cyanide in the Production of Gold (Cyanide Code, the Code). The CMP is based on the Principles and Standards of Practice under the Code. The WUL requires an annual audit of the CMP by an "Independent Third-party Reviewer". The CMP provided for review was Version 2022-01, issued June 2022. This plan is still undergoing revisions and the approved plan is Version 2019-02; however, the 2022 plan serves as the basis for this report. A cutoff date of November 30, 2022 was used for data analysis purposes.

1.2 Scope of Work

Paterson & Cooke USA Ltd. (P&C) was requested by Victoria Gold Corp. (Victoria, VGC) to perform the annual audit of the Eagle Gold Mine's Cyanide Management Plan (CMP) and its implementation following the guidelines of the International Cyanide Code for the Manufacture, Transport, and Use of Cyanide in the Production of Gold (Cyanide Code, Code). Adam House, a certified technical expert auditor for gold mining under the Code performed the audit. P&C has reviewed the CMP and supporting information, and the findings of the review are presented below. The scope did not include a Cyanide Code certification audit. It did, however, include a dedicated site visit for the purpose of the audit to verify the plan implementation. P&C also relied on communication with the site team, photographs, electronic document review, and personnel interviews to conduct the assessment. Mr. House performed the 2020 CMP audit for VGC.

1.3 This Document

This report summarizes the findings related to VGC's implementation of its Cyanide Management Plan. The report evaluates the site's performance during calendar year 2022 and follows the Cyanide Code summary report format. The report addresses compliance with the CMP, areas of non-compliance, as well as recommendations for operational consideration. For relative compliance with the intents of the Cyanide Code, the June 2021 Mining Operations Verification Protocol was used.

2. PRINCIPLE 1 – PRODUCTION: Encourage responsible cyanide manufacturing by purchasing from manufacturers who operate in a safe and environmentally protective manner.

2.1 Standard of Practice 1.1: Purchase cyanide from manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide and to prevent releases of cyanide to the environment.

The operation's long-term supply contract with the cyanide supplier, Cyanco Canada Inc. (Cyanco), does not require that the cyanide be produced at a facility that has been certified as following the Code. However, the certification status of the cyanide supplier, who is the product manufacturer, was verified by review of the ICMI website.

During the audit period VGC only purchased cyanide from Cyanide Code certified producers, with the agreement to purchase 100% of their required cyanide from Cyanco. No cyanide was purchased from an independent distributor(s) during the audit period, nor are current plans or provisions in place to do so. While no secondary supply contract is in place, there are alternative suppliers available in North America that are also certified under the Code if a disruption in the supply chain necessitated an alternative supplier. Per the CMP, in the event of a disruption, VGC will make a good-faith effort to source cyanide from another supplier that is certified under the Cyanide Code, retaining correspondence to demonstrate that such an effort was made. Delivery from Cyanco would resume at soon as possible.

Cyanco provides cyanide to the Eagle Mine in intermediate bulk containers (IBC's) consisting of dual layer polypropylene/polypropylene bags with wooden overpack crates. The crates are loaded into 20-foot seaworthy intermodal containers for delivery to site by truck.

3. PRINCIPLE 2 – TRANSPORTATION: Protect communities and the environment during cyanide transport.

3.1 Standard of Practice 2.1: Require that cyanide is safely managed through the entire transportation and delivery process from the production facility to the mine by use of certified transport with clear lines of responsibility for safety, security, release prevention, training, and emergency response.

Written agreements meeting the Cyanide Code's requirements were in place for the supply contract (i.e. Cyanco) during the audit. The cyanide purchase contract includes the cyanide manufacturer's (seller) responsibility on delivering the product to the mine site.

The seller's transportation supply chain is currently certified under the Cyanide Code. Supply is through the Cyanco Western U.S./Canada Rail, Barge & Truck Supply Chain. The supply chain includes rail, barge, & truck transportation from Cyanco's Alvin, Texas, USA production plant to the Eagle Mine in Canada. The certification status of the supply chain was verified via the Cyanide Code website.

Regarding storage and security at ports of entry, the contract includes Seller´s responsibility for interim loading, storage, unloading during shipment and unloading at the operation.

Safety and maintenance of the means of transportation throughout transport is addressed as seller's responsibility in the contracts, as well for task and safety training and emergency response for transporters and handlers throughout transport.

The contract states the seller is responsible for all aspects of transportation of cyanide to the Eagle site, as well as cyanide production. The contract does not commit the Seller to maintaining ICMC certification and signatory status. However, the cyanide transporters to Eagle are certified under the Code.

The sole cyanide supply chain to Eagle is certified under the Code. The Cyanco Western U.S. / Canada Rail, Barge, & Truck Supply Chain, currently supplies the cyanide to the mine site. It is comprised of barge, rail and truck movements using the Cyanco supply chain from the Alvin, TX production plant to the customer location. The Cyanco supply chain was first ICMC certified on March 06, 2013 and underwent appropriate recertification audits since that time. This branch of the supply chain was most recently recertified on April 22, 2020 to include transportation to the Eagle site.

Cyanco is responsible for the safety and security of the transport, including emergency response. Cyanco follows their Global Transportation Emergency Response Plan (GTERP) and engages CHEMTREC for emergency response notifications in the US and Emergency Response Assistance Plan (ERAP) in Canada. Cyanco utilizes Terrapure as the emergency response contractor within Canada.

In the event of a disruption in the production or supply chain from Cyanco, VGC will make a good-faith effort to source cyanide from another certified producer, as noted above. Likewise, VGC will attempt to utilize a certified supply chain for delivery to site, if possible. If VGC must secure transportation from a supplier where any element or the entirety of the supply chain is not certified under the Code, documentation will be retained, and the certified supply chain will be reestablished as soon as possible.

4. PRINCIPLE 3 – HANDLING AND STORAGE: Protect workers and the environment during cyanide handling and storage.

4.1 Standard of Practice 3.1: Design and construct unloading, storage and mixing facilities consistent with sound, accepted engineering practices and quality control and quality assurance procedures, spill prevention and spill containment measures.

The CMP indicates that the cyanide delivery area will be "cordoned off with warning signs and visual barriers to prevent unauthorized passage of personnel and equipment while the cyanide intermodal containers are being offloaded". In practice, signs and barriers are not used for the offloading process; however, spotters are utilized to keep personnel away from the area while the crane is unloading a container from the truck. Observation of an offload was not possible at the time of the audit, as no deliveries were received to observe; however, site personnel confirmed that spotters are used during the offload and that signs and barriers are not. The CMP should be updated to reflect the actual operational practices.

The plan indicates that appropriate warning signs will be placed at all entry doors to the ADR plant. Placement of signs had been previously verified, but at the time of the audit, the signs had come off of the building. Appropriate signage indicating that no eating, drinking, smoking or open flames are permitted must be placed at all entrances to the ADR plant.

A single container is to be placed on a concrete storage pad at the main entry to the ADR plant to allow operations access for unloading the cyanide crates for use. The intent of the pad is to permit the dry retrieval of any potential spillage of cyanide. A dedicated concrete pad was verified for this purpose with placement of a single intermodal container in place for use.

A dedicated area within the ADR plant is used for the short-term storage of the IBC's as they are prepared for use. As noted above, access to the building is to contain appropriate warning signs, consistent with the language specified in the Code; however, the signs have come off over time and must be replaced. The storage area also includes a HCN detector with audible and visual alarms, combination safety shower and eyewash station, and dry powder fire extinguishers for use in an emergency. Figure 4.1-2 showing the location of emergency equipment is from the facility design. Modifications to the locations of some equipment, including the addition of a combination safety shower/eyewash station at the CIC trash screens has occurred, and the figure should be updated in the CMP to reflect actual installations.

Eagle uses cyanide from IBC containers, which are stored in the sea containers until they are brought into the plant and prepared for use. The cyanide mixing system, including the cyanide

mixing and cyanide storage tanks, was designed by Hatch. A complete set of design drawings was available for review by the auditor. These drawings are stamped by a Certified Professional Engineer Registered in the Yukon Territory.

Observations within the plant confirmed that the cyanide mixing area was located within the internal structure of the process plant within a dedicated concrete containment area. The mixing system appeared to be maintained in good condition. Cyanide mixing and storage tanks were located within concrete berms. The mixing area is also subject to inspections each shift to detect any obvious releases or failure in containment. Shift reports were provided for review during the audit.

The cyanide storage area is located inside the plant area and located far away from communities and surface waters. The cyanide storage is adjacent to the process plant building, where the Process operations personnel are located. The process plant has HCN gas monitors equipped with visual and audible alarms at the cyanide mix area that will alert employees in case of a release of HCN gas. Operators are also required to have a portable HCN monitor in use. In addition, the standard operating procedure VGC-CMP-SOP-020 – Cyanide Emergency Response Procedures covers multiple emergency scenarios, including for the process plant in the event of high concentrations of HCN gas.

Any potential spills of solid cyanide from the IBC containers in the bulk storage area will be contained within the sea container. Spillage of any dry product during unloading of the containers would be contained on the concrete pad, as noted above, allowing for dry cleanup. Spillage inside the plant would also occur within the concrete containment area, allowing for dry cleanup.

Eagle has a preparation area for cyanide that includes a mixing tank and a storage tank. There are solution level indicators with high-level alarms installed on both tanks. These levels are continuously monitored from the control room. No failures of the level indicators were reported. The auditor observed the HMI showing that the level indicators were functioning correctly.

Cyanide mixing and storage tanks are secured to solid, reinforced concrete pedestal-type foundations and are contained within concrete bunded areas which appeared to be in good condition. The cyanide mixing and storage containment volume is not the recommended 110% of the largest tank (42 m^3). At 15 m^3, the containment is approximately 32% of the required volume, including the dedicated sump that reports back to the mixing tank. A low point in one section of the containment wall would direct any excess solution into the main containment area beneath the carbon columns, which has a volume of 83 m^3. This combined containment exceeds the 110% required. In addition, the carbon column area also has a dedicated sump to evacuate any spillage to the discharge launder of the final carbon column. As-built documentation verifying the

containment volumes was prepared by a P. Eng. with JDS Energy & Mining Inc. and was made available for review during the audit.

The cyanide storage is located in an outdoor area west of the process plant building. As such, it has adequate ventilation, and build-up of hydrogen cyanide gas is unlikely to occur. The site uses the characteristics of the IBC's, securely stored within the sea containers, to meet the intent of the Code requirements. The risk of potential contact with meteoric water is very low. The cyanide storage containers are secured with a lock and positioned door to door such that access to the cyanide containers is restricted.

The cyanide mixing and storage tanks are located in southwestern portion of the plant area, near the main rollup equipment door. The building appears to have appropriate ventilation to prevent build-up of hydrogen cyanide gas during mixing. These tanks are located within the plant building and has restricted access. The area can only be accessed with the presence of authorized operations personnel and use of a personal HCN detector is required. Operations recently added a strobe light to the entrance of the ADR plant to alert approaching personnel that a cyanide mix is in progress. The cyanide mixing and storage tanks are stored within a dedicated containment area with concrete berms, with no other materials permitted to be stored in this area.

4.2 Standard of Practice 3.2: Operate unloading, storage and mixing facilities using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.

The empty cyanide bags are triple rinsed over the mix tank after the contents are emptied. The rinsed bags, including the liner, plywood crate, and strapping materials are collected and transported to a secure, onsite incinerator for disposal, according to SOP-PRO-206 – Controlled Disposal of Sodium Cyanide Packaging and SOP-SSV-201 – Handling of Rinsed Cyanide Bags for Incineration. The packaging materials are stored inside of a secure sea container until they are incinerated. Rinsing, and disposal, including incineration were observed during the audit. According to SOP-PRO-206, the materials for disposal are to be wrapped with purple duct tape and the operators initials and the date are to be written on the tape. In practice, the bundles of waste are secured with the waste banding from the IBC. The procedure should be updated to reflect the operational practice.

Eagle has SOP-PRO-201 – Sodium Cyanide Solution Preparation that outlines the requirements for inspection, observation and mixing of cyanide solutions, including the sequence required for the cyanide mixing process. It also includes instructions for the prefill of the cyanide mixing tank with water and ensuring a pH of at least 11 prior to cyanide addition is obtained. A pH of 11 is adequate to avoid HCN evolution, but remains below the threshold for dissolving silica, which is problematic

for operations. The pH is achieved through the addition of sodium hydroxide to the mix tank, or through the pH from the residual solution remaining from the prior batch. This procedure also requires that any solid cyanide spillage in the mixing area must be swept up for disposal and the area cleaned with hypochlorite solution to detoxify any residue before being hosed to the sump. The availability of hypochlorite solution was confirmed and in interviews with operators, this is the current operational practice.

The Cyanide Mixing Process procedure requires operators to use the appropriate personal protective equipment (PPE) during mixing activities. These include both standard PPE required for operations, as well as specialty items such as steel-toed boots, rubber gloves, rubber boots, approved respirator, face shield, chemical suit with hood, hardhat, safety glasses, hearing protection and a personal HCN detector. The PPE requirements are further described in SOP-PRO-201 – Sodium Cyanide Solution Preparation. The mixing process was observed by the auditor during the site visit. The CMP references a video monitoring system to allow remote observation of the mixing area; however, site confirms that the video monitoring system, while installed, is not formally utilized to observe cyanide mixing. The procedure does require two operations personnel for cyanide mixing with the area barricaded and secured from unauthorized access during mixing. In addition, a “Mix in Progress” strobe and sign have been added to the ADR to alert personnel that cyanide mixing is underway. Remote video monitoring capability is considered best practice and formal observation during mixing should be considered, but the current procedure satisfies the intent of the Code.

Procedure SOP-PRO-204 – Sodium Cyanide Site Storage indicates that the sea containers are handled using a telehandler to unload the delivery trucks and either to place the containers within the bulk storage area or on the concrete pad near the ADR plant and cyanide mixing area. This procedure also indicates that containers shall not be stacked. This practice was observed, and a single level of containers is maintained. The solid cyanide product inside the IBCs already comes with red colorant dye, as delivered by Cyanco and the red color was observed during the mix. The site also utilizes a mobile crane for offloading the delivery trucks. The procedure should be updated to reflect this option as a means of unloading.

The cyanide mixing process was observed during the audit. Prior onsite reviews, the procedures, and the documentation provided during the review indicated that Eagle has appropriate SOPs and practices to handle and prepare cyanide solutions in a safe manner.

5. PRINCIPLE 4 – OPERATIONS: Manage cyanide process solutions and waste streams to protect human health and the environment.

5.1 Standard of Practice 4.1: Implement management and operating systems designed to protect human health and the environment including contingency planning and inspection and preventive maintenance procedures.

Eagle has several documents that are intended to support the safe operation of cyanide facilities. Some of these key items include the Cyanide Management Plan, the SOP's related to cyanide operations, and the Heap Leach Facility Operation, Maintenance and Surveillance (OMS) Manual. All SOPs include a section related to PPE requirements and considerations of safety hazards. The operation has identified equipment, personnel, and procedures for cyanide unloading and mixing activities as well as for storage facilities, processing facilities, and all associated piping and pumps as having contact with cyanide. SOPs were reviewed and found to be sufficiently detailed to enable safe operation. Several minor items within the CMP and SOPs were recommended to be updated to reflect the now as-built nature of the facility for consistency with the delivered project and operational practices. These updates should be included as part of the 2023 CMP update cycle.

Eagle has manuals and procedures that identify the assumption and parameters for the safe operation of the facilities. The Operational Maintenance and Surveillance Manual considers routine operational aspects, as well as maintenance requirements and surveillance of the facility. The Heap Leach Facility Contingency Water Management Plan addresses the design storm event considerations for the HLF, including the Probable Maximum Flood. Maximum operating in-heap pond level and response actions at various levels are detailed in the OMS. Historic in-heap pond and event pond level data during 2022 was reviewed. The 2022 data showed that the in-heap pond was at or above the trigger levels on multiple occasions throughout the year. Most of the events were short in duration and the pond levels returned to the desired points within a few days. Compounding factors, including significant rain events, crusher issues limiting fresh ore placement, and pump issues led to elevated pond levels from mid-October through the beginning of November. Site was able to manage these issues as they arose until the levels for the in-heap pond dropped below the trigger levels. There were no overflow events from the in-heap pond to the event pond or the receiving environment noted. The event pond was above the "Red" trigger level of 888 meters above sea level (masl), as indicated in the HLF OMS Manual in nearly 90% of the data points provided. However, in discussion with site, the level represents approximately 33% of the pond volume and is still over six (6) meters below the emergency overflow level. The

HLF OMS Manual should be reviewed, and the trigger elevations adjusted, if required, to reflect the site operating practices.

The Environmental Monitoring, Surveillance and Adaptive Management Plan (EMSAMP) is in place to manage key items such as surface water hydrology, surface and ground water quality, HLF and pond leak detection, and storage volumes. The plan details indicators, thresholds, and adaptive management measures to be taken for threshold exceedances.

The CMP also includes monitoring point of 50 ppm weak acid dissociable (WAD) cyanide present in the event pond to trigger wildlife deterrent measures. Further, if the need arises, and for the protection of the environment, a cyanide detoxification system is available in the ADR plant to assist in reducing the cyanide concentration of process solutions. The current CMP states that a hydrogen peroxide system would be used to detoxify, if necessary. The CMP also indicates that copper sulfate and ferric sulfate are on hand to aid in detox; however, these reagents are no longer on site and are not intended for use if detox is required. It was explained to the auditor that the site has modified the detox plan from solely hydrogen peroxide to a Caro's acid system. Caro's acid is a very efficient method for detoxifying cyanide and is superior to peroxide alone. The CMP and all other relevant documents should be updated to reflect this change during the 2023 audit cycle.

The pond level and subsequent cyanide concentration are reviewed on a continuous basis to maintain a concentration that is not toxic to avian and terrestrial wildlife that could come in contact with the pond water for a short period of exposure. In normal operations, Eagle does not have direct water discharges that have been treated for cyanide released to surface waters.

The CMP and OMS include a list of critical aspects and areas to be inspected and inspection frequencies. At the HLF and ADR plant, Eagle conducts inspections for pipeline leaks, ponding or pooling of solution, wildlife, condition of interceptor ditches, pond levels, condition of the facilities, functionality of safety equipment, signage, facility integrity, etc. In the case of the process plant, inspections include: the bulk cyanide storage area, the cyanide mixing and storage area, the ADR plant primary and containment areas, the pregnant and barren solution pipelines, among others.

Eagle has developed and implemented a management of change (MOC) process for operational changes to ensure that a systematic approach is followed with the aim of ensuring continued safety throughout the process. These systematic processes ensure that the change is managed in a proactive fashion. The MOC process ensures safety, health, and environmental risks and hazards are properly controlled when making changes to the facility, operation, or personnel. The MOC uses a format that includes a description of the proposed change, a risk assessment section,

review, evaluation, and approval. Several MOC examples were reviewed as part of the audit for both cyanide and non-cyanide facilities.

Eagle has implemented a HLF Contingency Water Management Plan for the site to respond to upsets in water balance, problems identified by inspections, and to address temporary shutdowns of the facilities. Procedures for stopping and starting the plant facilities during events such as a power outage, provide response measures for emergencies related to failures of cyanide equipment, and response plans to address upsets in the process water balance. Contingency scenarios are included in the CMP, OMS Manual and SOPs. The OMS also includes activities related to surveillance of the HLF and solution pipelines and actions to be taken in case of a line rupture. Any spillage within the ADR plant are contained within the process plant containment. The pregnant and barren solution lines are contained within lined ditches or on the lined HLF, allowing for containment of any leakage. Should the in-heap pond become overwhelmed, solution would report to the events pond. In relation to a temporary closure or cessation of operations scenario, Eagle addresses options to manage solution in the HLF Contingency Water Management Plan, including the use of the in-pad and event ponds volumes, the use of liner to reduce meteoric water infiltration, or the use of enhanced evaporation.

Eagle has a program to conduct routine inspections of cyanide facilities, with the results of the inspections reviewed by the designated staff at least weekly. The inspections are conducted in different areas of the operation, with the frequencies varying from every shift to special annual inspections. The inspection program of cyanide facilities including unloading, mixing and storage activities and frequency of inspections were found to be sufficient to assure that the operation is safe and functioning within design parameters. The auditor reviewed inspections records and verified that inspections are conducted on a consistent manner. A gap was observed in HLF inspection reports where inspections were not conducted, or documentation was incomplete. The management team has addressed the deficiency and regained control of the inspection documentation.

Multiple inspection reports for the HLF and ADR plant were reviewed. Operators performed the inspections, with several noting deficiencies requiring attention. Work requests were written for the items, which appeared on multiple inspection forms, until the issue had been addressed. One item noted on the inspection forms and during the site visit was related to signage. The warning signs on the ADR building exterior and at the HLF, as well as on the pregnant and barren solution lines, were missing or illegible. The site climate makes the sign life short, especially for sticker type signs. Replacement with more robust signage is recommended for the building and HLF entrances. The stickers for contents and direction of flow for the pipelines will require continued monitoring and replacement when necessary.

During the site visit, the auditor verified the condition of tanks, secondary containments, pipelines, pumps, valves, pipeline trench, pond freeboard. Corrections to the operating pond levels and freeboard should be made in the CMP, as noted above. Generally, the absence of salt buildup was consistently in good order; however, the presence of salts was observed around flange connections on the pump skids. An ADR plant inspection just prior to the site visit did not note the presence of any salts in this area, but the residue was in multiple locations and appeared to have been accumulating for longer than the period between the inspection and audit. The buildup should be addressed according to site procedures and operations personnel should receive additional training on what to look for during their inspections.

Eagle uses two mechanisms to document, track and close corrective actions identified during inspections: Corrective actions that are related to maintenance of equipment at the process plants and HLF are managed by the maintenance department. Work orders resulting from deficiencies related to the cyanide facilities are initiated, tracked, prioritized, planned, and closed. All other corrective actions not related to maintenance of equipment that are identified through inspections conducted by process personnel or other areas (e.g. Environmental) are tracked, implemented and followed up until closure. The auditors reviewed examples of items identified during inspections and records of the corrective actions. The inspections are reviewed by managers to ensure closure of the corrective action items.

The maintenance group has a preventive maintenance program for pumps, pipelines, valves, flow meters, gauges, level sensors, pH meters, sump pumps, filters, HCN sensors, tanks, ponds, and cyanide facilities in general. The Preventative Maintenance Plan is included in the CMP. The preventive maintenance program helps perform periodic maintenance and inspections of the integrity of process equipment, piping and tanks to ensure they are working properly. A corrective action maintenance schedule is also generated every week. Examples of corrective action records were reviewed and followed up to ensure they are being closed according to schedule. The PM program for the cyanide mixing and storage tanks follows the American Petroleum Institute (API) 653, Tank Inspection, Repair, Alteration and Reconstruction. Based on the API recommendation of external inspections every five years and the date the tanks were first placed into service in 2019, VGC should ensure that the inspections occur as part of the 2024 audit cycle.

Emergency power considerations are included in the CMP under VGC-CMP-SOP-010 – Backup Generator Operations and Maintenance. Eagle has three emergency power generators for the site. Each generator is rated for 1650 kW of output. In addition, eight (8) other generators of varying output are available on site. These three generators start automatically if there is a grid power outage to immediately restore power to the ADR Plant and HLF, allowing for the rapid restart of all critical equipment. Generators are monitored continuously via the plant control system, and they are electrically and mechanically inspected on a regular basis. The generators

operate for a five-month period as part of a co-generation agreement to supply power. When the generators are offline, they undergo regular PM's on a semi-annual basis, per the manufacturer's recommendation.

5.2 Standard of Practice 4.2: Introduce management and operating systems to minimize cyanide use, thereby limiting concentrations of cyanide in mill tailings.

This section is not applicable to the Eagle site under the Cyanide Code, as there is no milling operation.

5.3 Standard of Practice 4.3: Implement a comprehensive water management program to protect against unintentional releases.

Eagle employs a comprehensive, probabilistic water balance using the Monte Carlo simulation software, GoldSim. This model has been updated from the initial projections to include site operational data, as well as updated Climate/Meteorological data from operations, considering the proposed process plan through mine closure. An external consulting company (Mines Group, 2019) performed the initial water balance. The most recent HLF water balance update report was produced by Forte Dynamics, Inc. on April 22, 2022. The site wide water balance report was produced by Lorax Environmental Services, Ltd with an effective date of March 31, 2022. These reports were both filed as part of the VGC 2021 annual report.

The operational water balance includes the following factors: solution application rates, precipitation and evaporation rates, effects of freshet runoff, and impacts of freezing and thawing. Potential power outages are not included in the operational water balance as Eagle has emergency backup generators on site which will avoid any effects on water balance activities. However, the potential impacts of power outages on solution management are considered in the water balance update report. The event pond has a storage capacity capable of receiving 72-hours of drain down and runoff from a 100-year rainfall event, while still maintaining a 0.5m freeboard. Should solution enter the event pond, the operation prioritizes solution recovery from the pond for makeup water in the HLF rather than continuing fresh water addition.

Eagle has zero process water discharges to surface waters during operations. In closure when the leach pad begins to drain down, water collected in the events pond or excess solutions may be treated in the mine water treatment plant and discharged if water quality standards are met. A description of the water balance model and calculations are included in the Water Balance Model Reports.

Eagle conducts frequent inspections of the HLF and monitoring activities to ensure these facilities are operated according to the design criteria, following the inspection program included in the CMP and OMS manual. Process operators conduct routine inspections on the HLF, including conditions of the HLF and event ponds. The auditor reviewed inspections records and verified that inspections to the ADR Plant and HLF facilities are conducted on a consistent manner. Inspections noted any deficiencies observed, such as minor damage to the spillway liner. When deficiencies were noted, corresponding work requests were also noted.

Freeboard in the in-heap pond is monitored on a continuous basis and reported daily. The auditor reviewed historic data on the pond level and confirmed that the level was maintained below the overflow level to the event pond. The event pond level was also maintained below the trigger point, but as noted above, the levels indicated in the CMP should be updated to reflect the actual operating and trigger levels. During the site visit, the auditor observed that the freeboard was being maintained.

Climate data for Eagle has been collected since 2007. Multiple weather stations on site collects precipitation data on a daily basis. Data collected is used to compare the results to design assumptions and to calibrate the water balance model. The water balance model is updated and calibrated annually using precipitation, pond levels, solution flow rates and temperature data, as mentioned in the Water Balance Reports. Eagle is still a young operation; however, the water balance model input parameters have been updated with revised assumptions based on actual operating data, as noted in the Water Balance Report by Forte Dynamics Inc. The water balance projections will continue to be revised as necessary based on actual data.

5.4 Standard of Practice 4.4: Implement measures to protect birds, other wildlife and livestock from adverse effects of cyanide process solutions.

Eagle monitors the HLF for indications of solution ponding. If ponding is observed, the CMP and OMS outline measures to be taken to mitigate the ponding or exclude avian species from accessing the solution. Measures can include reducing or eliminating flow to the area and/or covering the ponded area with avian exclusion screens.

If process or storm water collects in the event pond, operations recycle the solution back onto the HLF as soon as possible. If the solution concentration is determined to be above 50 mg/L WAD cyanide, the site increases monitoring of the effectiveness of the installed avian deterrent devices. Eagle has implemented electronic propane gas cannons to be used to scare away birds and other wildlife getting too close to the event pond. A provision for the use of short-based or floating effigies is also included in the plan; however, deployment of these deterrents has not been

implemented since operations began. No cyanide-related wildlife mortalities occurred during the audit period for 2022.

The CMP indicates that a wildlife exclusion fence was to be installed around the perimeter of the event pond to prevent access by larger terrestrial wildlife. The fencing was not installed as part of the project. The fence was to be included for installation under the 2021 capital budget, but as of the 2022 audit, fencing around the event pond had not yet been installed.

5.5 Standard of Practice 4.5: Implement measures to protect fish and wildlife from direct and indirect discharges of cyanide process solutions to surface water.

Eagle does not have direct discharges to surface water from cyanide facilities during operation. When operations cease, process solutions will be managed by recirculating solution onto the leach pad or through evaporation. If the ponds or pad are unable to manage the solution, during closure, solution could be discharged through the mine water treatment plant if the water quality levels are met. The site has a comprehensive water management program in place to help protect against unintentional releases. Further, the facility design as a zero discharge facility aids in reducing the potential for indirect discharge.

Surface water quality monitoring data was provided for 2022, covering the period prior to the introduction of cyanide. In the sampling data reviewed, cyanide concentrations were below detection limits for the year at the various monitoring locations indicated in the Environmental Monitoring, Surveillance, and Adaptive Management Plan. The monitoring results reviewed have no measured cyanide concentrations exceeding the background levels in down gradient monitoring locations, suggesting that direct or indirect discharge is not occurring.

5.6 Standard of Practice 4.6: Implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of ground water.

The Eagle HLF was constructed with measures to protect groundwater from seepage of process solutions and water. The HLF is constructed with a dual-layer synthetic geomembrane liner system of linear low-density polyethylene (LLDPE) over a geosynthetic clay liner (GCL) system in the in-heap pond area. This design is also used for the event pond. Above the pond level in the HLF, the pad transitions to an LLDPE over GCL system. A solution drainage and collection system lies on top of the liner system for recovery and pumping of the pregnant solution. A Leak Detection and Recovery System (LDRS) is constructed in the in-heap pond and event pond which

return any solution collected to the heap or pond, respectively. This system is installed between the two layers of LLDPE to allow for detection of any leaks in the primary liner system.

The process plant is designed and operated to manage seepage and protect groundwater quality. The entire process area, including the cyanide mixing area, is contained within a reinforced concrete pad surrounded by curbs, parapets and stem walls, which provide a competent barrier to seepage. The concrete floor is sloped to drain solution into common sumps and then pump the solution back into the process circuit. All process tanks at the plant are secured to solid, reinforced concrete pedestal-type foundations and are contained within concrete berms with good condition concrete flooring. This foundation and floor system serves to prevent any seepage from the tank bottoms from entering the ground. Further, an LLDPE liner system was placed beneath the entire extents of the ADR plant and pregnant and barren solution pipeline corridor. The additional liner system further serves to minimize the potential for seepage and protect groundwater for beneficial uses.

Similar to surface water monitoring results, the site data reviewed for groundwater does not suggest any impacts from cyanide to the beneficial use of groundwater from the operation. Data reviewed showed cyanide concentrations consistently below detection limits.

5.7 Standard of Practice 4.7: Provide spill prevention or containment measures for process tanks and pipelines.

Spill prevention and containment measures are provided for all cyanide mixing, storage, and process solution tanks. The ADR plant tanks, piping, and pumps are enclosed within the ADR plant building which has a reinforced concrete slab and stem walls to provide containment. The floor is sloped to solution collection sumps. The sumps are designed to operate with automatic level sensors to return any solution collected back into the process. The combined containment within the ADR plant exceeds the minimum requirement of 110% of the largest tank. As noted above in under Standard of Practice 3.1, the cyanide mixing and storage containment is less than 110% of the tank volume; however, any excess solution would to the CIC area containment and sump, preventing release to the environment.

Other secondary and tertiary containment, including liner under the ADR plant provides for additional protection. Where the pregnant solution pipeline enters the building and the barren solution pipeline exits the building, the lines are run parallel to one another in an LLDPE lined channel, providing secondary containment. The facility design and subsequent visual inspection confirmed that pipes, tanks, and other systems containing process solution utilize carbon steel, HDPE, corrugated polyethylene, or stainless steel, all of which are compatible with cyanide and high pH solutions.

The tertiary lined event pond provides additional containment for the HLF in-heap pond to contain any spillage if the overflow level is reached. The pond has a pump back system for storm water or process solution return to the process system.

If a release of process solution outside of containment were to occur, VGC would follow VGC-CMP-SOP-020 – Cyanide Emergency Response Procedures. This includes the response requirements, as well as the remediation procedures for cyanide spills. Two small releases of 15L and 1.2m^3 occurred in 2022. The spill reports were provided for review. The response and cleanup procedures were consistent with the requirements under the CMP, and preventative actions were taken to minimize the likelihood of future occurrences of the same nature.

5.8 Standard of Practice 4.8: Implement quality control/quality assurance procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

The Phase 1A HLF at Eagle was designed by BGC Engineering Inc. with the process plant designed by Hatch. The design drawings by both firms were produced by Professional Engineers registered in the Yukon Territory and both having the appropriate Permit to Practice. Construction management was overseen primarily by JDS Energy & Mining Inc. The Eagle facility construction was performed by multiple contractors, including but not limited to Pelly Construction, The Gisborne Group, Clark Builders, and others. The quality control and quality assurance (QA/QC) programs were implemented during the initial construction of cyanide facilities at Eagle, with services provided primarily by Tetra Tech and Layfield Canada Ltd. The complete record package of the QA/QC documents was reviewed by the auditor.

The Phase 1B HLF expansion was designed by Forte Dynamics, Inc. The design was approved by a Professional Engineer registered in the Yukon Territory, having the appropriate Permit to Practice. Construction of the Phase 1B HLF was performed by Ewing Construction and the Layfield Group Ltd. CQA was provided by Tetra Tech. The complete QA/QC package for Phase 1B was provided for review by the auditor.

The final record of construction package for the ADR plant and HLF areas, including as-built drawings, is available electronically and was provided for auditor review. The packages covered the leach pad earthworks and geosynthetic liner installation, as well as the ADR LLDPE liner and concrete equipment foundations and containment area. Visual inspection during the site visit indicated that the tanks and pipelines were in good working order with no evidence of leakage, such as buildup of salts outside the flanged connections on the pump skid noted above.

5.9 Standard of Practice 4.9: Implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and ground water quality.

The CMP, the Environmental Monitoring, Surveillance, and Adaptive Management Plan, the Wildlife Protection Plan, and VGC-CMP-SOP-025 – Environmental Monitoring Procedures specify the requirements implemented by Eagle to monitor the effects of cyanide use on wildlife, surface, and ground water quality.

A comprehensive wildlife monitoring program is in place and detailed records were provided documenting the wildlife interactions and observations at the site. No wildlife mortalities related to cyanide have occurred at the site during the period of the audit.

The groundwater and surface water monitoring program also provide for an extensive program to ensure water quality is protected for beneficial uses. The documents noted above also provide requirements for sampling, preservation, chain of custody requirements, reporting requirements, etc. to ensure sample integrity is maintained. Results from the monitoring program were reviewed by the auditor as discussed previously.

6. PRINCIPLE 5 – DECOMMISSIONING: Protect communities and the environment from cyanide through development and implementation of decommissioning plans for cyanide facilities.

6.1 Standard of Practice 5.1: Plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.

Eagle has an approved Reclamation and Closure Plan (RCP) for the site, which addresses the long-term physical and chemical stability of the site, including reclamation of surface disturbances from existing development. The plan was first submitted to the Yukon Water Board in August 2014, and the plan is required to be revised and resubmitted every two (2) years on or before October 1st. The last plan submittal, and thus the current plan during the audit period covering through October 2024 was Version 2022-01, submitted in October 2022. In addition to regulatory approval, the RCP also includes engagement with First Nations groups and other stakeholders. The plan seeks to guide the return of the site to appropriate and functional ecosystems, similar to predevelopment conditions, while meeting key end land use objectives. The RCP addresses water quality, physical stability, land use, aesthetics, and public health and safety.

The RCP outlines the measures to be implemented to achieve the objectives, as well as the criteria that will be used to determine the successful implementation of the plan. The HLF facility will continue residual leaching until such time that cyanide destruction and rinsing can occur. This period will be followed by final drain down and cover. The RCP describes the use of the in-heap pond as a bioreactor to improve solution quality. Considerations of evaporation, water treatment, and revegetation of the cover with local species that have high moisture uptake characteristics are also considered in the RCP. The process plant will be decommissioned and dismantled. Foundations will be broken up to the extents possible, with reinforced concrete generally buried in place with material suitable for supporting revegetation.

As noted above, the RCP, which includes the closure cost estimate, is required by the Yukon Water Board (YWB) and the Yukon Government Department of Energy, Mines and Resources (EMR) to be resubmitted every two years.

6.2 Standard of Practice 5.2: Establish an assurance mechanism capable of fully funding cyanide-related decommissioning activities.

The RCP includes a detailed cost estimate for closure of the Eagle project, including all cyanide facilities and cyanide-related closure activities. The original cost estimate provided for a two-year peak liability, covering the construction year and first year of operation, as well as the life-of-mine (LOM) closure cost. The cost estimate was developed in compliance with the Yukon Mine Site Reclamation and Closure Policy Financial Guidelines. The estimate used unit rates and quantities for items such as earthworks, piping removal, building removal, HLF detoxification, and care and maintenance monitoring costs. Labor was assumed to be provided by a third-party, consistent with requirements under the Code. The current bonding required is to cover the two-year peak liability and surety for this bond is held by Trisura Guarantee Insurance Company, which was updated most recently on September 12, 2022, with the certified surety letter provided to the auditor for review. The bond amount will continue to be reviewed and updated, as necessary, with each subsequent resubmittal of the RCP.

7. PRINCIPLE 6 – WORKER SAFETY: Protect workers' health and safety from exposure to cyanide.

7.1 Standard of Practice 6.1: Identify potential cyanide exposure scenarios and take measures as necessary to eliminate, reduce and control them.

The CMP includes procedures describing the proper execution of cyanide-related tasks, such as unloading bulk cyanide shipments, mixing cyanide batches, plant operations, confined space

entry, and equipment decontamination for maintenance. The CMP and associated SOPs provide guidance as to how tasks should be conducted to reduce or eliminate worker exposure. The CMP requires regular review of the SOPs with updates occurring, as needed. Several of the procedures reviewed for cyanide related tasks have undergone multiple revisions.

The procedures indicate to the operator the personal protective equipment (PPE) that is required for each task to be undertaken. Area inspections are also conducted each shift to minimize risk to employees. Personnel are also required to conduct and document pre-work inspections prior to carrying out a specific task.

Eagle has implemented procedures for the review of proposed modifications to procedures. The Management of Change procedure requires review and approval of a cross-functional team, including representatives from Health, Safety & Security, Environmental, Maintenance, Mine Operations, Processing, Site Services, Information Technology (IT), Supply Chain, and the General Manager prior to implementing any proposed change.

Input from workers is considered in procedure development and while evaluating the effectiveness of the procedures. The workers can contribute to the procedures through direct comments on the procedure, pre-task inspections, or during safety meetings.

7.2 Standard of Practice 6.2: Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.

Eagle has determined the appropriate pH for limiting HCN evolution during mixing and operations. The CMP indicates that a pH of between 10 and 10.5 should be maintained in the pregnant and barren solutions. In the CMP, the pH of the solution prior to adding cyanide is indicated to be at least 11 prior to cyanide addition; however, VGC-SOP-PRO-201 – Sodium Cyanide Solution Preparation requires a pH of 10.5. Operator logs documenting the pH of the process solutions every two hours and were found to be maintained above pH 10 for the process plant. The control system continuously monitors and trends for the mix tank pH, indicating that it is being maintained above pH 10.5. Both the operator logs and pH trend were reviewed by the auditor. The CMP should be updated to reflect the operational practices of the site and the mixing SOP.

Eagle monitors the cyanide concentration in the HLF and plant to determine the appropriate cyanide addition rates, and operations adjusts the addition rates as necessary. Eagle was designed with a cyanide concentration of 500 ppm in the barren solution; however, current operating procedures target 250 ppm unless otherwise directed by the process department management. The operating data shows that the site solution concentration is significantly lower than the

design point, with operating logs indicating actual concentrations typically ranging from approximately 200 to 250 ppm, with rare concentrations noted around 280 ppm. Cyanide concentrations are measured and recorded every two hours, along with the pH, with adjustments to the addition rate made as necessary to control at the target concentration.

A pre-startup risk assessment was undertaken to determine the locations that the HCN detectors should be placed. These locations were selected, based on where workers could be exposed to HCN at 10 ppm on an instantaneous basis or 4.7 ppm continuously over an 8-hour period. There are nine detectors placed throughout the ADR Plant. The detectors are Dräger brand and have both audible and visual alarms, with the low-level alarm point at 4.7 ppm with an amber strobe and 10 ppm with a blue strobe. The stationary HCN detectors are calibrated monthly on a regular PM schedule, per the manufacturer's procedure. Maintenance records for all 9 units were reviewed and found to be consistently calibrated, per the schedule and spanned over a one-year period.

In addition to the stationary detectors, operators in the ADR Plant carry a personal gas detector. The personal detectors are Gas Badge Pro units. These units are to be bump tested daily, prior to use. Calibration logs provided indicated that the instruments were generally functioning as they were supposed to with personnel performing required bump tests and calibration.

Warning signs advising anyone entering the area that cyanide is present were previously posted at the entrances to the facility. However, as noted above, many of the signs are no longer present, as they were not well suited for the climate. Permanent replacement signs should be placed at the entrances to the ADR plant and the HLF as soon as possible. A new feature and practice added since the previous audit cycle was the installation of a warning strobe light on the exterior of the ADR plant that warns personnel approaching from the outside that a cyanide mix is in progress. Anyone coming on site, including visitors and contractors, must receive site hazard training, which includes basic information regarding cyanide.

Safety showers, eye wash stations and dry powder/non-acidic sodium bicarbonate fire extinguishers are located throughout the operation. An additional combination shower/eyewash unit was previously recommended at the CIC feed level. This unit has been installed and is functional. These items are maintained, inspected, and tested on a routine basis, as indicated in VGC-SOP-PRO-205 – Sodium Cyanide Facility Inspection.

The mixing and storage tanks, as well as pipelines containing cyanide are clearly identified to alert personnel to the contents. All lines containing cyanide, including low concentrations, are labeled with the specific contents and flow direction. Line labels are orange with black lettering. In addition, concentrated cyanide lines are indicated with orange/black labels, as well as purple tape

on both sides of the label to further alert individuals to the presence of concentrated cyanide. The solid cyanide product inside the IBCs already comes with red colorant dye, as delivered by Cyanco, and the red color was observed during the mix in the concentrated solution.

Safety Data Sheets (SDS), which include first aid procedures and additional information on cyanide safety and exposure, are found in hard copy in a binder near the ADR Plant control room and cyanide mix area. In addition, electronic copies of the information are available to all employees via the process drive on the site network. Similar information is posted directly on the cyanide mixing and storage tanks, including exposure symptoms, first aid and emergency response. All signage and SDS are printed in English, the language of the workforce. The SDS book was found to be missing the documents for liquid sodium cyanide and the hypochlorite solution. Operations should obtain the proper SDS for each reagent and ensure they are included in hard copy and electronically.

The CMP includes procedures to investigate and evaluate cyanide exposure incidents to determine if the programs and procedures are adequate or if changes are required to protect worker health and safety or improve emergency response to cyanide exposures. The MOC process would be utilized to implement any recommended changes.

7.3 Standard of Practice 6.3: Develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

Eagle has potable water supplied to the safety showers and eyewash stations, oxygen, a resuscitator, Diphoterine, and a radio are readily available at the ADR Plant, near the mixing and storage area. The condition and contents of the kit were reviewed during the audit and found to be maintained intact and in good condition.

The CMP references the Cyanokit, as being available at the medical clinic and in the ambulance. The kits are checked for proper storage, inventory and product expiry by the medical clinic staff. Site records were reviewed during the audit, as well as verification of the kits in both the clinic and ambulance.

Eagle has a written emergency response plan and procedures for responding to cyanide related incidents. The plan and procedures include responding to cyanide exposures, the site's "Code 1" procedure, rapid response process, communications, air ambulance evacuation and response to medical emergencies. Eagle has a medical clinic staffed 24/7 with one advanced care paramedic or nurse and one primary care paramedics with IV endorsement to allow administration of the Cyanokit. The clinic and the paramedics are under the medical direction of Iridia Healthcare. The site Cyanokit administration procedure was developed and approved by Iridia.

In addition to the clinic staff, the site has an emergency response team to provide primary response, rescue, and recovery, if required. An ambulance is available on site; however, due to the remote location of the site and limited regional resources, an emergency extending beyond the capabilities of the site clinic would likely require patient transport by air. The primary destination for air transport is Whitehorse General Hospital; however, if travel to Whitehorse is not possible, resources are available at the Mayo Nurses' Station, as well as Dawson City Community Hospital. If a patient requires transport offsite for a cyanide related emergency, the procedures require attendance by one of the site paramedics and at least one Cyanokit must accompany the patient.

The CMP requires that mock drills related to cyanide emergencies be conducted at least annually. Examples of two mock drills for 2022 were provided for review. Site should continue to ensure drills with varying scenarios are conducted at least annually, consistent with the CMP. The mock drills should include a debrief of the incident response, as well as documentation of any lessons learned or opportunities for improvement in the CMP or other procedures.

While it is ideal, the Cyanide Code does not require written confirmation that a formal agreement be in place for offsite medical facilities to assist in an emergency. As noted in the CMP, formal agreements are not in place for Eagle, nor are they permissible to nongovernmental agencies at this time. However, the facilities are aware of the potential need to treat patients who have been exposed to cyanide. Medical facilities often have cyanide antidote kits (e.g. sodium nitrate/sodium thiosulfate) on hand to treat cyanide exposure from sources such as fires, and while the availability at the sites relevant to Eagle were not confirmed, it is recommended to contact the local providers to gain an understanding of what other treatment options may be available and that the CMP be updated to reflect any other confirmed treatment options for offsite care.

8. PRINCIPLE 7 – EMERGENCY RESPONSE: Protect communities and the environment through the development of emergency response strategies and capabilities.

8.1 Standard of Practice 7.1: Prepare detailed emergency response plans for potential cyanide releases.

Eagle has developed the CMP, the HLF OMS, the Environmental Monitoring, Surveillance, and Adaptive Management Plan, the HLF Contingency Water Management Plan, and the Emergency Response Plan (ERP), all of which address response to the accidental release of cyanide. The

Emergency Response Plan considers multiple potential failure scenarios involving cyanide and the site-specific environment, operation, and response.

Cyanco and its supply chain are responsible for the safe transport of cyanide to the site. As such, any cyanide related spills prior to delivery at site would be managed by Cyanco or their transporters. If necessary, site personnel could be requested to assist in an offsite response.

Multiple emergency situations that could occur at site are addressed through the various documents, including the CMP and ERP. The plans detail responses specific to cyanide spills or leaks including process solution and dry reagent spills and makes provision for initial response, first aid, spill reporting contacts and spill control and cleanup. The HLF OMS provides specific procedures related to the heap leach area. Any potential emergency that has the potential to affect a community will trigger the notification requirements outlined in the Emergency Response Plan.

8.2 Standard of Practice 7.2: Involve site personnel and stakeholders in the planning process.

Eagle has included its workforce and stakeholders as potentially affected communities in emergency response planning. Coordination with local offsite medical providers was reported to have occurred, including air transport support. However, as noted, formal agreements are not in place, as they are unavailable to nongovernmental agencies. While the onsite personnel are trained to manage a variety of emergencies, including cyanide exposure, the site should continue to ensure that offsite partners are aware of and are properly trained for their role in assisting with a cyanide related emergency that exceeds site capabilities or capacity (e.g., a mass casualty incident). Local medical evacuation by rotor wing (helicopter) aircraft is not available. In the event of an emergency requiring air evacuation, the emergency response team maintains a list of all local helicopter services operating in the area and could request transport aid from one of the providers, if required.

Worker input into the planning is intended through comments on procedures, feedback in safety meetings and by taking part in the mock drills. Examples of worker input into procedures and cyanide related safety meetings were provided. Formal documentation of the debrief and lessons learned from the mock scenarios was not available but was reported to have occurred. The site is encouraged to formalize the debrief and review process and maintain the documentation for future exercises.

Eagle had regular interaction and consultation with the First Nation of Na-Ch Nyäk Dun (FNNND) and the Village of Mayo prior to startup to solicit input. This consultation has continued, and

documentation of ongoing routine coordination was also provided to the auditor. Information regarding accidental releases, or any other incident that could impact water supplies, human health, or wildlife habitat are to be communicated to the potentially affected communities.

8.3 Standard of Practice 7.3: Designate appropriate personnel and commit necessary equipment and resources for emergency response.

The ERP provides a list of the incident management team members, including the General Manager who has authority to ensure that sufficient and adequate resources are allocated to carry out the ERP. Alternate personnel roles are also indicated. The ERP describes the roles and responsibilities for those involved in responding to an emergency.

Contact information in the ERP includes call-out procedures and 24-hour contact information for the Incident Management Team and the ERT. Phone numbers and email for all relevant parties are included in the ERP. Radios are also available for 24-hour communications. It is recommended that the list of specific individuals responsible for emergency response, including contact information, be reviewed and updated regularly.

The ERT Team Roles, Responsibilities, and Minimum Requirements are documented within the ERP, including training requirements for the ERT members, and it is the responsibility to the Emergency Response Coordinators to ensure that training is provided and maintained. All responders undergo the same training.

Emergency response equipment, including the locations of cyanide antidote kits are provided in the CMP and SOPs. The CMP was updated following the prior audit to remove reference to a Cyanokit at the ADR Plant, instead notes the kits as being available at the site medical clinic and in the ambulance, as they cannot be administered by personnel other than the site nurses and paramedics.

The cyanide emergency response equipment is checked regularly by the site paramedics. ERT members check other emergency response equipment, including the site ambulance. The medical clinic inventory checks, which include the Cyanokits, as well as ambulance inspection forms were provided to the auditor.

Emergency response planning requirements are coordinated with external resources who may be required in an emergency. However, formal agreements are not in place, as noted above. In addition, the site is prepared to respond to most potential emergency scenarios, including cyanide exposure. Outside entities should continue to be engaged regularly and included in mock drills, as appropriate.

8.4 Standard of Practice 7.4: Develop procedures for internal and external emergency notification and reporting.

The CMP and ERP provide communication requirements and procedures for the site. The ERP addresses contact requirements for public communications, employee communications, regulatory contacts, contact information for response assistance from local assets, as well as through Cyanco, First Nations contacts, among others.

Among other responsibilities, the Incident Management Team Leader coordinates overall crisis management during an emergency. The Information Officer is responsible for overall communications and is the link between the onsite Incident Commander and the Corporate Emergency Management Team. The Information Officer will also prepare responses to media inquiries, with the appropriate spokesperson designated to deliver appropriate messaging. The Government/Regulatory and Liaison Officer is the point of contact for First Nations communications. The Emergency Response Coordinator advises when mutual aid assistance is required. Appropriate subject matter experts provide consultation related to emergencies where technical expertise relevant to the incident is required.

The ERP contains procedures for communication including emergency response contact information. In the event of an incident, the Corporate Emergency Management Team in consultation with the Incident Command Team, will notify affected parties in local communities, as necessary. Procedures for notifying outside agencies and the media are provided in the ERP.

8.5 Standard of Practice 7.5: Incorporate into response plans monitoring elements and remediation measures that account for the additional hazards of using cyanide treatment chemicals.

The CMP provides procedures in the event of cyanide release and addresses cyanide recovery and remediation if necessary. VGC-CMP-SOP-020 – Cyanide Emergency Response Procedures identifies the monitoring activities to be undertaken to identify the extent and effects of a release, The EMSAMP and VGC-CMP-SOP-025 – Environmental (Soil/Water Quality) Monitoring Procedures detail the requirements for sampling and disposal of any contaminated material from a cyanide release. Releases resulting in contaminated soils would be cleaned up and disposed of onto the HLF.

Treatment with chemicals for neutralization or decontamination is allowed for managing spilled solid cyanide within the mixing area containment, per VGC-CMP-SOP-020 – Cyanide Mixing Process. Operations would treat any contaminated area with sodium or calcium hypochlorite to destroy the cyanide. The spillage could be washed to a sump with a large volume of water and

the solution returned to the process. VGC-CMP-SOP-020 – Cyanide Emergency Response Procedures further allows treatment with hypochlorite of any water flowing through the area where a spill has occurred, requiring the solution to be contained and recovered into suitable containers for disposal within the process facilities or at a licensed disposal facility.

Drinking water is prepared through onsite generation of potable water. In the event of an emergency, drinking water could be trucked to site, if necessary.

The CMP does not explicitly prohibit the use of chemicals such as sodium hypochlorite, ferrous sulfate and hydrogen peroxide to treat any cyanide that would have been released into surface water. The plan references the safe use and application of the peroxide detox system to ensure that the process does not unduly impact surface waters. The plan should be updated to specify that addition of these chemicals to surface water is prohibited. As noted above, the plan references the use of hydrogen peroxide when surface water will not be impacted, but the plan should be updated to reflect the change to Caro's acid, as appropriate.

The CMP, the HLF OMS, and the Environmental Monitoring, Surveillance, and Adaptive Management Plan all address response to the accidental release of cyanide and detail the requirements for sampling and disposal of any contaminated material from a cyanide release. These documents outline procedures for validation sampling of any cleanup or remediation measures in the event of a cyanide release.

The CMP and the Environmental Monitoring, Surveillance, and Adaptive Management Plan address the potential need for monitoring the effects of a cyanide release. These documents also address sampling and monitoring.

8.6 Standard of Practice 7.6: Periodically evaluate response procedures and capabilities and revise them as needed.

The CMP requires that the ERP be reviewed at least annually and updated to incorporate changes in facility infrastructure or operational processes that involve management or the use of cyanide. The ERP is also intended to be updated to incorporate any lessons learned as outcomes from emergency response or mock drills.

As noted previously, mock drills involving cyanide are intended to be conducted at least annually. During this audit cycle, Eagle provided evidence of two mock drills related to cyanide that were conducted. A number of incidents have occurred, requiring a variety of responses. Two incidents related to the release of cyanide from containment were reviewed. A non-injury high HCN level in the ADR plant prompted an evacuation of the area. These incident reports were reviewed,

along with any follow up action taken. Provisions are in place within the CMP to incorporate lessons learned from any incidents or mock drills, if and when they occur.

9. PRINCIPLE 8 – TRAINING: Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner.

9.1 Standard of Practice 8.1: Train workers to understand the hazards associated with cyanide use.

New workers at the mine receive detailed orientation training. Workers receive classroom training prior to receiving in-plant training. Initial cyanide hazard training (Level 1) addresses cyanide basics and awareness. Upon completing orientation, personnel requiring it also receive detailed cyanide related training (Level 2 and Level 3), as well initial task training, which includes task specific hazards.

Contractors working at site must also undergo site induction training, which includes cyanide hazard training. Depending on the nature of the work to be performed, contractors may receive Level 1 through Level 3 training.

Annual cyanide refresher training, cyanide related task training, and cyanide release training are provided to all employees who may be exposed to cyanide. All three levels of training include a written test. The training department maintains a matrix of the employee training received and the dates.

Training records for all initial cyanide hazard training for all site and contractor personnel have been retained according to VGC-CMP-SOP-003 – Records Management. ERT members receive Level 3 cyanide training. The records for additional training received is tracked separately in a spreadsheet. The ERT specific certification tracking sheet provided notes the hours of training received, but the sheet does not indicate specific training that was completed during each period, such as firefighting, occupational first aid, HAZMAT, etc. Specific and detailed training records should be kept for the ERT for both initial certifications and ongoing refresher training.

9.2 Standard of Practice 8.2: Train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.

Eagle trains personnel to perform their routine tasks, including unloading bulk cyanide, mixing, production tasks, and maintenance with minimal risk to health, safety, or the environment by

preventing unplanned releases. Employees whose role requires working around cyanide receive training on how to perform their assigned tasks with minimal risk.

Cyanide related training elements for employee training are addressed in the Level 1, 2, and 3 cyanide training program, as well as through the operation's SOPs. Operators will also be trained in components from the Heap Leach and Process Facilities Plan, the Spill Response Plan, the HLF Contingency Water Management Plan, the Emergency Response Plan, the Environmental Monitoring Surveillance and Adaptive Management Plan and the Preventive Maintenance Program Plan relevant to their duties.

The cyanide related training program at Eagle is intended to be administered by personnel or supervisors with prior experience in training and the knowledge and experience in the systems that are the primary subject of the training. The training content for Eagle was developed by personnel who have extensive experience in cyanide related operations and training on the safe use of cyanide. Cyanide is a regular topic for safety meetings.

All operators are trained prior to working with cyanide. New employees are required to complete the appropriate level of training for their specific task, including the written test, prior to beginning work. These written tests for each level of training are used, in part, to help evaluate the effectiveness of the training and ensure the trainees understand the material being presented.

The training records for employees include the individual, department, level of training, the date training was completed, the name of the trainer, and the proficiency test results, where applicable.

9.3 Standard of Practice 8.3: Train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.

Eagle trains employees in the use and handling of cyanide, including mixing, leaching and maintenance processes, so that they are aware of the proper handling, decontamination, and first aid procedures. Training also includes response to first aid or cyanide release incidents. The CMP also indicates that workers will participate in the mock emergency drills.

Employees working with cyanide are trained in initial response, including recognizing the signs and symptoms of exposure, as well as basic first aid measures. Employees are also trained as to the locations of emergency response equipment. The ERT also received additional training, such as firefighting, occupational first aid (OFA) level 3, HAZMAT response, etc.

Given the remote and self-contained nature of the site, Eagle intends for all emergency response to be performed by site personnel. However, in the event of an emergency that is beyond site management's capabilities, the ERT will coordinate with the required resources for offsite assistance.

Mock drills involving cyanide are intended to be conducted at least annually. Two drills for 2022 were provided for review during the audit. Two minor releases of process solution and documentation related to evacuation of the process plant due to high HCN levels were also provided for review. Records of ERT and employee involvement in the mock drills was recorded. It is recommended that a formal and documented debrief be conducted following each mock drill or actual incident, and the lessons learned should be incorporated into the ERP and procedures, as appropriate.

10. PRINCIPLE 9 – DIALOGUE & DISCLOSURE: Engage in public consultation and disclosure.

10.1 Standard of Practice 9.1: Promote dialogue with stakeholders regarding cyanide management and responsibly address identified concerns.

Eagle conducts on-going communication in Mayo and other regional locations in order to provide general information on the site. This communication permits discussion of any concerns or questions related to the use of cyanide or other aspects of mine operations. Stakeholders participate through informal meetings, open houses, or the regulatory engagement processes to include the FNNND, the YWCHSB, community leaders, and other stakeholders in discussions on the project. Documentation of regular ongoing communication meetings with the FNNND were provided to the auditor.

The meetings referenced above also allow the site to disseminate general written or visual information on cyanide, its use in the mining process, and the general practices established to protect the environment and the health and safety of the workforce and the public with respect to any potential spills or releases. The Environmental Assessment Consultation Summary documented for initial engagement for the project was provided to the auditor. Documentation of regular ongoing communication meetings with the FNNND were provided to the auditor.

10.2 Standard of Practice 9.2: Make appropriate operational and environmental information regarding cyanide available to stakeholders.

Eagle makes information about the operation publicly available and is committed to disseminating information on any cyanide exposures or releases that could impact human health or the environment, in compliance with all applicable Yukon and Federal Government requirements. These will include any release of process solution outside of containment, any release of hazardous product in which there is a potential for that product to enter a waterway, and any release that results in dysfunction from lack of oxygen or poisoning. In addition, as noted in the Emergency Response Plan, a designated member of the senior management team, the Information Officer/Government Liaison Officer, will serve as a single point of contact with the media for specific information on any such exposure or release, associated corrective measures, and preventive measures taken the reduce or prevent the recurrence of similar incidents in future. As noted above, two minor cyanide related releases had occurred during the audit period. Both were addressed according to the emergency response plan, including all required notifications.

APPENDIX – Auditor Credentials Form.

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March 07, 2023

INTERNATIONAL CYANIDE MANAGEMENT INSTITUTE

Auditor Credentials Form

Facility Audited: Eagle Gold Mine
Victoria Gold Corp.
80 Richmond Street West
Suite 204
Toronto, ON M5H 2A4, Canada
T: 416.866.8800
F: 416.866.8801

ICMI AUDITOR CREDENTIALS

Cyanide Code Related Audits

Minimum experience: 3 audits in past 7 years in gold mining operations

Year	Type of Facility, Type of Audit	Country & State/Province
2022	Technical expert auditor for a recertification pre-audit under the International Cyanide Management Code (Cyanide Code) for a large gold mill. Conducted the field audit and authored report indicating compliance with the Cyanide Code Principles and Standards of Practice.	Ontario, Canada
2022	Technical expert auditor for the recertification audit under the International Cyanide Management Code (Cyanide Code) for a large gold mill. Conducted the field audit and authored report indicating compliance with the Cyanide Code Principles and Standards of Practice.	California, USA
2021	Technical expert auditor for the recertification audit under the International Cyanide Management Code (Cyanide Code) for a large gold mill. Conducted the field audit and authored report indicating compliance with the Cyanide Code Principles and Standards of Practice.	Nevada, USA

Year	Type of Facility, Type of Audit	Country & State/Province
2020	Cyanide Code technical expert for a client to determine if any fatal flaws exist that would prevent certification under the Code. Performed a gap analysis to evaluate any Standards of Practice that are not currently in compliance.	Republic of Kazakhstan
2020	Review of the client's Cyanide Management Plan and supporting documents. The audit consisted of a review of the plan, plan implementation, and a report of the findings. Though not a signatory to the Code, the site was measured against the Mining Operations Verification Protocol.	Yukon, Canada
2020	Provided training related to the Cyanide Code to the design engineers for a large gold project in the Kingdom of Saudi Arabia. Performed a technical review of the facility design for cyanide areas to ensure that the design was in compliance with the Code requirements and provided recommendations for inclusion of industry best practices.	Kingdom of Saudi Arabia
2019	Technical expert auditor for the initial certification audit under the International Cyanide Management Code (Cyanide Code) for a large gold mill. Conducted the field audit and authored report indicating compliance with the Cyanide Code Principles and Standards of Practice.	Ontario, Canada
2019	Pre-commissioning, commissioning, and startup consulting support for a large gold cyanidation project in the Yukon. Facility review for environmental, safety, and operations prior to cyanide introduction. Assisted with operations support, including procedure development and training, particularly related to cyanide.	Yukon, Canada
2018	Environmental closure audit for a gold cyanidation facility. The audit encompassed all aspects of the facility, including a site assessment to evaluate the current state of the operation, as well as internal budgets, plans submitted to the regulatory authorities, and the proposed path forward. Phase 1 focus related to the	Region III, Chile

Year	Type of Facility, Type of Audit	Country & State/Province
	closure plan and evaluation of the draindown model. Phase 2 of the project focused on identifying cost reductions for operation/evaporation, care and maintenance, and closure. All aspects of the audit included reviews for safe and environmentally acceptable closure.	
2018	Design review to ensure compliance with the Cyanide Code for a silver cyanidation facility. Authored a guidance paper for the client outlining and interpreting the Cyanide Code Standards of Practice and additional industry best practice recommendations for consideration with the project. Peer reviewed process design criteria.	Bolivia
2016	Commissioned a gold VLF and ADR facility. Provided operational readiness and commissioning planning support, guidance for cyanide management best practices, and Code compliance. Performed regular environmental and safety inspections prior to commissioning and through startup. Developed a written procedure for the safe operation of the VLF and ADR plant during the ongoing construction activities in the remainder of the plant. Provided a gap analysis and guidance on the execution of the Owner's operational readiness team.	Colorado, USA

Cyanide-related Operations Experience

Auditor	Yrs.	Relevant Position Titles	Types of Operations
Adam House; Metallurgical Engineer and Gold Processing Expert	22	• Process Optimization Lead – Paterson & Cooke • Director of Processing – Forte Dynamics	Mr. House has over 22 years of experience as an accomplished professional in the fields of project management, safety and environmental management, project engineering, process operations, mineral processing and extractive metallurgy, operational

Auditor	Yrs.	Relevant Position Titles	Types of Operations
		• Senior Metallurgical Engineer – Forte Dynamics • Project Development Manager – Samuel Engineering • Metallurgical Engineer, Specialist – Hatch • Project Manager – Newmont Mining Corp. • General Foreman – Newmont Mining Corp. • Metallurgical Engineer – Newmont Mining Corp. • Metallurgical Technician – Center for Advanced Mineral and Metallurgical Processing	readiness, and construction management. Adam is a strong collaborator with excellent communication and technical skills while effectively planning and executing work. He is very driven with a high success rate on a diverse portfolio of projects. His certifications include Project Management Professional (PMP®), MMSA Qualified Professional – Metallurgy / Processing, and Technical Expert Auditor for the International Cyanide Management Code. Adam has experience with projects in the United States, Argentina, Bolivia, Brazil, Canada, Chile, Mexico, Russia, Turkey, and Kazakhstan.

Statement of No Conflict

I certify that I have not audited any component of this facility for which I was responsible for design or development; nor have I within the past year been an employee of the facility, its parent company, or associated affiliates. I have not derived more than 30% of my income within the past 5 years from the facility, its parent, or associated affiliates. I have participated in at least 3 health, safety, and/or environmental audits in the past 7 years and am familiar with standard audit procedures as well as with the protocols developed by the International Cyanide Management Institute for implementation of the Code.

Yours sincerely

Adam House

Process Optimization Lead

Device Tag	Area Description	Transmitter S/	nsing Head S	Sensor S/N	Zero		Span		Calibration Date	echnician Name	Notes
					As Found	As Left	As Found	As Left			
5100-AIT-1101	CIC Upper Trash Screens Area	ARMD-1240	ARME-0326	ARPH-0226	0.40ppm	0.00ppm	8.60ppm	10.00ppm	JAN/25/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor) sensor was changed by lloyd previously
5100-AIT-1202	Carbon Column Area	ARLL-0846	ARLL-0898	ARLL-0044	(-)0.25ppm	0.00ppm	10.10ppm	10.00ppm	JAN/25/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1402	Acid Wash Area	ARLL-0852	ARLL-0842	ARLL-0029	(-)0.15ppm	0.00ppm	9.75ppm	10.00ppm	JAN/25/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1501	Caustic System Area	ARLL-0848	ARLL-0893	ARLM-0040	(-)0.50ppm	0.00ppm	9.45ppm	10.00ppm	JAN/25/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1502	Strip System Area	ARLL-0421	ARLL-0541	ARMN-0084	0.30ppm	0.00ppm	7.90ppm	10.00ppm	JAN/25/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5300-AIT-1802	Carbon Regen Area	ARLM-0149	ARLM-0403	ARPF-0332	0.50ppm	0.00ppm	8.00ppm	10.00ppm	JAN/25/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor) sensor was changed by lloyd previously
5400-AIT-4653	Gold Room Area	ARMD-1212	ARME-0055	ARPH-0125	0.10ppm	0.00ppm	10.00ppm	10.00ppm	JAN/25/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5530-AIT-3120	Cyanide System Area	ARLL-0828	ARLL-0771	ARLL-0034	(-)0.25ppm	0.00ppm	9.90ppm	10.00ppm	JAN/25/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5600-AIT-2834	Barren Solution Sump Are	ARLL-0839	ARLL-0887	ARMN-0091	0.25ppm	0.00ppm	8.90ppm	10.00ppm	JAN/25/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sens
5100-AIT-1101	CIC Upper Trash Screens Area	ARMD-1240	ARME-0326	ARPH-0226	1.00ppm	0.00ppm	7.50ppm	10.00ppm	FEB/20/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5100-AIT-1202	Carbon Column Area	ARLL-0846	ARLL-0898	ARLL-0044	0.20ppm	0.00ppm	9.15ppm	10.00ppm	FEB/20/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1402	Acid Wash Area	ARLL-0852	ARLL-0842	ARLL-0029	0.25ppm	0.00ppm	8.55ppm	10.00ppm	FEB/20/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1501	Caustic System Area	ARLL-0848	ARLL-0893	ARLM-0040	(-)0.20ppm	0.00ppm	9.20ppm	10.00ppm	FEB/20/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1502	Strip System Area	ARLL-0421	ARLL-0541	ARJP-0071	1.90ppm	0.00ppm	10.30ppm	10.00ppm	FEB/20/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor) changed out faulty sensor
5300-AIT-1802	Carbon Regen Area	ARLM-0149	ARLM-0403	ARPJ-0066	2.70ppm	0.00ppm	9.80ppm	10.00ppm	FEB/20/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor) changed out faulty sensor
5400-AIT-4653	Gold Room Area	ARMD-1212	ARME-0055	ARPH-0125	(-)0.60ppm	0.00ppm	10.00ppm	10.00ppm	FEB/20/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5530-AIT-3120	Cyanide System Area	ARLL-0828	ARLL-0771	ARLL-0034	0.20ppm	0.00ppm	10.55ppm	10.00ppm	FEB/20/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5600-AIT-2834	Barren Solution Sump Area	ARLL-0839	ARLL-0887	ARMN-0091	0.10ppm	0.00ppm	10.30ppm	10.00ppm	FEB/20/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
4100-AIT-1002	HLF vault	ARND-1056	ARNE-2006	ARNH-0078	2.89ppm	0.00ppm	8.20ppm	10.00ppm	FEB/20/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sens
5100-AIT-1101	CIC Upper Trash Screens Area	ARMD-1240	ARME-0326	ARPH-0226	0.10ppm	0.00ppm	7.60ppm	10.00ppm	MAR/17/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5100-AIT-1202	Carbon Column Area	ARLL-0846	ARLL-0898	ARLL-0044	(-)0.15ppm	0.00ppm	11.40ppm	10.00ppm	MAR/17/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1402	Acid Wash Area	ARLL-0852	ARLL-0842	ARLL-0029	(-)0.45ppm	0.00ppm	12.90ppm	10.00ppm	MAR/17/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1501	Caustic System Area	ARLL-0848	ARLL-0893	ARLM-0040	(-)0.20ppm	0.00ppm	12.10ppm	10.00ppm	MAR/17/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1502	Strip System Area	ARLL-0421	ARLL-0541	ARJP-0071	(-)1.20ppm	0.00ppm	9.70ppm	10.00ppm	MAR/17/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5300-AIT-1802	Carbon Regen Area	ARLM-0149	ARLM-0403	ARPJ-0066	(-)1.80ppm	0.00ppm	8.00ppm	10.00ppm	MAR/17/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5400-AIT-4653	Gold Room Area	ARMD-1212	ARME-0055	ARPH-0125	0.10ppm	0.00ppm	11.00ppm	10.00ppm	MAR/17/2023	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5530-AIT-3120	Cyanide System Area	ARLL-0828	ARLL-0771	ARLL-0034	(-)0.30ppm	0.00ppm	9.80ppm	10.00ppm	MAR/17/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor)
5600-AIT-2834	Barren Solution Sump Are	ARLL-0839	ARLL-0887	ARPJ-0072	(-)1.30ppm	0.00ppm	8.70ppm	10.00ppm	MAR/17/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sensor) changed out faulty sensor due to the power o
4100-AIT-1002	HLF vault	ARND-1056	ARNE-2006	ARNH-0078	(-)2.00ppm	0.00ppm	10.70ppm	10.00ppm	MAR/17/2022	Vince/Dilip	Confirmed all current serial #'s (Trans, sensor head and sens
5100-AIT-1101	CIC Upper Trash Screens Area	ARMD-1240	ARME-0326	ARPH-0226	(-.4)ppm	0.00ppm	10.3ppm	10.00ppm	MAR 30/2022	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor) Sensor slow to calibrate but was able to complete
5100-AIT-1202	Carbon Column Area	ARLL-0846	ARLL-0898	ARLL-0044	(-) .1ppm	0.00ppm	11.6ppm	10.00ppm	MAR 30/2022	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1402	Acid Wash Area	ARLL-0852	ARLL-0842	ARLL-0029	.25ppm	0.00ppm	10,8ppm	10.00ppm	MAR 30/2022	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1501	Caustic System Area	ARLL-0848	ARLL-0893	ARLM-0040	0.00ppm	0.00ppm	10.7ppm	10.00ppm	MAR 30/2022	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1502	Strip System Area	ARLL-0421	ARLL-0541	ARJP-0071	(-.2)ppm	0.00ppm	9.00ppm	10.00ppm	MAR 30/2022	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5300-AIT-1802	Carbon Regen Area	ARLM-0149	ARLM-0403	ARPJ-0066	(.3)ppm	0.00ppm	9.00ppm	10.00ppm	MAR 30/2022	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5400-AIT-4653	Gold Room Area	ARMD-1212	ARME-0055	ARPH-0125	.1ppm	0.00ppm	9.3ppm	10.00ppm	MAR 30/2022	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5530-AIT-3120	Cyanide System Area	ARLL-0828	ARLL-0771	ARLL-0034	.4ppm	0.00ppm	11.1ppm	10.00ppm	MAR 30/2022	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5600-AIT-2834	Barren Solution Sump Area	ARLL-0839	ARLL-0887	ARPJ-0072	.7ppm	0.00ppm	8.4ppm	10.00ppm	MAR 30/2022	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor) Sensor slow to calibrate but was able to complete
4100-AIT-1002	HLF vault	ARND-1056	ARNE-2006	ARPJ-0043	N/A	0.00ppm	N/A	10.00ppm	MAR 30/2022	Lloyd	are on order. Unable to cal
5100-AIT-1101	CIC Upper Trash Screens Area	ARMD-1240	ARME-0326	ARPH-0226	(-.1)	0.00ppm	0	10.00ppm	APR27/2022	Cameron/Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5100-AIT-1202	Carbon Column Area	ARLL-0846	ARLL-0898	ARLL-0044	0.15	0.00ppm	9	10.00ppm	APR27/2022	Cameron/Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1402	Acid Wash Area	ARLL-0852	ARLL-0842	ARLL-0029	0.1	0.00ppm	9.4	10.00ppm	APR27/2022	Cameron/Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1501	Caustic System Area	ARLL-0848	ARLL-0893	ARLM-0040	0.4	0.00ppm	9.4	10.00ppm	APR27/2022	Cameron/Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1502	Strip System Area	ARLL-0421	ARLL-0541	ARPJ-0071	(-.2)	0.00ppm	7	10.00ppm	APR27/2022	Cameron/Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor) sensor should be swapped an next interval
5300-AIT-1802	Carbon Regen Area	ARLM-0149	ARLM-0403	ARPJ-0042	1.2	0.00ppm	8.5	10.00ppm	APR27/2022	Cameron/Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)

5400-AIT-4653	Gold Room Area	ARMD-1212	ARME-0055	ARPH-0125	-0.2	0.00ppm	8.5	10.00ppm	APR27/2022	Cameron/Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5530-AIT-3120	Cyanide System Area	ARLL-0828	ARLL-0771	ARLL-0034	(-.5)	0.00ppm	8.85	10.00ppm	APR27/2022	Cameron/Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5600-AIT-2834	Barren Solution Sump Area	ARLL-0839	ARLL-0887	ARPJ-0055	2.5	0.00ppm	11.6	10.00ppm	APR27/2022	Cameron/Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
4100-AIT-1002	HLF vault	ARND-1056	ARNE-2006	ARPJ-0043	(-2.3)ppm	0.00ppm	11.1	10.00ppm	APR27/2022	Cameron/Lloyd	Confirmed all current serial #'s (Trans, sensor head and sens
5100-AIT-1101	CIC Upper Trash Screens Area	ARMD-1240	ARME-0326	ARPH-0125	1.6ppm	0.00ppm	9.6ppm	10.00ppm	MAY/25/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor) changed sensor
5100-AIT-1202	Carbon Column Area	ARLL-0846	ARLL-0898	ARLL-0044	.1ppm	0.00ppm	9,5ppm	10.00ppm	MAY/25/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1402	Acid Wash Area	ARLL-0852	ARLL-0842	ARLL-0029	0.5ppm	0.00ppm	9.9ppm	10.00ppm	MAY/25/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1501	Caustic System Area	ARLL-0848	ARLL-0893	ARLM-0040	0ppm	0.00ppm	10ppm	10.00ppm	MAY/25/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1502	Strip System Area	ARLL-0421	ARLL-0541	ARPJ-0071	.3ppm	0.00ppm	9.3ppm	10.00ppm	MAY/25/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5300-AIT-1802	Carbon Regen Area	ARLM-0149	ARLM-0403	ARPJ-0042	(-1.8)ppm	0.00ppm	9.9ppm	10.00ppm	MAY/25/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5400-AIT-4653	Gold Room Area	ARMD-1212	ARME-0055	ARPH-0125	.1ppm	0.00ppm	9.6ppm	10.00ppm	MAY/25/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5530-AIT-3120	Cyanide System Area	ARLL-0828	ARLL-0771	ARLL-0043	.35pppm	0.00ppm	10.45ppm	10.00ppm	MAY/25/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5600-AIT-2834	Barren Solution Sump Area	ARLL-0839	ARLL-0887	ARPJ-0055	(-.8ppm)	0.00ppm	6ppm	10.00ppm	MAY/25/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
4100-AIT-1002	HLF vault	ARND-1056	ARNE-2006	ARPJ-0043	0ppm	0.00ppm	9.7ppm	10.00ppm	MAY/25/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sens
5100-AIT-1101	CIC Upper Trash Screens Area	ARMD-1240	ARME-0326	ARPH-0125	(-1.2)ppm	0.00ppm	9.3ppm	10.00ppm	JUNE/22/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5100-AIT-1202	Carbon Column Area	ARLL-0846	ARLL-0898	ARLL-0044	.1ppm	0.00ppm	9.95ppm	10.00ppm	JUNE/22/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1402	Acid Wash Area	ARLL-0852	ARLL-0842	ARLL-0029	0ppm	0.00ppm	9.6ppm	10.00ppm	JUNE/22/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1501	Caustic System Area	ARLL-0848	ARLL-0893	ARLM-0040	.15ppm	0.00ppm	9.6ppm	10.00ppm	JUNE/22/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1502	Strip System Area	ARLL-0421	ARLL-0541	ARPJ-0071	(-.5)ppm	0.00ppm	9.6ppm	10.00ppm	JUNE/22/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5300-AIT-1802	Carbon Regen Area	ARLM-0149	ARLM-0403	ARPJ-0042	0ppm	0.00ppm	9.2ppm	10.00ppm	JUNE/22/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5400-AIT-4653	Gold Room Area	ARMD-1212	ARME-0055	ARPH-0125	.2ppm	0.00ppm	9.4ppm	10.00ppm	JUNE/24/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5530-AIT-3120	Cyanide System Area	ARLL-0828	ARLL-0771	ARLL-0043	0ppm	0.00ppm	10ppm	10.00ppm	JUNE/22/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5600-AIT-2834	Barren Solution Sump Area	ARLL-0839	ARLL-0887	ARPJ-0055	(-.3)ppm	0.00ppm	8.3ppm	10.00ppm	JUNE/22/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
4100-AIT-1002	HLF vault	ARND-1056	ARNE-2006	ARPJ-0043	1.8ppm	0.00ppm	8.9ppm	10.00ppm	JUNE/22/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sens
5100-AIT-1101	CIC Upper Trash Screens Area	ARMD-1240	ARME-0326	ARPH-0125	0.1ppm	0.00ppm	8.7ppm	10.00ppm	JULY22/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5100-AIT-1202	Carbon Column Area	ARLL-0846	ARLL-0898	ARNE-0063	0.9	0.00ppm	8.9	10.00ppm	JULY23/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor) Swapped out new sensor and cal
5200-AIT-1402	Acid Wash Area	ARLL-0852	ARLL-0842	ARLL-0029	(-1.2)ppm	0.00ppm	10.1ppm	10.00ppm	JULY22/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1501	Caustic System Area	ARLL-0848	ARLL-0893	ARLM-0040	n/a	0.00ppm	n/a	10.00ppm	n/a	n/a	Confirmed all current serial #'s (Trans, sensor head and sensor) no new sensor
5200-AIT-1502	Strip System Area	ARLL-0421	ARLL-0541	ARPJ-0071	(-.1)ppm	0.00ppm	8.5ppm	10.00ppm	JULY22/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5300-AIT-1802	Carbon Regen Area	ARLM-0149	ARLM-0403	ARPJ-0042	0ppm	0.00ppm	8.1ppm	10.00ppm	JULY22/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5400-AIT-4653	Gold Room Area	ARMD-1212	ARME-0055	ARPH-0125	(-.1)ppm	0.00ppm	8.9ppm	10.00ppm	JULY22/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5530-AIT-3120	Cyanide System Area	ARLL-0828	ARLL-0771	ARLL-0043	(-.9)ppm	0.00ppm	10,3ppm	10.00ppm	JULY22/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5600-AIT-2834	Barren Solution Sump Area	ARLL-0839	ARLL-0887	ARPM0157	.5ppm	0.00ppm	8.7ppm	10.00ppm	JULY22/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor) New sensor
4100-AIT-1002	HLF vault	ARND-1056	ARNE-2006	ARPJ-0043	(-.2)ppm	0.00ppm	10.2ppm	10.00ppm	JULY22/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sens
5100-AIT-1101	CIC Upper Trash Screens Area	ARMD-1240	ARME-0326	ARPH-0125	.5ppm	0.00ppm	8.6ppm	10.00ppm	AUG 24/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sensor)
5100-AIT-1202	Carbon Column Area	ARLL-0846	ARLL-0898	ARNE-0063	n/a	0.00ppm	n/a	10.00ppm	AUG 25/22	Vince	Confirmed all current serial #'s (Trans, sensor head and sensor) Gas monitor is out of reach: area under construction
5200-AIT-1402	Acid Wash Area	ARLL-0852	ARLL-0842	ARLL-0029	0.0ppm	0.00ppm	9.2ppm	10.00ppm	AUG 25/22	Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1501	Caustic System Area	ARLL-0848	ARLL-0893	ARRE-0322	0.25ppm	0.00ppm	9.00ppm	10.00ppm	AUG 26/22	Vince	Confirmed all current serial #'s (Trans, sensor head and sensor) Installed new sensor and cal
5200-AIT-1502	Strip System Area	ARLL-0421	ARLL-0541	ARPJ-0071	0.1ppm	0.00ppm	9.3ppm	10.00ppm	AUG 25/22	Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5300-AIT-1802	Carbon Regen Area	ARLM-0149	ARLM-0403	ARPJ-0042	0.7ppm	0.00ppm	8.6ppm	10.00ppm	AUG 25/22	Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5400-AIT-4653	Gold Room Area	ARMD-1212	ARME-0055	ARPH-0125	0.1ppm	0.00ppm	10.4ppm	10.00ppm	AUG 25/22	Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5530-AIT-3120	Cyanide System Area	ARLL-0828	ARLL-0771	ARLL-0043	1.6ppm	0.00ppm	9.4ppm	10.00ppm	AUG 25/22	Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5600-AIT-2834	Barren Solution Sump Area	ARLL-0839	ARLL-0887	ARPM-0157	1.8ppm	0.00ppm	8.7ppm	10.00ppm	AUG 25/22	Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
4100-AIT-1002	HLF vault	ARND-1056	ARNE-2006	ARPJ-0043	(-1ppm)	0.00ppm	9.6ppm	10.00ppm	AUG 24/22	Lloyd	Confirmed all current serial #'s (Trans, sensor head and sens
5100-AIT-1101	CIC Upper Trash Screens Area	ARMD-1240	ARME-0326	ARPH-0125	0.30ppm	0.00ppm	8.20ppm	10.00ppm	SEPT 2/22	Dilip/Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5100-AIT-1202	Carbon Column Area	ARLL-0846	ARLL-0898	ARNE-0063	(-)0.30PPM	0.00ppm	8.40PPM	10.00ppm	SEPT 2/22	Dilip/Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1402	Acid Wash Area	ARLL-0852	ARLL-0842	ARLL-0029	(-)0.20ppm	0.00ppm	9.60ppm	10.00ppm	SEPT 2/22	Dilip/Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)

5200-AIT-1501	Caustic System Area	ARLL-0848	ARLL-0893	ARRE-0322	0.05PPM	0.00ppm	9.95PPM	10.00ppm	SEPT 2/22	Dilip/Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1502	Strip System Area	ARLL-0421	ARLL-0541	ARPJ-0071	0.00PPM	0.00ppm	9.60PPM	10.00ppm	SEPT 2/22	Dilip/Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5300-AIT-1802	Carbon Regen Area	ARLM-0149	ARLM-0403	ARPJ-0042	(-)0.30PPM	0.00ppm	10.10PPM	10.00ppm	SEPT 2/22	Dilip/Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5400-AIT-4653	Gold Room Area	ARMD-1212	ARME-0055	ARPH-0125	(-)0.30PPM	0.00ppm	8.80PPM	10.00ppm	SEPT 2/22	Dilip/Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5530-AIT-3120	Cyanide System Area	ARLL-0828	ARLL-0771	ARLL-0043	(-)0.20PPM	0.00ppm	10.10PPM	10.00ppm	SEPT 2/22	Dilip/Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5600-AIT-2834	Barren Solution Sump Area	ARLL-0839	ARLL-0887	ARRE-0211	0.85PPM	0.00ppm	10.10PPM	10.00ppm	SEPT 2/22	Dilip/Vince	Confirmed all current serial #'s (Trans, sensor head and sensor) Swapped out for new sensor and cal
4100-AIT-1002	HLF vault	ARND-1056	ARNE-2006	ARPJ-0043	0.50 PPM	0.00ppm	10.20 PPM	10.00ppm	SEPT 2/22	Dilip/Vince	Confirmed all current serial #'s (Trans, sensor head and sens
5100-AIT-1101	CIC Upper Trash Screens Area	ARMD-1240	ARME-0326	ARPH-0125	(-)0.30 PPM	0.00ppm	8.00PPM	10.00ppm	Oct/1/2022	Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5100-AIT-1202	Carbon Column Area	ARLL-0846	ARLL-0898	ARNE-0063	0.80 PPM	0.00ppm	9.10 PPM	10.00ppm	Oct/1/2022	Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1402	Acid Wash Area	ARLL-0852	ARLL-0842	ARLL-0029	0.50 PPM	0.00ppm	8.50 PPM	10.00ppm	Oct/1/2022	Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1501	Caustic System Area	ARLL-0848	ARLL-0893	ARRE-0322	(-)0.05 PPM	0.00ppm	10.60 PPM	10.00ppm	Oct/1/2022	Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5200-AIT-1502	Strip System Area	ARLL-0421	ARLL-0541	ARPJ-0071	0.70 PPM	0.00ppm	10.70 PPM	10.00ppm	Oct/1/2022	Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5300-AIT-1802	Carbon Regen Area	ARLM-0149	ARLM-0403	ARPJ-0042	0.50 PPM	0.00ppm	8.80 PPM	10.00ppm	Oct/1/2022	Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5400-AIT-4653	Gold Room Area	ARMD-1212	ARME-0055	ARPH-0125	0.30 PPM	0.00ppm	9.70 PPM	10.00ppm	Oct/1/2022	Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5530-AIT-3120	Cyanide System Area	ARLL-0828	ARLL-0771	ARLL-0043	0.40 PPM	0.00ppm	8.40 PPM	10.00ppm	Oct/1/2022	Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
5600-AIT-2834	Barren Solution Sump Area	ARLL-0839	ARLL-0887	ARRE-0211	(-)0.40 PPM	0.00ppm	10.20 PPM	10.00ppm	Oct/1/2022	Vince	Confirmed all current serial #'s (Trans, sensor head and sensor)
4100-AIT-1002	HLF vault	ARND-1056	ARNE-2006	ARPJ-0043	0.40 PPM	0.00ppm	10.10 PPM	10.00ppm	Oct/1/2022	Vince	Confirmed all current serial #'s (Trans, sensor head and sens

Bump Certificate

Instrument SN: 08120EC-093
Bump Date: 3/18/2023
Part Number: 18100060-1
Job Number: 08120E
Setup Date: 5/10/2021
Setup Technician: KC
Created By: iNet
Battery:
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
210317M010	HCN	Hydrogen Cyanide	10.00	5.30	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
210317M010	HCN	3/18/2023 1:40:23 PM (GMT-07:00)	271384BQ18188	4/30/2024

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08120EC-093

Calibration Certificate

Instrument SN: 08120EC-093
Calibration Date: 3/18/2023
Part Number: 18100060-1
Job Number: 08120E
Setup Date: 5/10/2021
Setup Technician: KC
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
210317M010	HCN	Hydrogen Cyanide	10.00	190.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
210317M010	HCN	3/18/2023 1:39:23 PM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

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Bump Certificate

Instrument SN: 23011C7-087
Bump Date: 3/29/2023
Part Number: 18100060-2
Job Number: 23011C
Setup Date: 1/20/2023
Setup Technician: KF
Created By: iNet
Battery:
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
19021C6001	HCN	Hydrogen Cyanide	10.00	5.10	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
19021C6001	HCN	3/29/2023 8:31:05 AM (GMT-07:00)	271384BQ18188	4/30/2024

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Calibration Certificate

Instrument SN: 23011C7-087
Calibration Date: 3/1/2023
Part Number: 18100060-2
Job Number: 23011C
Setup Date: 1/20/2023
Setup Technician: KF
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
19021C6001	HCN	Hydrogen Cyanide	10.00	219.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
19021C6001	HCN	3/1/2023 7:04:02 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

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Bump Certificate

Instrument SN: 08051MG-120
Bump Date: 3/29/2023
Part Number: 18100060-2
Job Number: 08051M
Setup Date: 2/17/2022
Setup Technician: ALEE
Created By: iNet
Battery:
Assigned User: Brad Grunewald
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
19121TW005	HCN	Hydrogen Cyanide	10.00	5.10	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
19121TW005	HCN	3/29/2023 2:11:57 AM (GMT-07:00)	271384BQ18188	4/30/2024

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Calibration Certificate

Instrument SN: 08051MG-120
Calibration Date: 3/26/2023
Part Number: 18100060-2
Job Number: 08051M
Setup Date: 2/17/2022
Setup Technician: ALEE
Created By: iNet
Battery:
Assigned User: Brad Grunewald

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
19121TW005	HCN	Hydrogen Cyanide	10.00	296.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
19121TW005	HCN	3/26/2023 9:53:45 PM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

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Bump Certificate

Instrument SN: 081113W-056
Bump Date: 3/29/2023
Part Number: 18100060-3
Job Number: 081113
Setup Date: 8/26/2021
Setup Technician: MA
Created By: iNet
Battery:
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
18013AK012	HCN	Hydrogen Cyanide	10.00	5.20	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
18013AK012	HCN	3/29/2023 8:41:57 AM (GMT-07:00)	271384BQ18188	4/30/2024

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081113W-056

Calibration Certificate

Instrument SN: 081113W-056
Calibration Date: 3/25/2023
Part Number: 18100060-3
Job Number: 081113
Setup Date: 8/26/2021
Setup Technician: MA
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
18013AK012	HCN	Hydrogen Cyanide	10.00	186.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
18013AK012	HCN	3/25/2023 8:53:19 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

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Bump Certificate

Instrument SN: 1002464-003
Bump Date: 3/27/2023
Part Number: 18100060-2
Job Number: 100246
Setup Date: 8/5/2022
Setup Technician: JM
Created By: iNet
Battery:
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21120W3001	HCN	Hydrogen Cyanide	10.00	5.10	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
21120W3001	HCN	3/27/2023 4:29:24 PM (GMT-07:00)	271384BQ18188	4/30/2024

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1002464-003

Calibration Certificate

Instrument SN: 1002464-003
Calibration Date: 3/5/2023
Part Number: 18100060-2
Job Number: 100246
Setup Date: 8/5/2022
Setup Technician: JM
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21120W3001	HCN	Hydrogen Cyanide	10.00	185.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
21120W3001	HCN	3/5/2023 11:47:24 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

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1002464-003

Calibration Certificate

Instrument SN: 1002464-003
Calibration Date: 3/5/2023
Part Number: 18100060-2
Job Number: 100246
Setup Date: 8/5/2022
Setup Technician: JM
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21120W3001	HCN	Hydrogen Cyanide	10.00	185.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
21120W3001	HCN	3/5/2023 11:47:24 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

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1002464-003

Bump Certificate

Instrument SN: 110100N-010
Bump Date: 3/27/2023
Part Number: 18100060-2
Job Number: 110100
Setup Date: 5/4/2022
Setup Technician: JY
Created By: iNet
Battery:
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
1911196024	HCN	Hydrogen Cyanide	10.00	5.00	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
1911196024	HCN	3/27/2023 4:33:49 PM (GMT-07:00)	271384BQ18188	4/30/2024

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Calibration Certificate

Instrument SN: 110100N-010
Calibration Date: 2/27/2023
Part Number: 18100060-2
Job Number: 110100
Setup Date: 5/4/2022
Setup Technician: JY
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
1911196024	HCN	Hydrogen Cyanide	10.00	270.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
1911196024	HCN	2/27/2023 10:24:23 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

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Bump Certificate

Instrument SN: 12074JT-016
Bump Date: 3/20/2023
Part Number: 18100060-8
Job Number: 12074J
Setup Date: 4/16/2020
Setup Technician: GS
Created By: iNet
Battery:
Assigned User: Jason Cheung
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21010FX004	HCN	Hydrogen Cyanide	10.00	5.40	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
21010FX004	HCN	3/20/2023 8:43:34 AM (GMT-07:00)	271384BQ18188	4/30/2024

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12074JT-016

Calibration Certificate

Instrument SN: 12074JT-016
Calibration Date: 2/23/2023
Part Number: 18100060-8
Job Number: 12074J
Setup Date: 4/16/2020
Setup Technician: GS
Created By: iNet
Battery:
Assigned User: Jason Cheung

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21010FX004	HCN	Hydrogen Cyanide	10.00	208.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
21010FX004	HCN	2/23/2023 9:28:00 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

Bump Certificate

Instrument SN: 12083D8-096
Bump Date: 11/26/2022
Part Number: 18100060-2
Job Number: 12083D
Setup Date: 1/14/2021
Setup Technician: JM
Created By: iNet
Battery:
Assigned User: Zean Lang
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
17091PE028	HCN	Hydrogen Cyanide	10.00	5.00	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
17091PE028	HCN	11/26/2022 7:50:53 AM (GMT-07:00)	265831BQ11218	11/30/2023

:

Calibration Certificate

Instrument SN: 12083D8-096
Calibration Date: 11/23/2022
Part Number: 18100060-2
Job Number: 12083D
Setup Date: 1/14/2021
Setup Technician: JM
Created By: iNet
Battery:
Assigned User: Zean Lang

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
17091PE028	HCN	Hydrogen Cyanide	10.00	186.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
17091PE028	HCN	11/23/2022 7:22:41 AM (GMT-07:00)	265831BQ11218	11/30/2023	Fresh Air	N/A

:

Bump Certificate

Instrument SN: 1212025-001
Bump Date: 3/29/2023
Part Number: 18100060-4
Job Number: 121202
Setup Date: 1/8/2021
Setup Technician: GS
Created By: iNet
Battery:
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
20010NP005	HCN	Hydrogen Cyanide	10.00	5.10	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
20010NP005	HCN	3/29/2023 8:03:03 AM (GMT-07:00)	271384BQ18188	4/30/2024

:

Calibration Certificate

Instrument SN: 1212025-001
Calibration Date: 3/24/2023
Part Number: 18100060-4
Job Number: 121202
Setup Date: 1/8/2021
Setup Technician: GS
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
20010NP005	HCN	Hydrogen Cyanide	10.00	104.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
20010NP005	HCN	3/24/2023 9:12:15 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

Bump Certificate

Instrument SN: 121229C-060
Bump Date: 3/23/2023
Part Number: 18100060-2
Job Number: 121229
Setup Date: 12/13/2012
Setup Technician: GB
Created By: iNet
Battery:
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
17030K3025	HCN	Hydrogen Cyanide	10.00	5.10	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
17030K3025	HCN	3/23/2023 8:23:54 AM (GMT-07:00)	271384BQ18188	4/30/2024

:

Calibration Certificate

Instrument SN: 121229C-060
Calibration Date: 3/23/2023
Part Number: 18100060-2
Job Number: 121229
Setup Date: 12/13/2012
Setup Technician: GB
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
17030K3025	HCN	Hydrogen Cyanide	10.00	193.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
17030K3025	HCN	3/23/2023 8:22:54 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

121229C-060

Bump Certificate

Instrument SN: 14070J7-004
Bump Date: 3/27/2023
Part Number: 18100060-5
Job Number: 14070J
Setup Date: 2/17/2022
Setup Technician: ALEE
Created By: iNet
Battery:
Assigned User: Refinery Security
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21061LG066	HCN	Hydrogen Cyanide	10.00	5.00	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
21061LG066	HCN	3/27/2023 8:04:30 AM (GMT-07:00)	271384BQ18188	4/30/2024

:

Calibration Certificate

Instrument SN: 14070J7-004
Calibration Date: 3/8/2023
Part Number: 18100060-5
Job Number: 14070J
Setup Date: 2/17/2022
Setup Technician: ALEE
Created By: iNet
Battery:
Assigned User: Refinery Security

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21061LG066	HCN	Hydrogen Cyanide	10.00	398.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
21061LG066	HCN	3/8/2023 3:14:04 PM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

Bump Certificate

Instrument SN: 15113FV-002
Bump Date: 3/29/2023
Part Number: 18100060-2
Job Number: 15113F
Setup Date: 5/2/2022
Setup Technician: JB
Created By: iNet
Battery:
Assigned User: Brianne Puckett
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
18013AK049	HCN	Hydrogen Cyanide	10.00	5.40	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
18013AK049	HCN	3/29/2023 11:55:47 AM (GMT-07:00)	271384BQ18188	4/30/2024

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Calibration Certificate

Instrument SN: 15113FV-002
Calibration Date: 3/25/2023
Part Number: 18100060-2
Job Number: 15113F
Setup Date: 5/2/2022
Setup Technician: JB
Created By: iNet
Battery:
Assigned User: Brianne Puckett

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
18013AK049	HCN	Hydrogen Cyanide	10.00	221.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
18013AK049	HCN	3/25/2023 9:12:07 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

Bump Certificate

Instrument SN: 160233T-004
Bump Date: 3/29/2023
Part Number: 18100060-1
Job Number: 160233
Setup Date: 5/10/2021
Setup Technician: KC
Created By: iNet
Battery:
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
17030K3024	HCN	Hydrogen Cyanide	10.00	5.20	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
17030K3024	HCN	3/29/2023 8:36:29 AM (GMT-07:00)	271384BQ18188	4/30/2024

:

160233T-004

Calibration Certificate

Instrument SN: 160233T-004
Calibration Date: 3/28/2023
Part Number: 18100060-1
Job Number: 160233
Setup Date: 5/10/2021
Setup Technician: KC
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
17030K3024	HCN	Hydrogen Cyanide	10.00	158.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
17030K3024	HCN	3/28/2023 1:18:52 PM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

Bump Certificate

Instrument SN: 161136D-080
Bump Date: 3/19/2023
Part Number: 18100060-3
Job Number: 161136
Setup Date: 9/9/2020
Setup Technician: GS
Created By: iNet
Battery:
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21120W3006	HCN	Hydrogen Cyanide	10.00	5.00	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
21120W3006	HCN	3/19/2023 3:33:01 PM (GMT-07:00)	271384BQ18188	4/30/2024

:

Calibration Certificate

Instrument SN: 161136D-080
Calibration Date: 3/16/2023
Part Number: 18100060-3
Job Number: 161136
Setup Date: 9/9/2020
Setup Technician: GS
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21120W3006	HCN	Hydrogen Cyanide	10.00	362.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
21120W3006	HCN	3/16/2023 8:18:57 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

Bump Certificate

Instrument SN: 161136D-118
Bump Date: 3/27/2023
Part Number: 18100060-3
Job Number: 161136
Setup Date: 5/5/2022
Setup Technician: NV
Created By: iNet
Battery:
Assigned User: Skye Hanson
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
210317M005	HCN	Hydrogen Cyanide	10.00	6.40	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
210317M005	HCN	3/27/2023 3:58:40 PM (GMT-07:00)	271384BQ18188	4/30/2024

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161136D-118

Calibration Certificate

Instrument SN: 161136D-118
Calibration Date: 3/27/2023
Part Number: 18100060-3
Job Number: 161136
Setup Date: 5/5/2022
Setup Technician: NV
Created By: iNet
Battery:
Assigned User: Skye Hanson

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
210317M005	HCN	Hydrogen Cyanide	10.00	176.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
210317M005	HCN	3/27/2023 3:58:12 PM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

Bump Certificate

Instrument SN: 16113VQ-004
Bump Date: 3/22/2023
Part Number: 18100060-2
Job Number: 16113V
Setup Date: 11/23/2021
Setup Technician: MA
Created By: iNet
Battery:
Assigned User: Leon Breton
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21112M4008	HCN	Hydrogen Cyanide	10.00	5.80	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
21112M4008	HCN	3/22/2023 11:07:32 AM (GMT-07:00)	271384BQ18188	4/30/2024

:

16113VQ-004

Calibration Certificate

Instrument SN: 16113VQ-004
Calibration Date: 3/6/2023
Part Number: 18100060-2
Job Number: 16113V
Setup Date: 11/23/2021
Setup Technician: MA
Created By: iNet
Battery:
Assigned User: Leon Breton

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21112M4008	HCN	Hydrogen Cyanide	10.00	180.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
21112M4008	HCN	3/6/2023 4:35:42 PM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

Bump Certificate

Instrument SN: 161222L-002
Bump Date: 3/29/2023
Part Number: 18100060-2
Job Number: 161222
Setup Date: 5/19/2022
Setup Technician: JB
Created By: iNet
Battery:
Assigned User: Todd Travis
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
22092Z5003	HCN	Hydrogen Cyanide	10.00	5.10	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
22092Z5003	HCN	3/29/2023 9:32:54 AM (GMT-07:00)	271384BQ18188	4/30/2024

:

Calibration Certificate

Instrument SN: 161222L-002
Calibration Date: 3/25/2023
Part Number: 18100060-2
Job Number: 161222
Setup Date: 5/19/2022
Setup Technician: JB
Created By: iNet
Battery:
Assigned User: Todd Travis

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
22092Z5003	HCN	Hydrogen Cyanide	10.00	193.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
22092Z5003	HCN	3/25/2023 8:47:53 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

Bump Certificate

Instrument SN: 161222L-001
Bump Date: 1/14/2023
Part Number: 18100060-4
Job Number: 161222
Setup Date: 11/1/2022
Setup Technician: MA
Created By: iNet
Battery:
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21081QF008	HCN	Hydrogen Cyanide	10.00	5.20	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
21081QF008	HCN	1/14/2023 9:47:38 AM (GMT-07:00)	271384BQ18188	4/30/2024

:

161222L-001

Calibration Certificate

Instrument SN: 161222L-001
Calibration Date: 1/2/2023
Part Number: 18100060-4
Job Number: 161222
Setup Date: 11/1/2022
Setup Technician: MA
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21081QF008	HCN	Hydrogen Cyanide	10.00	293.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
21081QF008	HCN	1/2/2023 7:20:18 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

161222L-001

Bump Certificate

Instrument SN: 19014HA-005
Bump Date: 3/20/2023
Part Number: 18100060-1
Job Number: 19014H
Setup Date: 1/26/2022
Setup Technician: JY
Created By: iNet
Battery:
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
180305M009	HCN	Hydrogen Cyanide	10.00	5.00	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
180305M009	HCN	3/20/2023 1:18:40 PM (GMT-07:00)	271384BQ18188	4/30/2024

:

19014HA-005

Calibration Certificate

Instrument SN: 19014HA-005
Calibration Date: 3/9/2023
Part Number: 18100060-1
Job Number: 19014H
Setup Date: 1/26/2022
Setup Technician: JY
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
180305M009	HCN	Hydrogen Cyanide	10.00	406.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
180305M009	HCN	3/9/2023 8:53:56 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

Bump Certificate

Instrument SN: 1911197-008
Bump Date: 3/19/2023
Part Number: 18100060-2
Job Number: 191119
Setup Date: 8/5/2022
Setup Technician: JM
Created By: iNet
Battery:
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21120W3002	HCN	Hydrogen Cyanide	10.00	5.40	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
21120W3002	HCN	3/19/2023 7:56:14 AM (GMT-07:00)	271384BQ18188	4/30/2024

:

1911197-008

Calibration Certificate

Instrument SN: 1911197-008
Calibration Date: 2/25/2023
Part Number: 18100060-2
Job Number: 191119
Setup Date: 8/5/2022
Setup Technician: JM
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21120W3002	HCN	Hydrogen Cyanide	10.00	227.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
21120W3002	HCN	2/25/2023 8:16:20 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

1911197-008

Bump Certificate

Instrument SN: 1911197-024
Bump Date: 3/29/2023
Part Number: 18100060-B
Job Number: 191119
Setup Date: 12/12/2019
Setup Technician: GO
Created By: iNet
Battery:
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21120W3005	HCN	Hydrogen Cyanide	10.00	5.40	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
21120W3005	HCN	3/29/2023 7:57:19 AM (GMT-07:00)	271384BQ18188	4/30/2024

:

1911197-024

Calibration Certificate

Instrument SN: 1911197-024
Calibration Date: 3/25/2023
Part Number: 18100060-B
Job Number: 191119
Setup Date: 12/12/2019
Setup Technician: GO
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21120W3005	HCN	Hydrogen Cyanide	10.00	143.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
21120W3005	HCN	3/25/2023 8:34:57 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

Bump Certificate

Instrument SN: 2011279-037
Bump Date: 3/25/2023
Part Number: 18100060-1
Job Number: 201127
Setup Date: 8/5/2022
Setup Technician: JM
Created By: iNet
Battery:
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
210135G001	HCN	Hydrogen Cyanide	10.00	5.00	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
210135G001	HCN	3/25/2023 2:49:12 PM (GMT-07:00)	271384BQ18188	4/30/2024

:

2011279-037

Calibration Certificate

Instrument SN: 2011279-037
Calibration Date: 3/7/2023
Part Number: 18100060-1
Job Number: 201127
Setup Date: 8/5/2022
Setup Technician: JM
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
210135G001	HCN	Hydrogen Cyanide	10.00	184.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
210135G001	HCN	3/7/2023 7:54:24 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

Bump Certificate

Instrument SN: 21061LF-128
Bump Date: 3/29/2023
Part Number: 18100060-5
Job Number: 21061L
Setup Date: 7/28/2021
Setup Technician: MA
Created By: iNet
Battery:
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
22062P5001	HCN	Hydrogen Cyanide	10.00	6.20	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
22062P5001	HCN	3/29/2023 3:05:59 PM (GMT-07:00)	271384BQ18188	4/30/2024

:

Calibration Certificate

Instrument SN: 21061LF-128
Calibration Date: 3/14/2023
Part Number: 18100060-5
Job Number: 21061L
Setup Date: 7/28/2021
Setup Technician: MA
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
22062P5001	HCN	Hydrogen Cyanide	10.00	195.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
22062P5001	HCN	3/14/2023 3:29:35 PM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

Bump Certificate

Instrument SN: 21061LH-029
Bump Date: 3/29/2023
Part Number: 18100060-7
Job Number: M124J7
Setup Date: 3/9/2023
Setup Technician: JP
Created By: iNet
Battery:
Assigned User: Shane Simons
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
22111TQ003	HCN	Hydrogen Cyanide	10.00	5.60	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
22111TQ003	HCN	3/29/2023 8:18:16 AM (GMT-07:00)	271384BQ18188	4/30/2024

:

Calibration Certificate

Instrument SN: 21061LH-029
Calibration Date: 3/29/2023
Part Number: 18100060-7
Job Number: M124J7
Setup Date: 3/9/2023
Setup Technician: JP
Created By: iNet
Battery:
Assigned User: Shane Simons

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
22111TQ003	HCN	Hydrogen Cyanide	10.00	256.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
22111TQ003	HCN	3/29/2023 8:17:29 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

21061LH-029

Bump Certificate

Instrument SN: 23011C7-027
Bump Date: 3/28/2023
Part Number: 18100060-2
Job Number: 23011C
Setup Date: 1/19/2023
Setup Technician: KF
Created By: iNet
Battery:
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
1911196023	HCN	Hydrogen Cyanide	10.00	5.30	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
1911196023	HCN	3/28/2023 10:05:16 AM (GMT-07:00)	271384BQ18188	4/30/2024

:

Calibration Certificate

Instrument SN: 23011C7-027
Calibration Date: 3/17/2023
Part Number: 18100060-2
Job Number: 23011C
Setup Date: 1/19/2023
Setup Technician: KF
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
1911196023	HCN	Hydrogen Cyanide	10.00	201.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
1911196023	HCN	3/17/2023 9:04:41 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

Bump Certificate

Instrument SN: 23011C7-071
Bump Date: 3/2/2023
Part Number: 18100060-2
Job Number: 23011C
Setup Date: 1/20/2023
Setup Technician: KF
Created By: iNet
Battery:
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
2107090009	HCN	Hydrogen Cyanide	10.00	5.80	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
2107090009	HCN	3/2/2023 11:34:16 AM (GMT-07:00)	271384BQ18188	4/30/2024

:

23011C7-071

Calibration Certificate

Instrument SN: 23011C7-071
Calibration Date: 3/2/2023
Part Number: 18100060-2
Job Number: 23011C
Setup Date: 1/20/2023
Setup Technician: KF
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
2107090009	HCN	Hydrogen Cyanide	10.00	418.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
2107090009	HCN	3/2/2023 11:33:44 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

Bump Certificate

Instrument SN: 23011X1-052
Bump Date: 3/29/2023
Part Number: 18100060-2
Job Number: 23011X
Setup Date: 1/26/2023
Setup Technician: JK
Created By: iNet
Battery:
Assigned User: Cameron Holmes
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: NOTAPPLICABLE

Sensor SN	Sensor Type	Gas Type	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21061LG084	HCN	Hydrogen Cyanide	10.00	5.20	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
21061LG084	HCN	3/29/2023 3:01:21 PM (GMT-07:00)	271384BQ18188	4/30/2024

:

Calibration Certificate

Instrument SN: 23011X1-052
Calibration Date: 3/29/2023
Part Number: 18100060-2
Job Number: 23011X
Setup Date: 1/26/2023
Setup Technician: JK
Created By: iNet
Battery:
Assigned User: Cameron Holmes

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
21061LG084	HCN	Hydrogen Cyanide	10.00	340.00%	Passed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
21061LG084	HCN	3/29/2023 3:00:06 PM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A

:

Calibration Certificate

Instrument SN: ?F5\??S1M
Calibration Date: 2/27/2023
Part Number: PZQ(XV?K?????K
Job Number: ??A???
Setup Date: 9/16/1934
Setup Technician: u9
Created By: iNet
Battery:
Assigned User:

Sensor SN	Sensor Type	Gas Type	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
210317M007	HCN	N/A	0.00		ZeroFailed	0.00	4.50	10.00	4.00	4.70

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
210317M007	HCN	2/27/2023 2:04:15 PM (GMT-07:00)	N/A	-	Fresh Air	N/A

:

?F5\??S1M

Bump Certificate

Instrument SN: 10040J2-001
Bump Date: 3/24/2023
Part Number: MX6-KG23C211
Job Number: 10040J
Setup Date: 1/1/2000
Setup Technician: AWU
Created By: iNet
Battery: 3-Cell Lithium Battery Pack
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: INSTALLED

Sensor SN	Sensor Type	Gas Type	Factor	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
210437P001	CO	Carbon Monoxide		100.00	62.00	Passed	0.00	25.00	50.00	35.00	100.00
2202225015	HCN	Hydrogen Cyanide		10.00	5.50	Passed	0.00	4.50	10.00	4.00	4.70
22062D4070	LEL	Methane	Methane	50.00	33.00	Passed	0.00	10.00	20.00	N/A	N/A
21121J8002	NO2	Nitrogen Dioxide		25.00	13.90	Passed	0.00	1.00	3.00	3.00	3.00
22060NN024	O2	Oxygen		18.00	19.30	Passed	0.00	19.50	23.50	N/A	N/A

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
210437P001	CO	3/24/2023 1:26:01 AM (GMT-07:00)	R254346BE109349	8/31/2024
2202225015	HCN	3/24/2023 1:24:43 AM (GMT-07:00)	271384BQ18188	4/30/2024
22062D4070	LEL	3/24/2023 1:25:58 AM (GMT-07:00)	R254346BE109349	8/31/2024
21121J8002	NO2	3/24/2023 1:25:12 AM (GMT-07:00)	273621BC497910	8/31/2023
22060NN024	O2	3/24/2023 1:25:58 AM (GMT-07:00)	R254346BE109349	8/31/2024

:

10040J2-001

Calibration Certificate

Instrument SN: 10040J2-001
Calibration Date: 2/26/2023
Part Number: MX6-KG23C211
Job Number: 10040J
Setup Date: 1/1/2000
Setup Technician: AWU
Created By: iNet
Battery: 3-Cell Lithium Battery Pack
Assigned User:

Sensor SN	Sensor Type	Gas Type	Factor	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
210437P001	CO	Carbon Monoxide		100.00	105.00%	Passed	0.00	25.00	50.00	35.00	100.00
2202225015	HCN	Hydrogen Cyanide		10.00	346.00%	Passed	0.00	4.50	10.00	4.00	4.70
22062D4070	LEL	Methane	Methane	50.00	154.00%	Passed	0.00	10.00	20.00	N/A	N/A
21121J8002	NO2	Nitrogen Dioxide		25.00	323.60%	Passed	0.00	1.00	3.00	3.00	3.00
22060NN024	O2	Oxygen		20.90	178.95%	Passed	0.00	19.50	23.50	N/A	N/A

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
210437P001	CO	2/26/2023 3:46:26 AM (GMT-07:00)	R254346BE109349	8/31/2024	Fresh Air	N/A
2202225015	HCN	2/26/2023 3:41:14 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A
22062D4070	LEL	2/26/2023 3:46:58 AM (GMT-07:00)	R254346BE109349	8/31/2024	Fresh Air	N/A
21121J8002	NO2	2/26/2023 3:44:37 AM (GMT-07:00)	273621BC497910	8/31/2023	Fresh Air	N/A
22060NN024	O2	2/26/2023 3:39:13 AM (GMT-07:00)	Fresh Air	N/A	Fresh Air	N/A

:

10040J2-001

Bump Certificate

Instrument SN: 13090ZF-005
Bump Date: 1/16/2023
Part Number: MX6-K1235211
Job Number: 13090Z
Setup Date: 1/1/2000
Setup Technician: JY
Created By: iNet
Battery: 3-Cell Lithium Battery Pack
Assigned User:
Bump Threshold: 50
Bump Timeout: 120
Pump Accessory: INSTALLED

Sensor SN	Sensor Type	Gas Type	Factor	Span Gas	Sensor Reading	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
19050E5150	CO	Carbon Monoxide		100.00	60.00	Passed	0.00	25.00	50.00	35.00	100.00
22012F5002	HCN	Hydrogen Cyanide		10.00	5.00	Passed	0.00	4.50	10.00	4.00	4.70
22091FU131	LEL	Methane	Methane	50.00	26.00	Passed	0.00	10.00	20.00	N/A	N/A
21121J8027	NO2	Nitrogen Dioxide		25.00	14.30	Passed	0.00	1.00	3.00	3.00	3.00
22080PZ052	O2	Oxygen		18.00	19.00	Passed	0.00	19.50	23.50	N/A	N/A

Sensor SN	Sensor Type	Bump Date/Time	Cylinder ID	Cylinder Exp
19050E5150	CO	1/16/2023 7:28:46 AM (GMT-07:00)	R254346BE109349	8/31/2024
22012F5002	HCN	1/16/2023 7:27:31 AM (GMT-07:00)	271384BQ18188	4/30/2024
22091FU131	LEL	1/16/2023 7:28:41 AM (GMT-07:00)	R254346BE109349	8/31/2024
21121J8027	NO2	1/16/2023 7:27:56 AM (GMT-07:00)	273621BC497910	8/31/2023
22080PZ052	O2	1/16/2023 7:28:41 AM (GMT-07:00)	R254346BE109349	8/31/2024

:

13090ZF-005

Calibration Certificate

Instrument SN: 13090ZF-005
Calibration Date: 1/16/2023
Part Number: MX6-K1235211
Job Number: 13090Z
Setup Date: 1/1/2000
Setup Technician: JY
Created By: iNet
Battery: 3-Cell Lithium Battery Pack
Assigned User:

Sensor SN	Sensor Type	Gas Type	Factor	Span Gas	Span Reserve	Passed/Failed	Gas Alert	Alarm Low	Alarm High	Alarm TWA	Alarm STEL
19050E5150	CO	Carbon Monoxide		100.00	133.00%	Passed	0.00	25.00	50.00	35.00	100.00
22012F5002	HCN	Hydrogen Cyanide		10.00	471.00%	Passed	0.00	4.50	10.00	4.00	4.70
22091FU131	LEL	Methane	Methane	50.00	170.00%	Passed	0.00	10.00	20.00	N/A	N/A
21121J8027	NO2	Nitrogen Dioxide		25.00	304.40%	Passed	0.00	1.00	3.00	3.00	3.00
22080PZ052	O2	Oxygen		20.90	162.68%	Passed	0.00	19.50	23.50	N/A	N/A

Sensor SN	Sensor Type	Cal Date/Time	Cylinder ID	Cylinder Exp	Zero Cylinder Id	Zero Cylinder Exp
19050E5150	CO	1/16/2023 7:24:40 AM (GMT-07:00)	R254346BE109349	8/31/2024	Fresh Air	N/A
22012F5002	HCN	1/16/2023 7:19:36 AM (GMT-07:00)	271384BQ18188	4/30/2024	Fresh Air	N/A
22091FU131	LEL	1/16/2023 7:25:14 AM (GMT-07:00)	R254346BE109349	8/31/2024	Fresh Air	N/A
21121J8027	NO2	1/16/2023 7:22:52 AM (GMT-07:00)	273621BC497910	8/31/2023	Fresh Air	N/A
22080PZ052	O2	1/16/2023 7:17:27 AM (GMT-07:00)	Fresh Air	N/A	Fresh Air	N/A

:

Eagle Mine
Base Case Cover System Performance Monitoring Report
2022

18 April 2023

VICTORIA GOLD CORP
TSX | VGCX

okane

Integrated Mine Closure and Relinquishment Solutions

Eagle Mine
Base Case Cover System
Performance Monitoring Report
2022

1048-221-009

April 2023

Prepared for:

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0	DRAFT	3-Mar-2023	Rima Bouslama	Larisa Doucette	
1	DRAFT	18-Apr-2023	Blake Weinrauch	Larisa Doucette	Addressed client comments

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EXECUTIVE SUMMARY

Okane Consultants Inc. (Okane) was retained by Victoria Gold Corp. (VG) to provide engineering services to design and evaluate a base case cover system (BCCS)at the 1370 bench of the Platinum Gulch waste rock storage area (PG WRSA) at Eagle Gold Mine in Yukon, Canada. Two performance monitoring stations were installed by VG in October 2020, on the plateau and south facing slope of the BCCS field trial on the 1370 bench of the PG WRSA. The work summarized herein supports reclamation research described in the Reclamation and Closure Plan (RCP; version 2020-01) and is particularly aimed at evaluating net percolation into the WRSA, which is an important component of the overall site-wide water balance and water quality model (Lorax, 2023). This report summarizes performance of the cover system over the second year of monitoring, from January 1, 2022 to December 31, 2022 (referred to as the 2022 monitoring period) and a comprehensive two-year monitoring period between October 24, 2020 to December 31, 2022.

Meteorological conditions during the 2022 monitoring period were consistent with trends in climate of the area. Precipitation varied throughout the summer months, with July to September rainfall exceeding evapotranspirative processes, and October being wetter than the previous period. Volumetric water contents (VWCs) measured at the Plateau monitoring station were lower than the 2020/2021 monitoring period, indicating greater available storage capacity in the cover system throughout the summer. Generally, the Slope cover system monitoring station recorded lower VWCs and greater temperature variations than the Plateau station.

Cover system water balance modelling results for the Slope and Plateau locations in the second year of monitoring were consistent with anticipated performance of the cover system. The cover system water balance model estimated NP rates of 26% and 36% of effective precipitation for Slope and Plateau locations, respectively, similar to the NP rates estimated for 2020/2021 monitoring period. The estimated NP rates are similar to the modeled rates assumed in the site-wide water balance and water quality model. Variability in performance of the cover system monitoring areas is associated with overburden material properties, localized variations in snow accumulation and freeze thaw cycles, and location on the landform. It is expected that NP rates will trend downward as the vegetative cover improves and matures, resulting in lower NP due to more water being pulled from the cover system via evapotranspiration processes.

Continued field trial cover system performance monitoring will provide additional data for characterization cover system performance on a year to year basis and allow various types of climate years to be evaluated.

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1 INTRODUCTION

Victoria Gold Corp. (VG) owns and operates the Eagle Gold Mine on the Dublin Gulch property located in central Yukon Territory, Canada. The mine is currently in operation. Version 2020-01 of the Reclamation and Closure Plan (RCP) outlined a series of tasks for a proposed research program in support of ongoing reclamation and closure planning. Cover system monitoring in support of progressive reclamation is being advanced through a cover system trial at the 1370 bench of the Platinum Gulch waste rock storage area (PG WRSA).

Okane Consultants Inc. (Okane) was retained to design and monitor a base case cover system (BCCS) trial constructed at the 1370 bench of the PG WRSA. The BCCS, consisting of ~0.5 m of overburden placed on the WRSA lift plateau and slope, provides opportunity to track evolution of cover system response to site-specific physical, chemical, and biological processes to enhance understanding of key mechanisms that control cover system performance. Cover system performance will primarily be assessed in terms of net percolation (NP) of meteoric waters.

Installation of performance monitoring stations on the plateau and slope of the BCCS trial was completed by VG on October 23, 2020, with Okane providing remote guidance. The objective of this report is to summarize and interpret meteorological and soil condition monitoring data collected through the second year of monitoring of the BCCS trial, from January 1, 2022 to December 31, 2022, herein referred to as the 2022 monitoring period. In addition, trends in data for the two-year monitoring period between October 24, 2020 and December 31, 2022 will be discussed. Water balance estimations are also presented and discussed within this report.

1.1 Project Objectives and Scope

The RCP outlines a research program associated with the 1370 m lift on the PG WRSA (i.e., the 1370 bench) into reclamation cover system configurations and the processes governing performance. The primary objective of the 1370 bench cover system trial is to measure and understand BCCS water dynamics on the lift plateau and slope, such that an informed estimate of NP rates through a variably thick cover system can be developed. Estimated NP[1] rates can then be considered in refining the BCCS configuration if required. Cover system performance is considered in the context of Eagle Gold Mine's water balance and water quality model (WBWQM) (Lorax, 2023).

A secondary objective of the research program is to demonstrate that the BCCS design is geotechnically, geomorphologically, and geochemically stable. Thus, as the objectives are realized they can be used to demonstrate that the integrated performance of the system is sufficient to meet closure performance objectives without the need for substantial regrading of the WRSAs.

[1] NP of net precipitation is defined as the difference between total precipitation and total evapotranspiration.

1.2 Conceptual Model of Performance

The primary objective of the BCCS is to provide controls on NP to limit infiltration into waste rock material and subsequently limit leaching, by taking advantage of the water store and release properties of overburden material. Climate is a primary driver of cover system performance, and the Eagle Gold Mine site setting is classified as a Dsb climate regime (Continental Subarctic, with a cold dry summer) as per the Köppen-Geiger classification system. According to the Global Cover System Design Technical Guidance Document (INAP, 2017) a Dsb climate is expected to facilitate a range of NP (and variable evapotranspiration and runoff rates), expressed as percentage of annual precipitation, for various cover system alternatives as follows:

- Very low (<5%): Geosynthetic;
- Low (5–10%): Barrier Type – Sand bentonite layer;
- Moderate (10–20%): Enhanced store and release – low hydraulic conductivity layer;
- High (20–50%): Store and release;
- Very High (>50%): Erosion protection – Vegetative cover.

The BCCS trial is a simple monolithic layer of overburden and can be expected to perform as a store and release cover system. A cover system of this type would thus be expected to allow from 20% to 50% of average annual precipitation to infiltrate past the base of the cover system (below the zone of effective evapotranspiration). However, the spatial distribution of NP is not expected to be consistent over the entirety of the WRSA. For example, slope areas are expected to have a large runoff component with spring melt, and if slope runoff is not directed off the facility, it could accumulate at a downslope plateau area. The net effect is a lower NP rate on slopes, with the balance accumulating on lift plateaus. Much of the remaining input water would be released via evapotranspiration during the summer months. It is expected that the majority of NP occurs during the freshet season as soil thaws, and in the fall once evapotranspiration rates slow, but before soil has frozen. Following establishment of the cover system, an NP rate of 25 to 30% of average total annual precipitation has been assumed in the Eagle Gold Mine WBWQM (Lorax, 2023), which translates to approximately 31% and 37% of effective precipitation on the slope and plateau, respectively.

1.3 Report Organization

The report has been subdivided into the following sections:

- Section 2 – Background;
- Section 3 – Material and Methods;
- Section 4 – Results;
- Section 5 – Discussion;

- Section 6 – Summary;
- Section 7 – Recommendations and,
- Section 8 – References.

2 BACKGROUND

The approximate area of the PG WRSA 1370 bench plateau is 47,500 m^2, and the amount of overburden used to construct the BCCS in September and October 2020 was 20,777 m^3. The BCCS consists of ~0.5 m of overburden material placed on a portion of the 1370 bench lift plateau and on a section of the adjacent ~1.15H:1V slope (Dwg. 1048-005-020, Appendix A). The cover system design is aligned with the base case configuration in the VG RCP and will inform on the potential of using the configuration for successful reclamation.

The cover system was constructed using standard site procedures. Construction methods included paddock dumping and dozing of overburden material from the stockpile across the plateau of the 1370 bench to produce the ~0.5 m cover system layer, and nominal tracking and compaction by dozer after placement. Some remaining overburden was pushed over the crest and spilled down the south-southeast slope. The method for covering slopes aligns with the proposed final closure method for the mine, and slope faces will be covered by dozing material over the crest of each bench. The method of application is appropriate for cover system placement on slopes that do not require regrading and where waste rock slopes need to be regraded. The application method does not provide a uniform cover system thickness on the waste rock slopes but will allow for a greater understanding of water partitioning on both benches and slopes for the refinement of cover system model inputs.

Installation of cover system performance monitoring instrumentation on the BCCS trial was completed by VG in October 2020 and is managed jointly by VG and Okane. A material sampling program was conducted before and during cover system construction to characterize physical and hydraulic properties of the overburden material (Okane, 2022b).

3 MATERIALS AND METHODS

3.1 Performance Monitoring Instrumentation

Profile views of performance monitoring instrumentation installed in the 1370 bench BCCS trial are shown on Dwg. 1048-005-002 (Appendix A). A detailed description of the installation of soil water and meteorological monitoring instruments can be found in Okane (2021a). The following is a summary of instrumentation installed:

- One Plateau Soil Monitoring Station consisting of five matric suction and five volumetric water content (VWC) sensors installed throughout the cover system and in the waste surface, along with a net radiometer, snow depth sensor, and tipping bucket rain gauge (TBRG) (Photo B.1, Appendix B);

- One Slope Soil Monitoring Station consisting of five matric suction and five volumetric water content (VWC) sensors installed throughout the cover system and in the waste surface, along with a net radiometer and snow depth sensor (Photo B.2, Appendix B).

Precipitation (PPT), wind speed, air temperature, and relative humidity (RH) are measured by the existing meteorological stations on site (Potato Hills and Camp meteorological stations). The primary station used to create the meteorological station data record for this report is Potato Hills. Air temperature and RH recorded at the Camp meteorological station amended the Potato Hills record for periods of missing or erroneous data reported at the Potato Hills station to create a dataset hereby referred to as the meteorological station data record. Data collected and analyzed for the 2020/2021 monitoring period (October 24, 2020 to November 30, 2021) is summarized in Okane (2022a).

3.2 Monitoring Data Collection

Data capture rates for components of the 1370 bench BCCS field trial performance monitoring systems were analyzed over the 2022 monitoring period (Table 3.1); the average data capture rate was 99%. Data capture rates for automated sensors are based on the number of sensors operating compared to the total number of sensors installed, and the data collection efficiency of these sensors [number of data points collected / (number of measurements per day x number of days in the monitoring period)].

Table 3.1: Soil water and meteorological monitoring station data capture rates for the 2022 monitoring period.

Component	Number of Automated Sensors	Number of Automated Sensors Operating	Data Capture Rate
Site Meteorological Record (Potato Hills and Camp)			
Total precipitation	1	1	99%
Air temperature / RH	1	1	94%
Wind speed / direction	1	1	94%
Plateau Soil Monitoring Station			
Matric suction / temperature	5	5	100%
Water content	5	5	100%
Net radiometer	1	1	100%
Snow depth	1	1	69%
Rainfall	1	1	100%
Slope Soil Monitoring Station			
Matric suction / temperature	5	5	100%
Water content	5	5	100%
Net radiometer	1	1	100%
Snow depth	1	1	95%
Average Data Capture Rate for the Monitoring Period			**99%**

Data issues identified for the 2022 monitoring period were as follows:

1. Erroneous or missing air temperature and RH measurements were identified at the Potato Hills meteorological station from July 21, 2022 to October 6, 2022, which may be associated with sensor failure. Air temperature and RH data collected during this period by the Camp meteorological station were inserted into the Potato Hills station record to complete the meteorological station record.

2. Erroneous or missing snow depth measurements were identified at the Plateau station from July 10, 2022 to October 3, 2022.

3. A data gap in the site meteorological station record from October 1 to October 6, 2022 was due to Campbell Scientific (CS) performing maintenance on the Potato Hills and Camp meteorological stations.

4 RESULTS

4.1 Meteorological Conditions

Meteorological parameters are measured to obtain site-specific climatic conditions for evaluation of cover system performance. Precipitation, wind speed, air temperature, and RH are measured by the existing meteorological stations on site (Potato Hills and Camp meteorological stations). Due to the similar elevation of the Potato Hills station and the 1370 bench BCCS trial, it is used as the primary station to create the meteorological data record. The Potato Hills record is supplemented with air temperature and RH data from the Camp meteorological station from July 20, 2022 to October 1, 2022, when Potato Hills data is erroneous or missing. Net radiation and snow depth are measured at both the 1370 bench BCCS trial Plateau and Slope cover system monitoring stations, and rainfall is measured at the Plateau monitoring station only.

4.1.1 Air Temperature

Air temperatures recorded for the meteorological station data record since the onset of monitoring are presented in Figure 4.1. Air temperature recorded for the meteorological station data record during the 2022 monitoring period ranged from a low of -34.4°C in January 2022, to a high of 26.1°C in August 2022. In comparison, during 2021 monitoring period, temperatures ranged from a low of -41.1°C in February 2021, to a high of 28.6°C recorded in July 2021 (Table 4.1).

The average minimum air temperature during the 2022 monitoring period was warmer (-16.6 °C) than the average minimum air temperature during the 2021 monitoring period (-18.3 °C) (Table 4.1). The average maximum air temperature (8.7°C) in the 2022 monitoring period was warmer than the 2021 monitoring period (7.5°C).

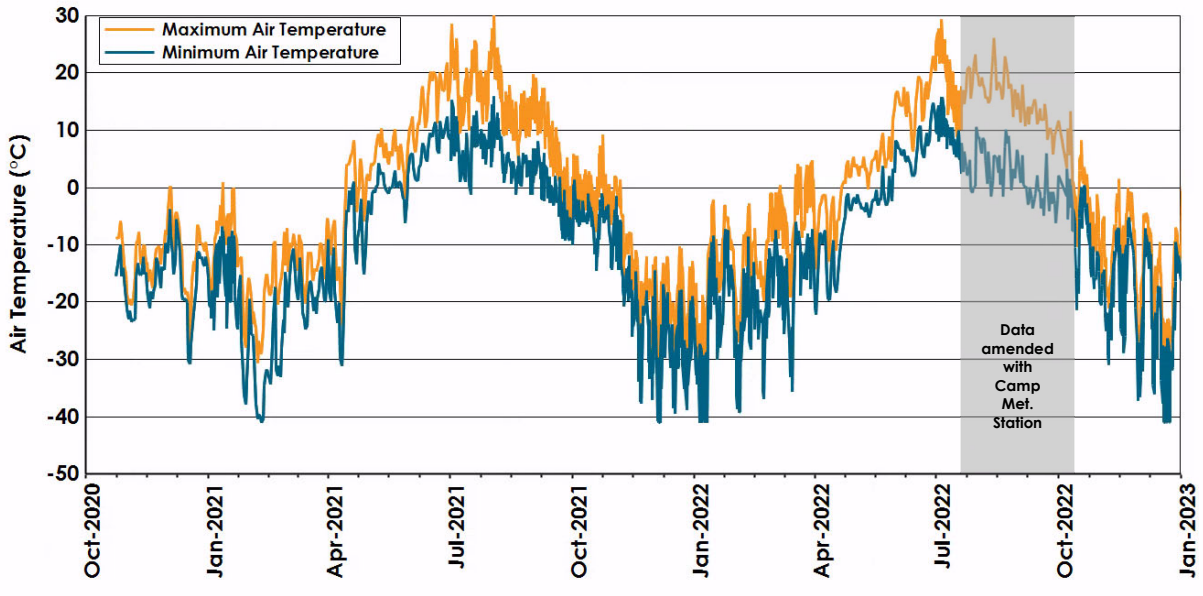

Figure 4.1: Daily minimum and maximum air temperatures recorded for the meteorological station data record since the onset of monitoring.

Table 4.1: Maximum and minimum monthly air temperatures recorded for the meteorological station data record during the 2021 and 2022 monitoring period.

Month	2021		2022	
	Maximum Air Temp (°C)	Minimum Air Temp (°C)	Maximum Air Temp (°C)	Minimum Air Temp (°C)
January	0.9	-37.9	-3.1	-34.4
February	-7.7	-41.1	-3.3	-28.6
March	-5.4	-24.7	-1.4	-26.8
April	8.2	-31.1	5.3	-22.1
May	10.6	-6.2	13.9	-5.1
June	21.9	1.3	22.9	1.9
July	28.6	-1.2	24.9*	-0.8*
Aug	25.0	0.8	26.1*	-1.5*
Sep	15.4	-9.3	18.1*	-6.2*
Oct	0.7	-10.6	6.8	-17.7
Nov	1.6	-28.7	-1.7	-27.8
December	-10.4	-30.5	-4.4	-29.6
Average	**7.5**	**-18.3**	**8.7**	**-16.6**

*Amended with Camp Meteorological Station data.

4.1.2 Relative Humidity

Daily maximum and minimum relative humidity (RH) in the meteorological station data record was available for the monitoring periods and is presented in Figure 4.2. The maximum recorded RH for both monitoring periods was 100% and the minimum RH was 18.5% and 20.4% for the 2021 and 2022 monitoring periods, respectively. Daily average RH during the 2022 monitoring period is presented in Figure 4.3. The maximum recorded average daily RH was 99.2% and the minimum was 33.6%.

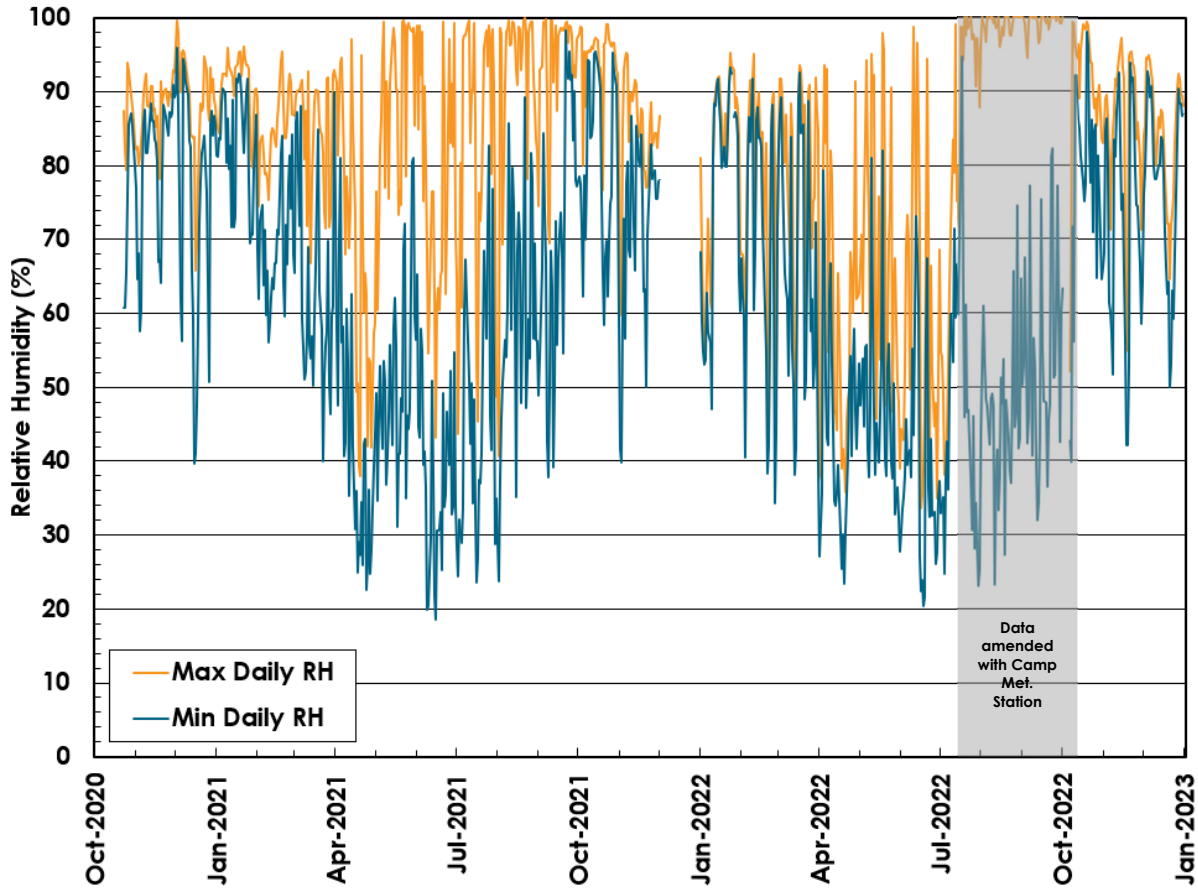

Figure 4.2: Daily minimum and maximum relative humidity recorded for the meteorological station data record since the onset of monitoring.

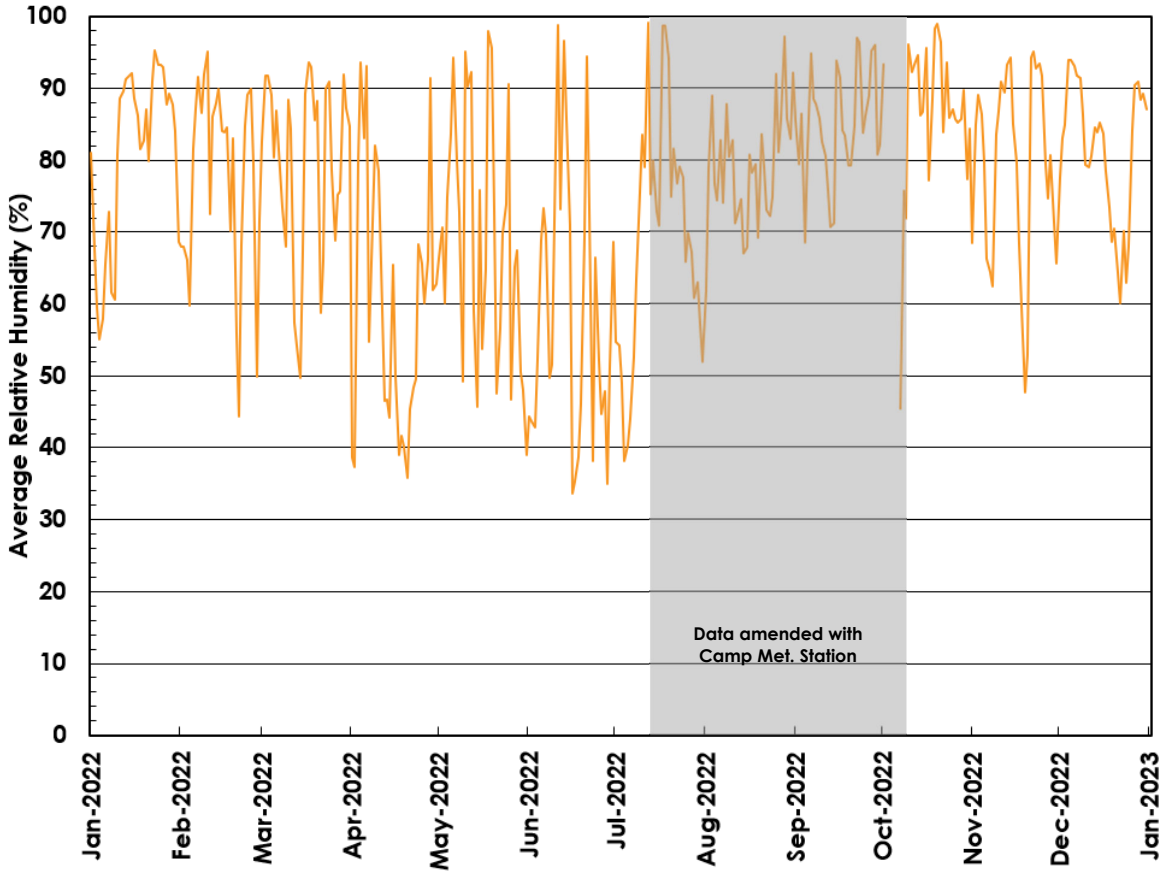

Figure 4.3: Daily average relative humidity measured for the meteorological station data record during the 2022 monitoring period.

4.1.3 Wind Speed

The average daily wind speed for the meteorological station data record since the onset of monitoring is presented in Figure 4.4. Average annual daily wind speed of 2.7 m/s in the 2022 monitoring period was similar to that recorded in the previous monitoring period. A maximum average daily wind speed of 9.6 m/s was recorded on January 2, 2022 and a minimum average daily wind speed of 0.04 m/s was recorded on January 18, 2022.

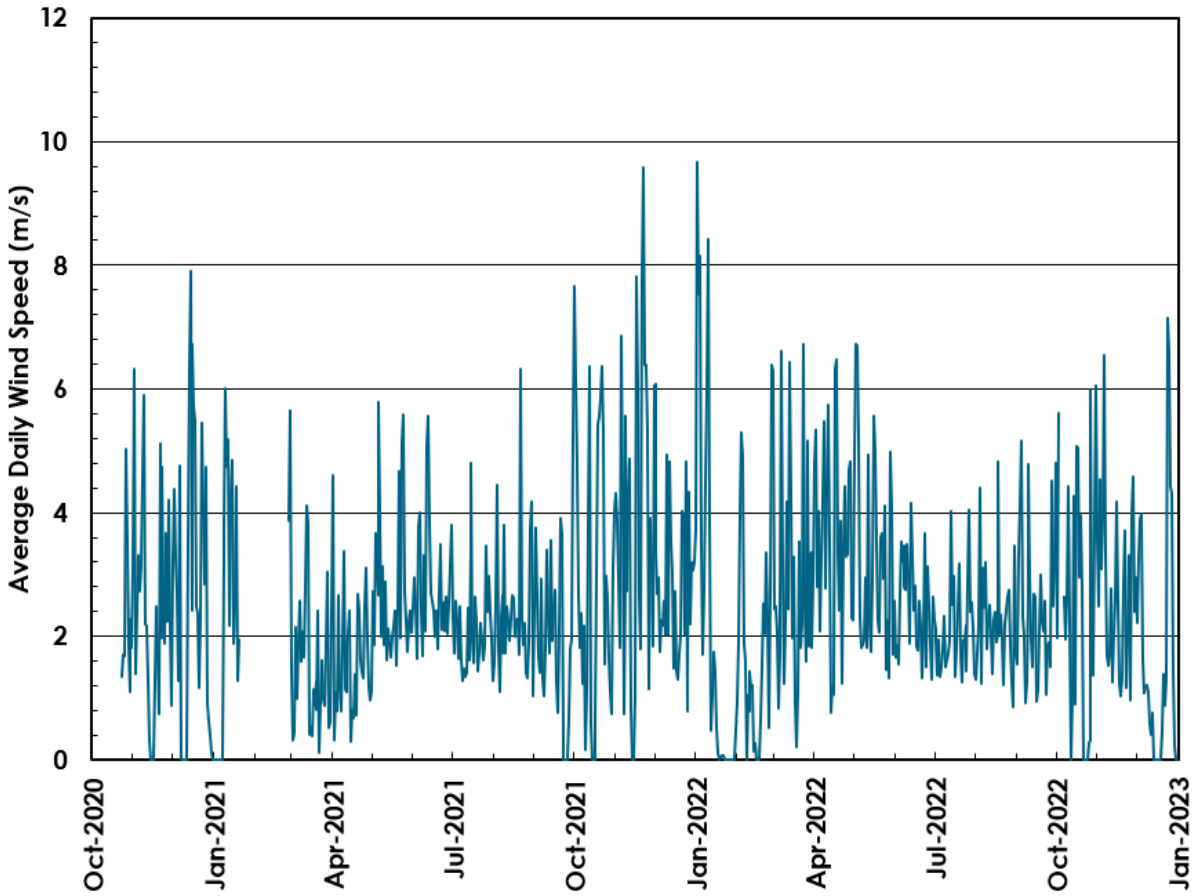

Figure 4.4: Average daily wind speed recorded for the meteorological station data record since the onset of monitoring.

4.1.4 Net Radiation

Net radiation is important in understanding temperature fluctuations in the cover system and is the primary driver in the calculation used to estimate reference evapotranspiration. Net radiation is continuously monitored at the Plateau and Slope monitoring stations of the 1370 bench BCCS trial with Kipp & Zonen model NR-LITE2 net radiometers; hourly averages and daily totals of net radiation (i.e., the sum of incoming and outgoing all-wave radiation) are monitored. The Slope monitoring station is located on the southeast slope of the 1370 bench (Dwg. 1048-005-020, Appendix A). Total daily net radiation recorded at the Plateau and Slope stations since the onset of monitoring is presented in Figure 4.5 . An average daily net radiation of 1.9 MJ/m^2 and 1.0 MJ/m^2 during the 2022 monitoring period was recorded with a maximum daily net radiation of 14.4 MJ/m^2 and 13.1 MJ/m^2 recorded on May 20, 2022 at the Plateau and Slope stations, respectively.

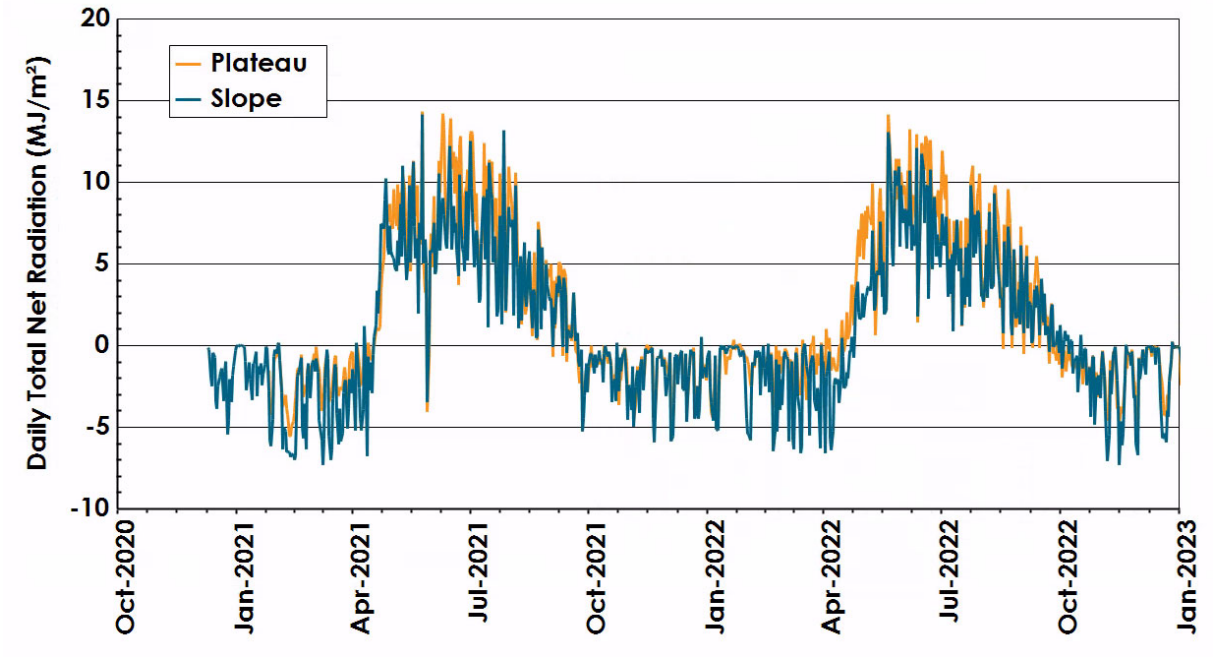

Figure 4.5: Daily total net radiation recorded at the 1370 bench BCCS trial Plateau and Slope monitoring stations since the onset of monitoring.

4.1.5 Total Precipitation

Total precipitation is continuously monitored with precipitation weighing gauges at the Potato Hills and Camp meteorological stations and is a sum of rainfall and snow water equivalent (SWE). Daily and cumulative precipitation recorded for the meteorological station data record during the 2021 monitoring period and the 2022 monitoring period is presented in Figure 4.6 and Figure 4.7, respectively. Cumulative precipitation in the 2022 monitoring period was 441.0 mm, comprised of 122.9 mm snowfall and 318.1 mm rainfall.

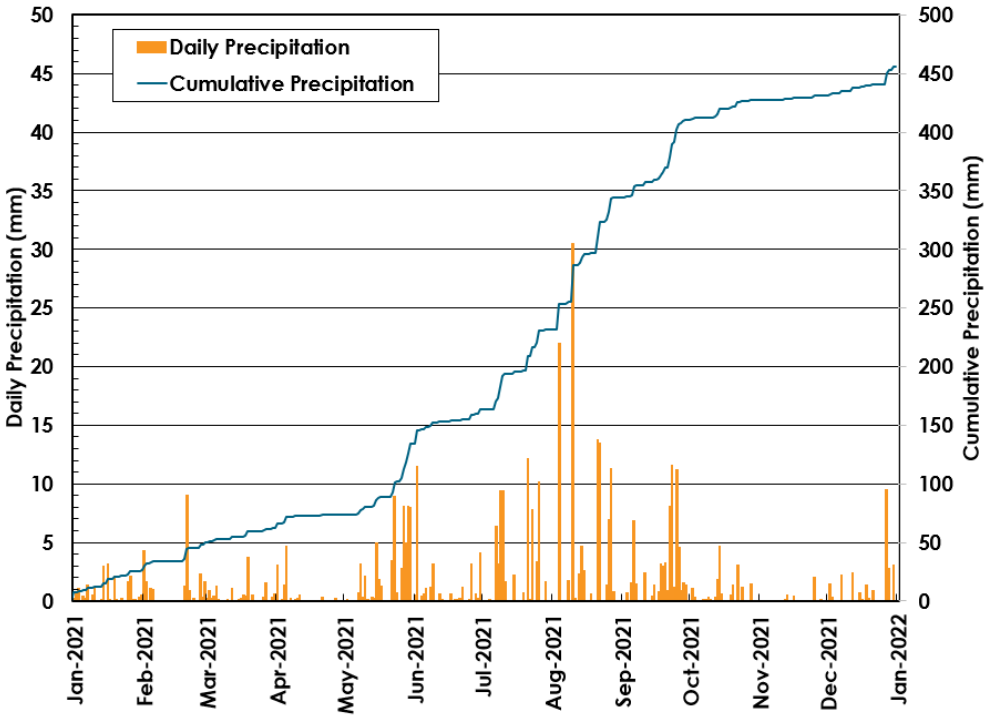

Figure 4.6: Daily and cumulative total precipitation for the meteorological station data record during the 2021 monitoring period.

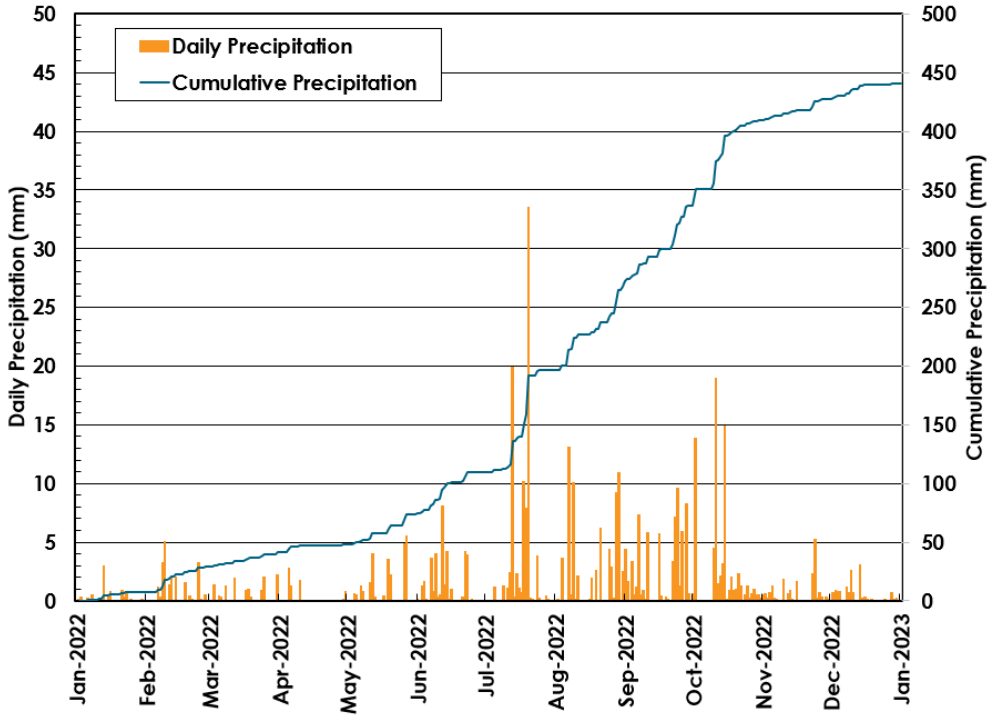

Figure 4.7: Daily and cumulative total precipitation measured for the meteorological station data record during the 2022 monitoring period.

4.1.6 Rainfall

Rainfall is continuously monitored at the 1370 bench BCCS trial Plateau station with an EML Metric ARG314 TBRG with 0.2 mm resolution. ARG314 rainfall measurements are accurate to 99% up to 120 mm/hr wind speeds. The aerodynamic shape of the TBRG reduces wind loss of rainfall over the orifice, increasing accuracy of the measurement. Total monthly rainfall recorded on the 1370 bench BCCS trial Plateau and the meteorological station data record for the 2021 and 2022 monitoring periods is presented in Table 4.2. Daily and cumulative rainfall recorded on the Plateau during the 2021 and 2022 monitoring periods is presented in Figure 4.8 and Figure 4.9, respectively. Cumulative rainfall on the Plateau is compared to the site meteorological station record in Figure 4.10 and Figure 4.11 for the 2021 and 2022 monitoring periods, respectively.

Table 4.2: Rainfall recorded on the 1370 bench BCCS trial Plateau and site meteorological stations for the 2021 monitoring period vs. the 2022 monitoring period.

Month	2021 Total Rainfall (mm)		2022 Total Rainfall (mm)	
	1370 Bench BCCS Trial	Meteorological station data record (Potato Hills and Camp)	1370 Bench BCCS Trial	Meteorological station data record (Potato Hills and Camp)
April	1.0	0.0	0.0	0.0
May	29.8	55.2	8.6	15.1
June	19.4	29.8	40.4	35.8
July	66.4	68.2	67.8	86.8[1]
Aug	89.6	112.3	90.8	75.2[1]
Sep	22.0	18.8	63.4	64.8[1]
Oct	0.0	0.0	24.2	40.3[1,2]
Total	**228.2**	**284.3**	**295.2**	**318.1**

[1] Correcting using daily average air temperature recorded by the Camp Meteorological Station.

[2] 13.9 mm rainfall event recorded at the Camp Meteorological Station on October 1, 2022, amended into the meteorological station data record.

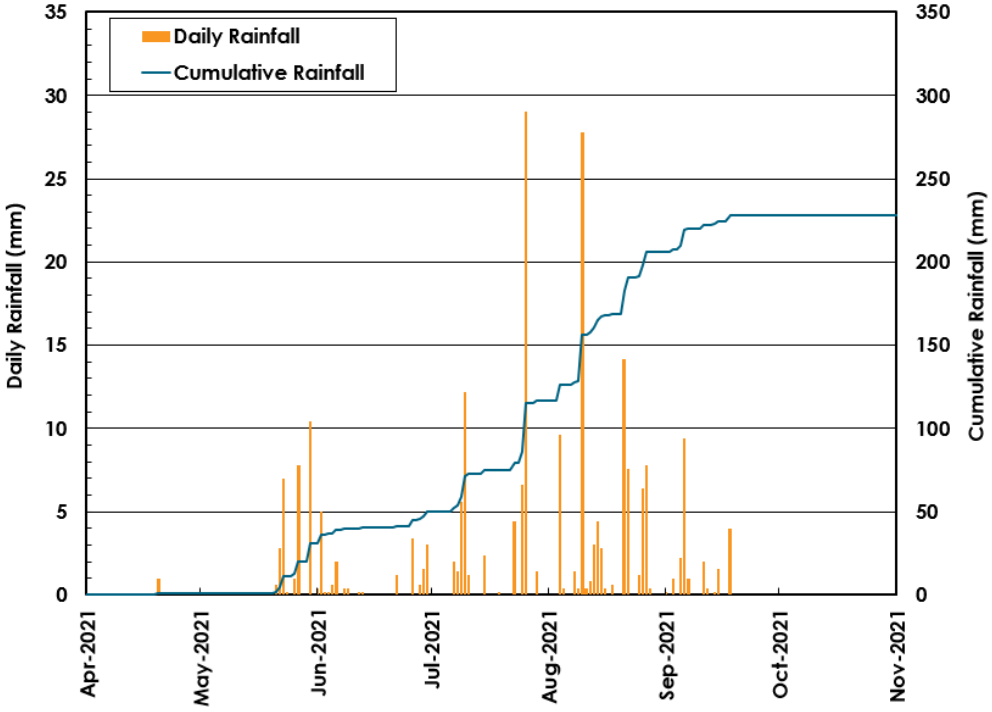

Figure 4.8: Daily and cumulative rainfall measured at the 1370 Bench BCCS trial Plateau monitoring station during the 2021 monitoring period.

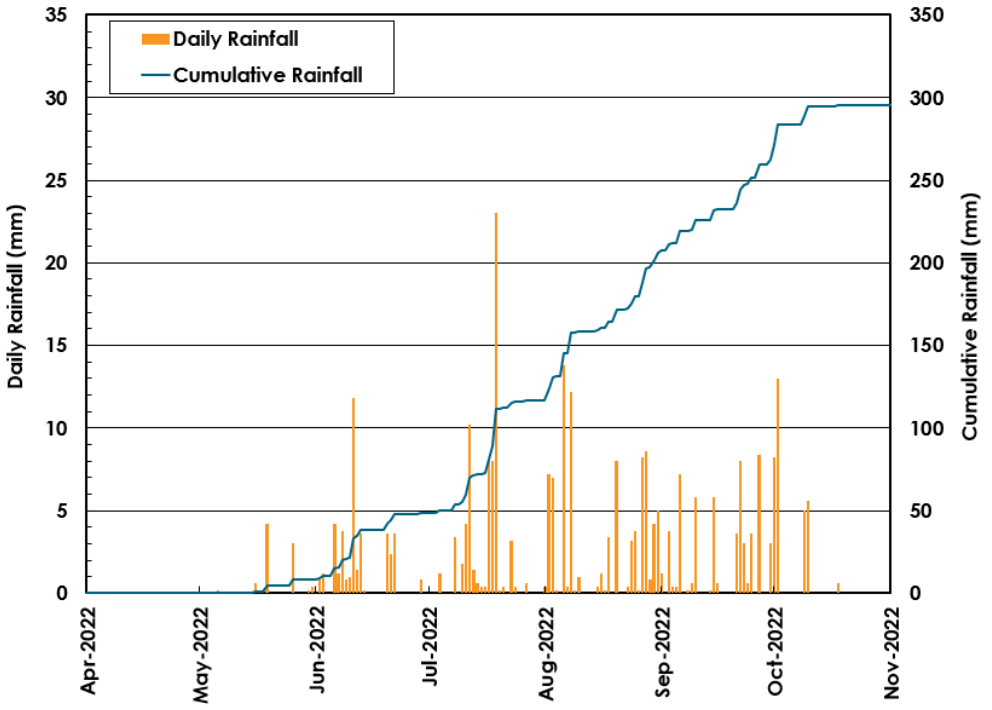

Figure 4.9: Daily and cumulative rainfall measured at the 1370 Bench BCCS trial Plateau monitoring station during the 2022 monitoring period.

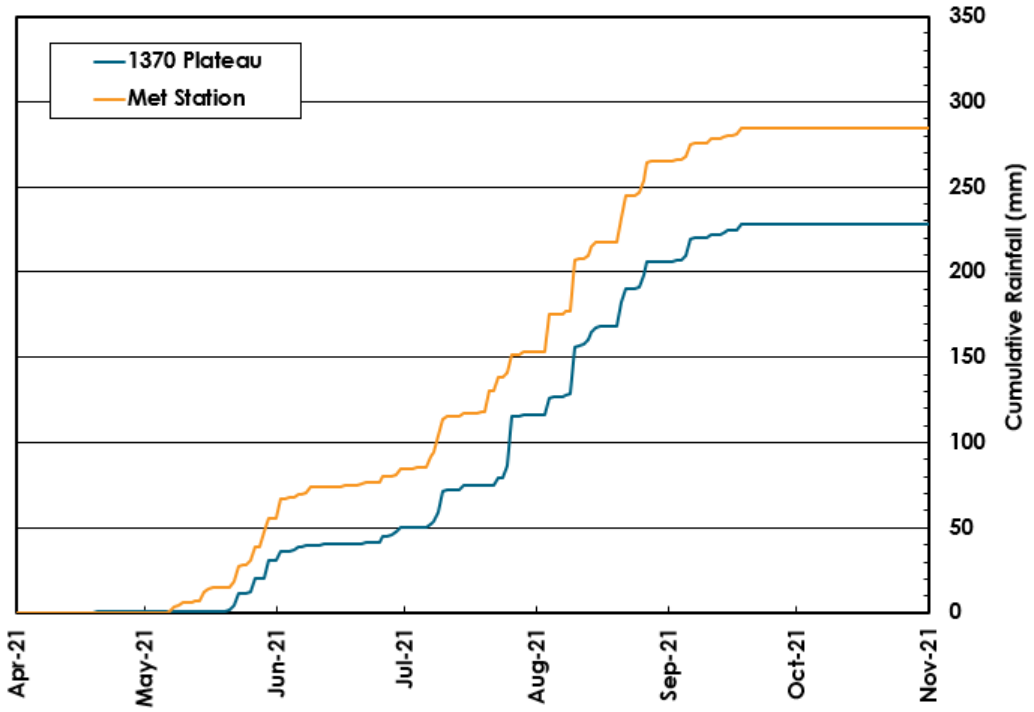

Figure 4.10: Cumulative rainfall recorded at the 1370 Bench BCCS trial Plateau monitoring station and the meteorological station data record during the 2021 monitoring period.

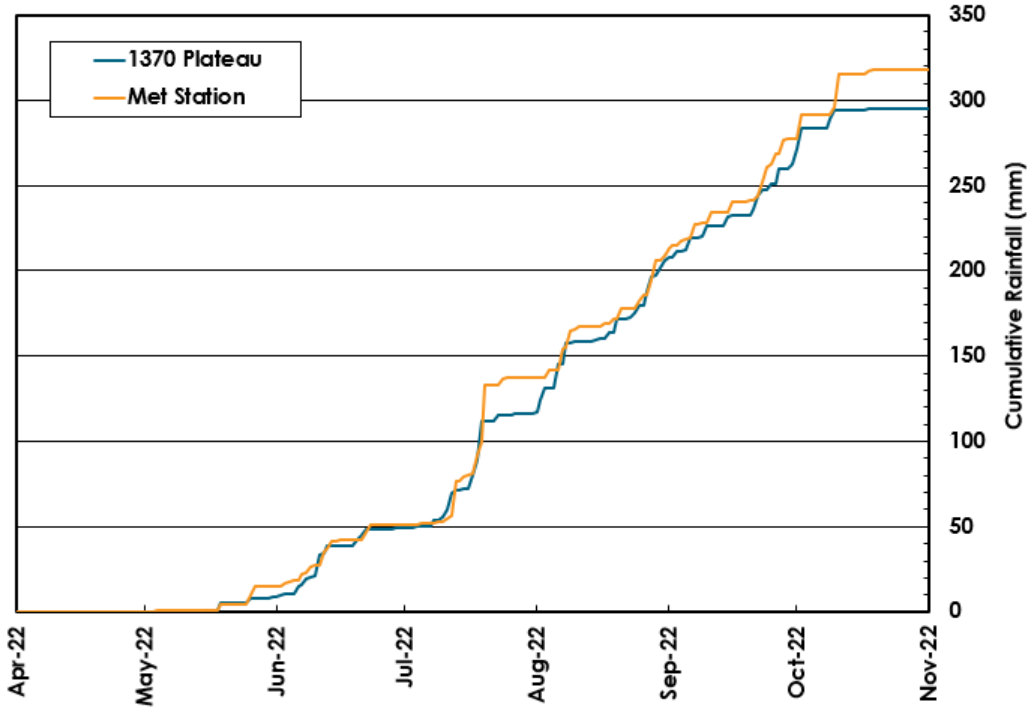

Figure 4.11: Cumulative rainfall recorded at the 1370 Bench BCCS trial Plateau monitoring station and meteorological station data record during the 2022 monitoring period.

4.1.7 Snow Depth

Snow depth is continuously monitored with CS SR50AT sonic ranging sensors at the 1370 bench BCCS trial Plateau and Slope monitoring stations, with a measurement accuracy of ±1 cm. The snow depth sensor measures the distance to the surface beneath by emitting an ultrasonic pulse in a conical beam and measuring the elapsed time between the emission and return of the pulse. Raw distance data is corrected with an air temperature measurement collected by the SR50AT to account for variations of the speed of sound in air. The corrected snow depth data is then averaged by the sensor and used to calculate a single snow depth value for the conical area below the sensor. Average daily snow depths recorded since the onset of monitoring are presented in Figure 4.12.

A snow survey was not completed on the cover system trial in the 2022 monitoring period due to windblown conditions on the 1370 bench BCCS plateau. Although the cover trials experienced windblown conditions on the plateau, the snow depth sensor indicated that snow had accumulated below the sensor. Table 4.3 summarizes maximum snow depth measurements recorded on the 1370 bench BCCS trial Plateau and Slope stations for the 2020/2021 and 2021/2022 snow seasons[2]. Snow depth data is used to estimate SWE snowmelt timing as part of the water balance analysis.

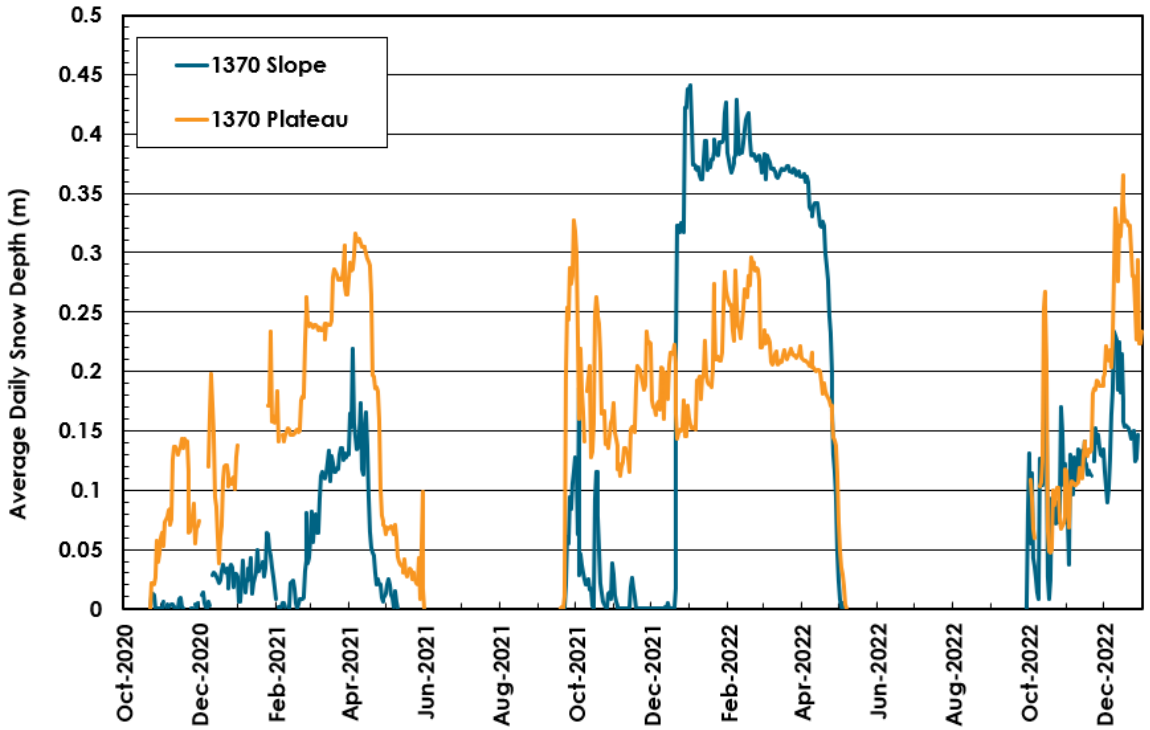

Figure 4.12: Daily average snow depth measured at the 1370 Bench BCCS trial Plateau and Slope monitoring stations since the onset of monitoring.

[2] Snow season is defined from approximately October to May

Table 4.3: Maximum snow depth recorded on the 1370 Bench BCCS trial Plateau and Slope stations for the 2020/2021 snow season* vs. the 2021/2022 snow season*.

Snow season	1370 BCCS trial station	Date	Maximum snow depth (m)
2020/2021	Plateau	Apr 6, 2021	0.36
	Slope	Apr 2, 2021	0.22
2021/2022	Plateau	Dec 31, 2021	0.50
	Slope	Jan 1, 2022	0.44

*approximately October to May.

A snow survey was completed by VG site personnel at the "Dustfall Above Pit" location (located approximately 300 m east of the 1370 bench but also at an elevation of ~1,370 masl) during the 2022 monitoring period (Table 4.4). The maximum SWE calculated using the Dustfall Above Pit area snow survey data was 279 mm on March 26, 2022, with a maximum snow depth of 109.3 cm.

Table 4.4: Snow surveys completed at the "Dustfall Above Pit" location during the 2022 monitoring period.

Survey Date	Average Snow Depth	Snow Water Equivalent	Density
	(cm)	(mm)	(kg/m^3)
Jan 31, 2022	100.10	224	224
Feb 28, 2022	107.10	238	224
Mar 26, 2022	109.30	279	266
May 2, 2022	85.00	228	267

4.2 Subsurface Temperature

Subsurface soil temperatures of the cover system trial are recorded at 1370 bench BCCS trial Plateau and Slope soil monitoring stations using profiles of CS Model 229 (CS229) heat dissipation matric potential sensors to observe freeze-thaw cycling and the depth of frost penetration. The largest implication of freeze-thaw cycles on cover system performance is potential changes to physical properties of the material, such as altering the hydraulic conductivity. Soil temperature data recorded at the Plateau and Slope monitoring stations since the onset of monitoring are illustrated in Figure 4.13 and Figure 4.14, respectively.

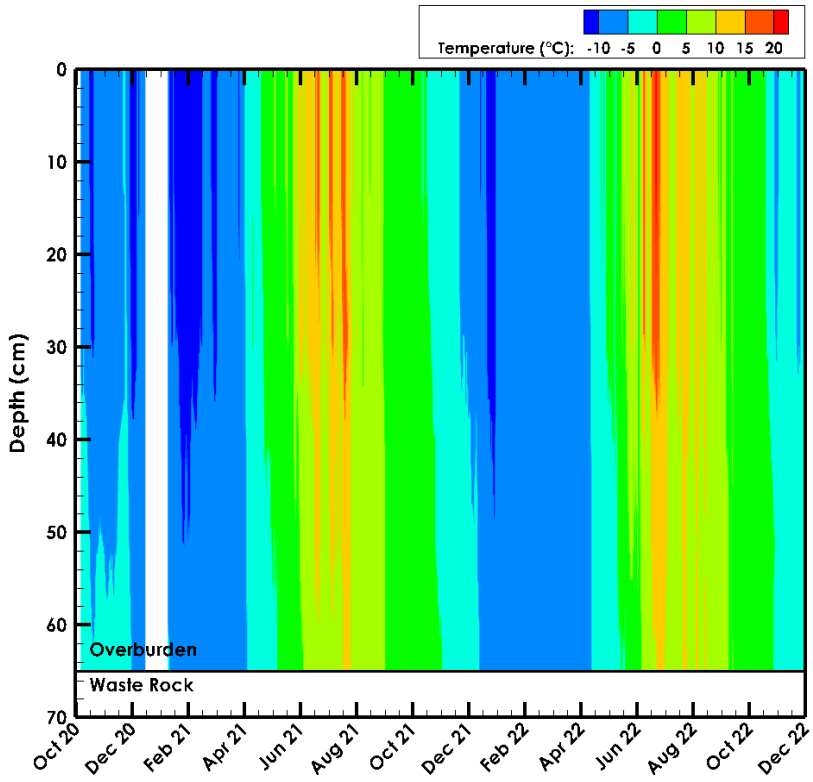

Figure 4.13: Soil temperature measured at the 1370 Bench BCCS trial Plateau soil monitoring station since the onset of monitoring (white vertical areas indicate periods of missing data).

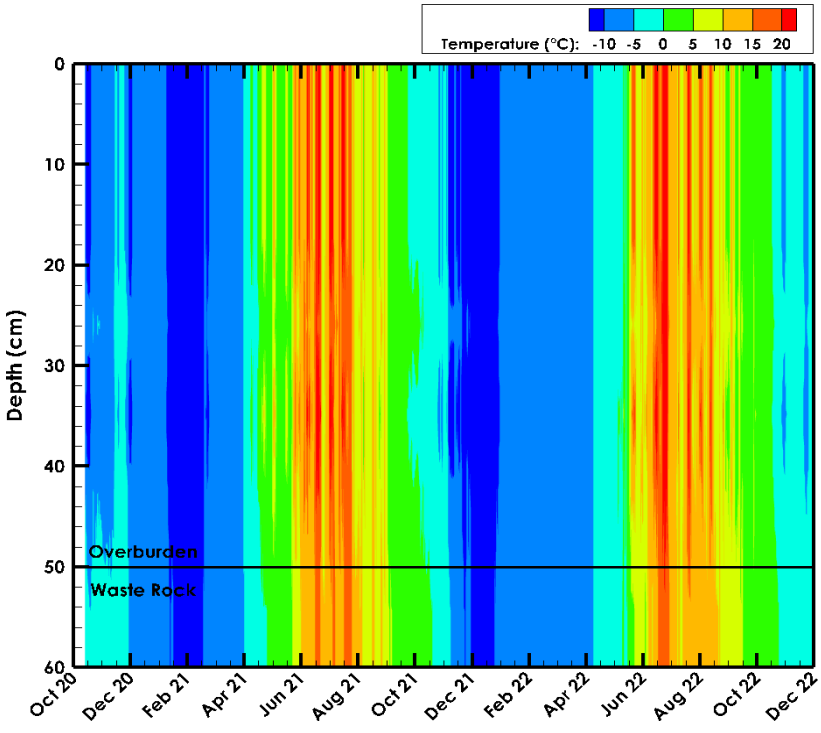

Figure 4.14: Soil temperature measured at the 1370 Bench BCCS trial Slope soil monitoring station since the onset of monitoring.

4.3 Soil Water Conditions

Subsurface volumetric water content (VWC) of the 1370 bench BCCS trial is recorded at Plateau and Slope soil monitoring stations using profiles of CS616 water content reflectometers, with a measurement accuracy of ±2.5%. The CS616 reflectometer measurements are based on dielectric constant, and because the dielectric constant for ice is different than water, VWC data cannot be interpreted during frozen conditions and is removed from datasets. Matric potential is measured with CS229 heat dissipation matric potential sensors installed at the soil monitoring stations with an accuracy of ~1 kPa at matric potentials > -100 kPa. Matric suction and VWC measurements can be analyzed to investigate performance and water dynamics of the cover system.

4.3.1 Volumetric Water Content

Soil VWC data collected at the 1370 bench BCCS trial Plateau and Slope monitoring stations since the onset of monitoring are illustrated in Figure 4.15 and Figure 4.16, respectively.

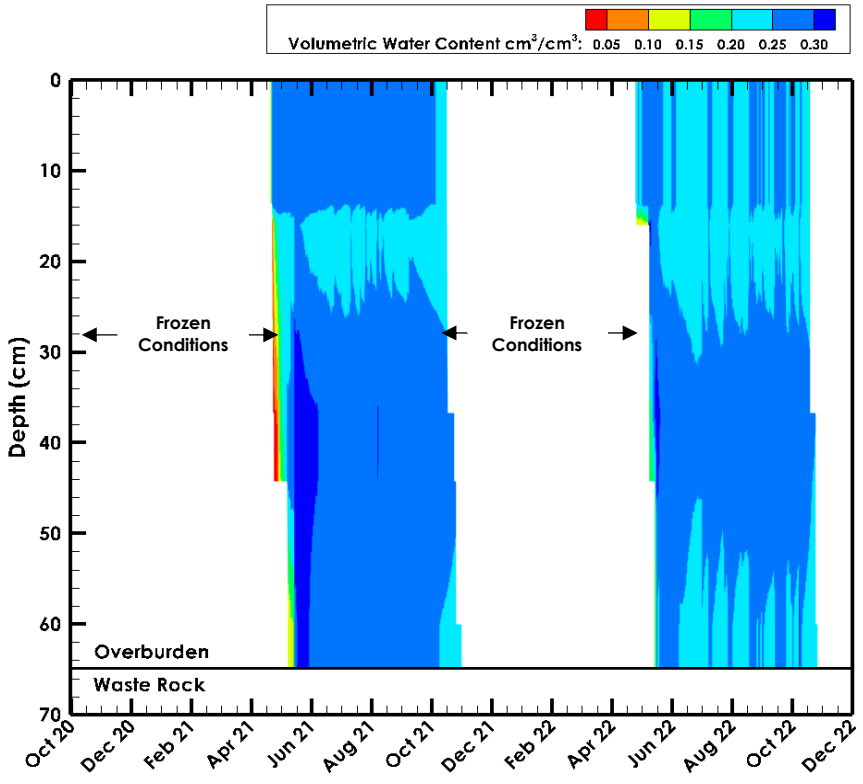

Figure 4.15: Soil VWC measured at the 1370 bench BCCS trial Plateau soil monitoring station since the onset of monitoring.

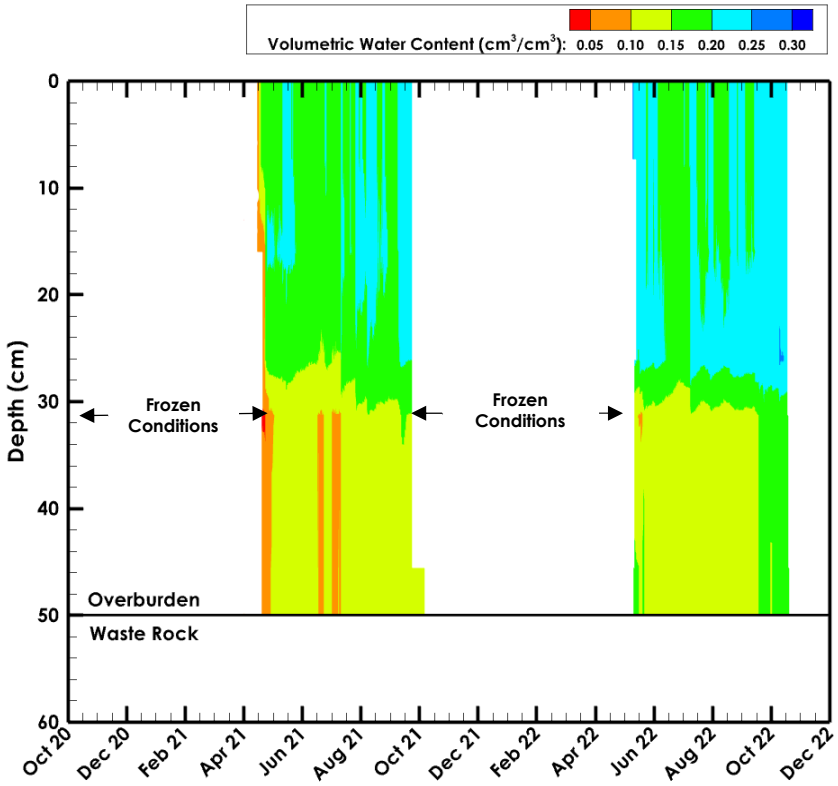

Figure 4.16: Soil VWC measured at the 1370 Bench BCCS trial Slope soil monitoring station since the onset of monitoring.

4.3.2 Matric Suction

Matric suction is a measure of the energy state in the system. Knowledge of the potential energy of soil water at discrete points within the soil allows determination of how far the water in a soil system is from equilibrium (Hillel, 1998). In the case of unsaturated soils, the magnitude of potential energy as given by matric suction provides an indication of the energy that would be required to remove an additional unit of water at the soil surface. Matric suction data collected at the 1370 bench BCCS trial Plateau and Slope monitoring stations since the onset of monitoring are illustrated in Figure 4.17 and Figure 4.18, respectively.

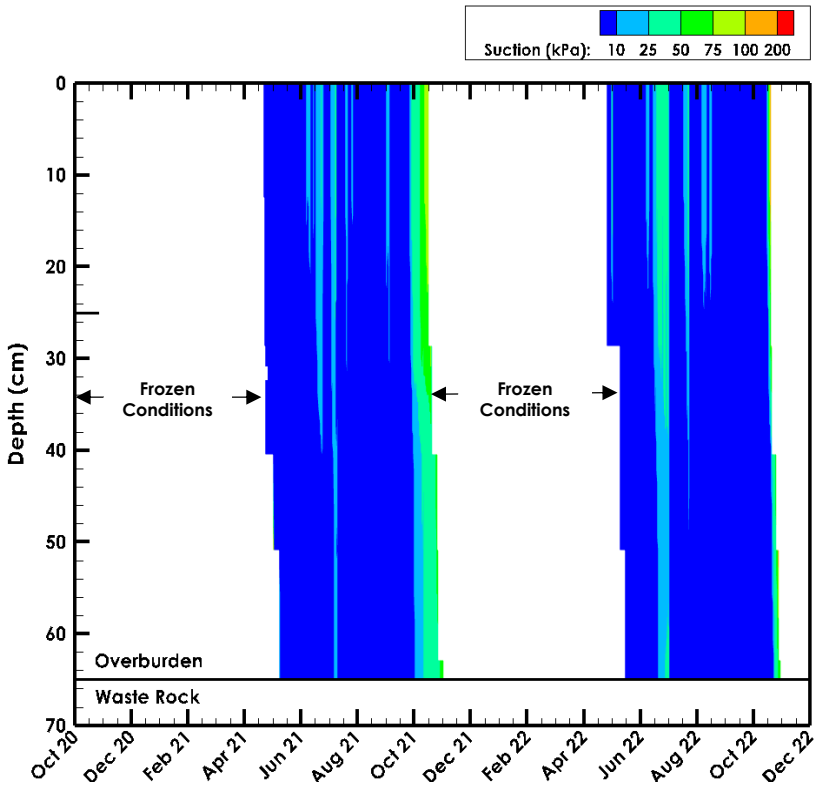

Figure 4.17: Soil matric suction measured at the 1370 Bench BCCS trial Plateau soil monitoring station since the onset of monitoring.

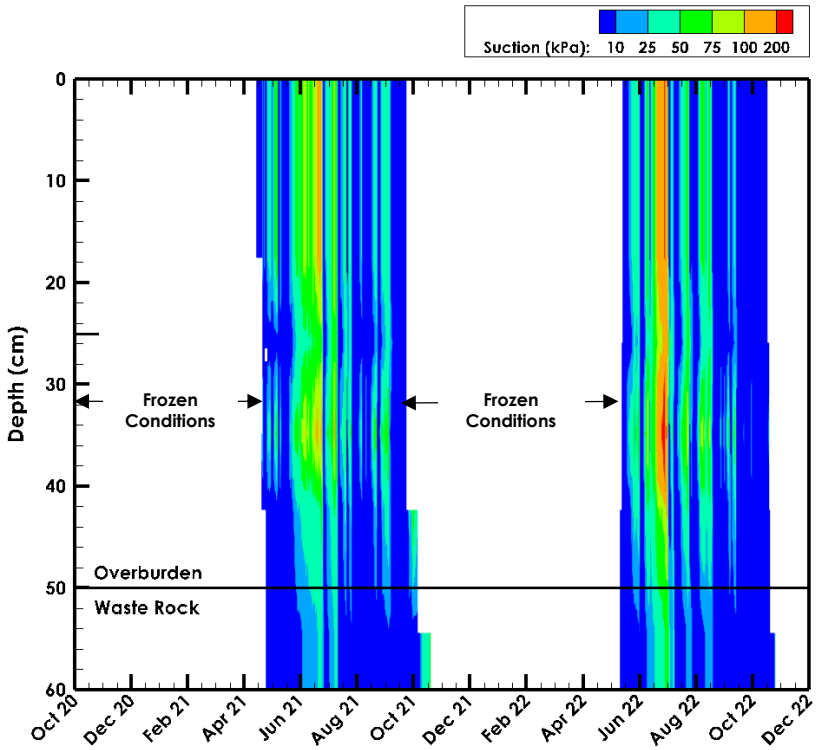

Figure 4.18: Soil matric suction measured at the 1370 Bench BCCS trial Slope soil monitoring station since the onset of monitoring.

5 DISCUSSION

5.1 Meteorological Conditions

Since monitoring began on the 1370 bench BCCS trial, meteorological conditions have been recorded from various monitoring stations and can provide indications of local variability between stations and larger scale climate variability. Meteorological conditions govern the performance of the cover system and the metrics used to evaluate performance, such as subsurface temperatures and water content, reflect local conditions. Generally, trends in meteorological data measured at site follow expected patterns for a northern site, with elevated temperatures during prolonged summer insolation, as well as delayed snowpack melting in spring.

All snow at the base of the Slope and Plateau monitoring station had melted by early-May 2022; both stations remained snow free for the summer season (Figure 4.12). While temperatures remained below zero until late April 2022, snow events in December 2021 through March 2022 and October 2022 through November 2022 are generally correlated with drops in air temperature and corresponding periodic drops in net radiation. The largest snow event on December 27, 2021, corresponded with a minimum temperature of -28.1°C, and a net radiation decrease of ~ 0.4 to -1.2 MJ/m^2. This snowfall event resulted in a snow depth increase of 11.0 cm at the Slope station; however, the Plateau station reported variable snow depth over the same period with a decrease of 3.0 cm from December 27 to December 28, 2021. Varying snow depths at the Plateau and Slope stations over similar time periods are likely a result of topographical effects caused by the slope, wind intensity and direction, and sensor sensitivity. Blowing snow and drifting effects will vary snow deposition between the two stations due to the effects of the slope itself. At the start of the 2021/2022 snow season, snow depth recorded at the Slope station was thinner than that recorded at the Plateau, and later transitioned to be thicker on the Slope than Plateau. This contrasts with what was observed during the 2020/2021, when Plateau snow depth was consistently greater than Slope snow depth.

Rainfall recorded during 2022 was higher than rainfall during the 2021 at the 1370 bench BCCS trial, by approximately 67 mm. July 2022 rainfall was dominated by two distinct rain events on July 10 to 11, and July 16 to 18, 2022 (14.4 mm and 39.0 mm recorded at BCCS trial, respectively) associated with brief RH increases. These meteorological conditions are reflective of a high-pressure area persisting throughout the month of July, akin to what was observed in 2021. August 2022 measured high rainfall, smaller daily temperature differentials, higher humidity, and greater windspeed variability, compared to climate normals. August 2022 rainfall was dominated by two distinct rainfall periods on August 1 to 7 and August 26 to 27, 2022 (40.8 mm and 16.8 mm recorded at BCCS trial, respectively) associated with RH increases. October 2022 precipitation recorded at BCCS trial (comprised of 13.4 mm snowfall and 25.6 mm rainfall) was higher than October 2021 precipitation (5 mm). Meteorological monitoring data is used to characterize variations in meteorological conditions, which will affect cover system performance by enhancing or subduing the effects of evapotranspiration, soil saturation, and temperature changes in the subsurface.

5.1.1 Reference Evapotranspiration

Reference evapotranspiration (RE), calculated using the Penman-Monteith method, is the sum of transpiration of water within vegetation and evaporation of free water from the vegetation surface for a hypothetical crop of 0.12 m height with 70 sm^{-1} surface resistance and an albedo of 0.23 (Allen *et al.* 1998). A reference crop is used for this method to study evaporative demand independent of vegetation type, development, and management, to allow comparison between soil surfaces. Lorax (2023) uses the same method to calculate RE using data collected at the Camp meteorological station. The RE calculation in this report uses the meteorological station data record air temperature, RH, and wind speed data, combined with net radiation data recorded at the 1370 bench BCCS trial, and is therefore appropriate for the trial location.

Calculated RE for the Plateau and Slope monitoring locations in the 2022 monitoring period was less than the 2021 monitoring period for all months except for September (Figure 5.1 and Figure 5.2). During the 2022 monitoring period, the calculated total cumulative RE was 242.2 and 273.8 mm for the Slope and Plateau respectively, with the highest RE occurring in June when RH was lowest, daily air temperature maximums were high, and precipitation was low. In comparison, during the 2021 monitoring period, the calculated total cumulative RE was 312.0 and 315.0 mm for the Slope and Plateau, respectively, with the highest RE occurring in June (98.5 mm and 84.9 mm for the Plateau and Slope, respectively) and July (88.0 mm and 108.5 mm for the Plateau and Slope, respectively) when RH was lowest, daily temperature maximums were highest, and precipitation was low. Evapotranspiration decreased in August and September due to colder temperatures and shorter days resulting in less evaporation and vegetation transpiration (Figure 5.1).

Rainfall at the 1370 bench BCCS trials exceeded the RE from July to October during the 2022 monitoring period, which coincides with lower suctions and higher VWC seen in the Plateau and Slope soil profiles. In contrast, in June and July of the 2021 monitoring period, RE was higher than rainfall. October 2022 measured high precipitation, snowmelt events, and low RE, therefore it is expected that NP rates will be high in the fall.

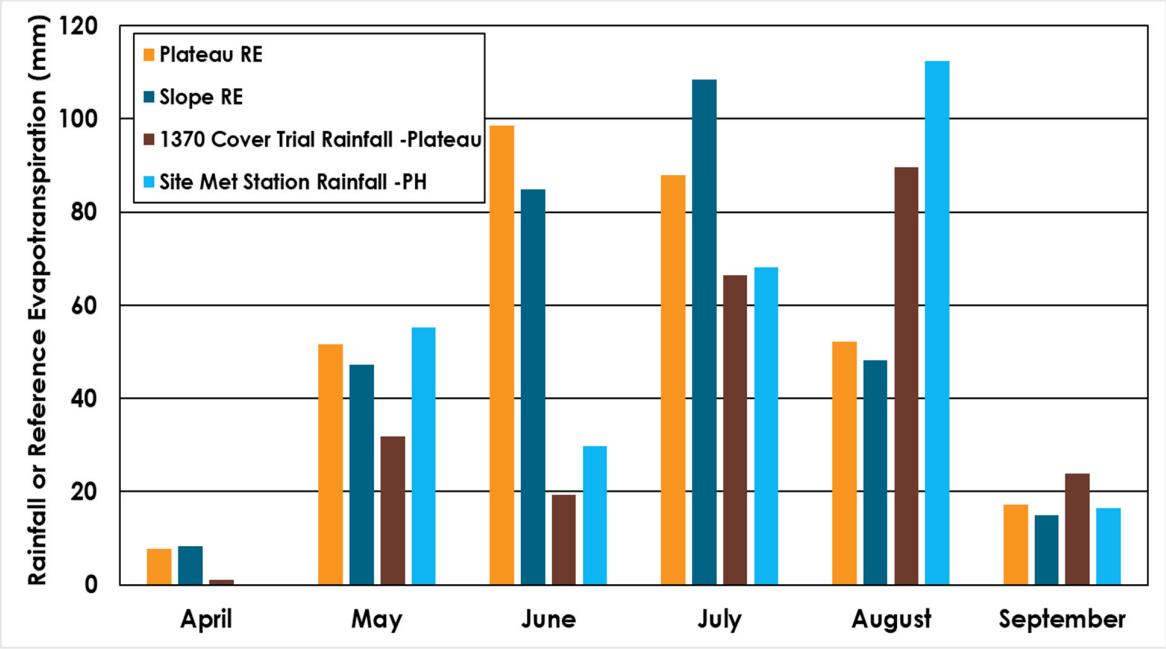

Figure 5.1: Rainfall and reference evapotranspiration calculated for the 1370 bench BCCS trial Plateau and Slope for the 2021 monitoring period.

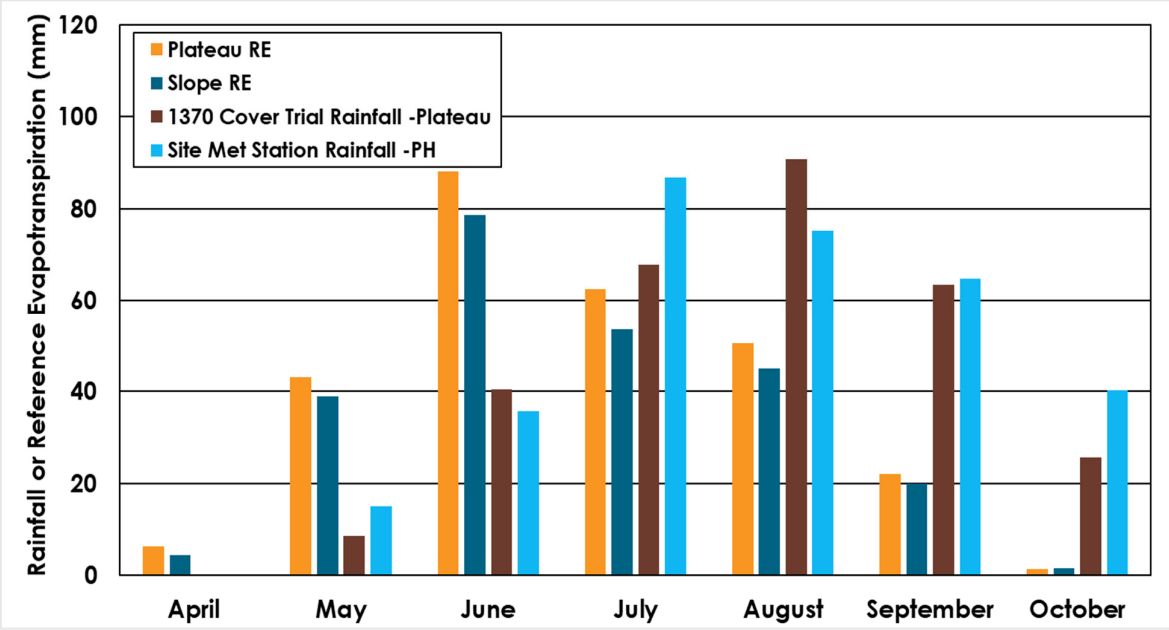

Figure 5.2: Rainfall and reference evapotranspiration calculated for the 1370 bench BCCS trial Plateau and Slope for the 2022 monitoring period.

5.2 Subsurface Temperature

Cover system temperature provides a useful indicator of the energy balance of the system. The partitioning of energy between the cover system and the overlying atmosphere will govern performance of the system. Partitioning of energy is especially important in northern environments as climate conditions can be considered to achieve closure objectives.

Surface infiltration and subsurface flow is inhibited in frozen soil (soil temperatures < 0°C). Therefore, water balance calculations incorporate the change in soil temperature with depth which assists with characterize the timing of cover system freeze-thaw cycles. The timing of freeze-thaw conditions throughout the entire soil profile is important for the water balance, as subsurface water flow is possible at depth in the cover system even when infiltration is inhibited by the frozen ground surface (e.g., early winter). In addition, freeze-thaw cycles help shape and condition the cover system, by altering soil density, hydraulic conductivity, and water storage capacity. Subsurface temperature regime and trends are also important to understand growing conditions for cover vegetation once established.

In subarctic, high latitude regions, net radiation at the cover system surface determines soil temperatures and can be a primary control on cover system performance; therefore, slope aspect can influence performance of the cover system. The aspect of the instrumented slope on the 1370 bench BCCS trial area is in a southeast direction. During spring and fall months where there are limited daylight hours and the sun is lower in the horizon, the Slope station could be expected to receive greater amounts of net radiation than the Plateau station or portions of the WRSA with a northern aspect; however, this was not the case during the 2021 and 2022 monitoring periods (Figure 4.5).

Similar to the 2021 monitoring period, freezing temperatures were observed in both cover system configurations during the 2022 monitoring period. The Plateau cover system profile started freezing from the surface down in mid-October 2021 and was completely frozen by mid-December, while the Slope profile began to freeze in late-September 2021 and was completely frozen by mid-November. Ground thaw started early and mid-May for the Plateau and Slope locations during the 2022 monitoring period, respectively, whereas it started in mid- to late-April for the Plateau and Slope, respectively during the 2021 monitoring period. The cover systems at the Plateau and Slope are approximately 65 cm and 50 cm thick, respectively, which likely accounts for the relatively rapid freezing and thawing through the profiles, as is expected. Differences in freezing and thawing timing between monitoring locations and monitoring periods are attributed to differences in air temperature, sun exposure and snow cover persistence (Figure 4.12). The average maximum air temperature in April 2021 (-3.7°C) was similar to April 2022 maximum air temperature (-3.5°C), however, average minimum air temperature in May 2021 was warmer (0.05°C) than May 2022 average minimum air temperature (-1.9°C). During the 2021 period, spring snowfall caused the Plateau snowpack to persist until late-May, and the Slope was snow free by early-May, while in the 2022 period snowmelt rapidly occurred at both locations by the end of April.

The covers system data record showed consistent daily maximum air temperatures below freezing from January until mid-April 2022. Concurrently, net radiation at the Plateau and Slope stations remained primarily negative with some days having slightly positive net radiation values during this

period, indicating the loss of energy occurring due to freezing. Daily maximum air temperatures dropped below freezing in early October 2022. Positive radiation input began to rise rapidly from May to early July to between 5 and 15 MJ/m^2. Ground thaw at the Slope station started within a week of the above 0°C air temperatures in the spring, while the Plateau station surface thaw began sooner likely due to the thinner snowpack on the Plateau. Rapid thaw at the stations is facilitated by the infiltration of warmer water from the melting snow above, as well as increased net radiation resulting from rapidly increasing daylight hours and sun angle. From June to August 2022, the Slope station experienced greater soil temperatures throughout the profile than the Plateau station, despite similar net radiation inputs. In general, trends in soil temperature during the 2022 monitoring period were similar to the 2020/2021 monitoring period.

5.3 Soil Water Conditions

Matric suction and VWC measurements are analyzed to investigate performance and water dynamics of the cover system trials. VWC demonstrated patterns of wetting and drying throughout the second year of monitoring (Figure 4.15), with snowmelt increasing VWC in the spring, and periodic recharge of water during summer and late-September to early-October rainfall events. The VWC at the Plateau monitoring station generally increased with depth during the 2022 monitoring period spring freshet, indicating downward infiltration of meltwater (Figure 4.15). For the remainder of the summer, the VWC in the upper ~15 cm and below ~40 cm was consistently between 0.20 and 0.25 cm^3/cm^3, respectively. Trends in VWC at the Plateau station during the 2022 monitoring period were similar to the 2021 monitoring period, with VWC measurements lower during the 2022 monitoring period compared to the 2021 monitoring period. Lower VWC measurements indicate greater available storage capacity in the cover system, likely due to the timing and intensity of rainfall events recorded in both monitoring periods.

Similar to the 2021 monitoring period, Slope monitoring station profile VWC was lower throughout the 2022 monitoring period compared to the Plateau station (Figure 4.16). The lower VWC on the slope in general, and particularly at the base of the cover system can be attributed to a lateral flow of water on the slope. Trends in Slope VWC during the 2022 monitoring period were similar to the 2021 monitoring period, with VWC measurements higher during the 2022 monitoring period compared to the 2021 monitoring period. The VWC of the bottom 20 cm of the cover system on the slope did not exceed 0.15 cm^3/cm^3 from May to mid-September 2022. During spring melt and brief periods in late July 2022 and from mid-September to mid-October 2022, VWC increased to above 0.20 and 0.15 cm^3/cm^3 in the upper 30 cm and lower 20 cm of the profile, respectively.

After the 2022 monitoring period spring melt, the Plateau station primarily recorded matric suctions <10 kPa and generally remained at this level throughout the entire cover system column with exceptions between late-June to early-July, end of July, and early August when suction increased to between 25 and 50 kPa from the top down. Following October 2022 precipitation events, suction remained below 10 kPa, while during the 2021 monitoring period, suction increased to between 50 kPa and 75 kPa from the top down due to minimal precipitation. Overall, the Slope station (Figure 4.18) recorded higher suction values deeper within the cover system than the Plateau station (Figure 4.17). The Slope station exhibited similar matric suction to the Plateau station at the onset of freshet

but suction quickly increased by late May to above 50 kPa and peaked at greater than 200 kPa in mid-June. The increased suction period was punctuated by July through October rainfall events that dropped the suction in the entire profile, reflecting infiltration of rainfall. The patterns observed for matric suction data are consistent with those observed in VWC data, and suction data patterns are more prominent. Since the onset of monitoring, the permanent wilting point (PWP)(1,500 kPa) was not reached over the entire cover system profile at both stations.

Water storage within the cover system profiles was calculated using measured VWC and the thickness of discrete sections of the soil profile centered around each VWC sensor (e.g., a 10 cm interval in the soil profile centered around a sensor measuring a VWC of 0.25 cm^3/cm^3 yields 2.5 cm of water storage). Water storage is an estimation of the volume of water contained within the cover system at a given time and facilitates understanding of changes in the volume of water within the cover system over time. Change in water storage within the cover system is a key performance metric and a water balance parameter and is used to characterize the timing and magnitude of infiltration into the cover system after precipitation events, as well as movement through the cover system.

Similar to the 2021 monitoring period, water storage rapidly increased during 2022 spring melt as the ground thawed and snowmelt water infiltrated the cover system (Figure 5.3). Total water storage in the soil profile peaked following spring melt at 144 mm, followed by drying in June as higher evaporative demands began to draw water from the system. The Plateau and Slope water storage showed similar trends from May to October 2022. Storage increases are observed following rainfall events, followed by declining patterns from late May to mid-July 2022, indicating NP and evapotranspiration processes removing water from the system. The decreases in storage allow for new precipitation to be stored within the soil profile and limits NP to the underlying waste rock. Difference in water storage conditions between Plateau and Slope suggests that different landscape elements exhibit differences in storage, and that runoff rates will vary as a function of landform location. Water storage at the Slope station was higher prior to freezing conditions during the 2022 monitoring period compared to the 2021 monitoring period, likely reflecting the increased precipitation and reduced evapotranspiration occurring throughout the fall. October 2022 measured high precipitation, low RE (Figure 5.1) and snowmelt events caused by above freezing temperatures (Figure 4.12) are expected to result in reduced soil water storage capacity and increased NP in the fall of 2022.

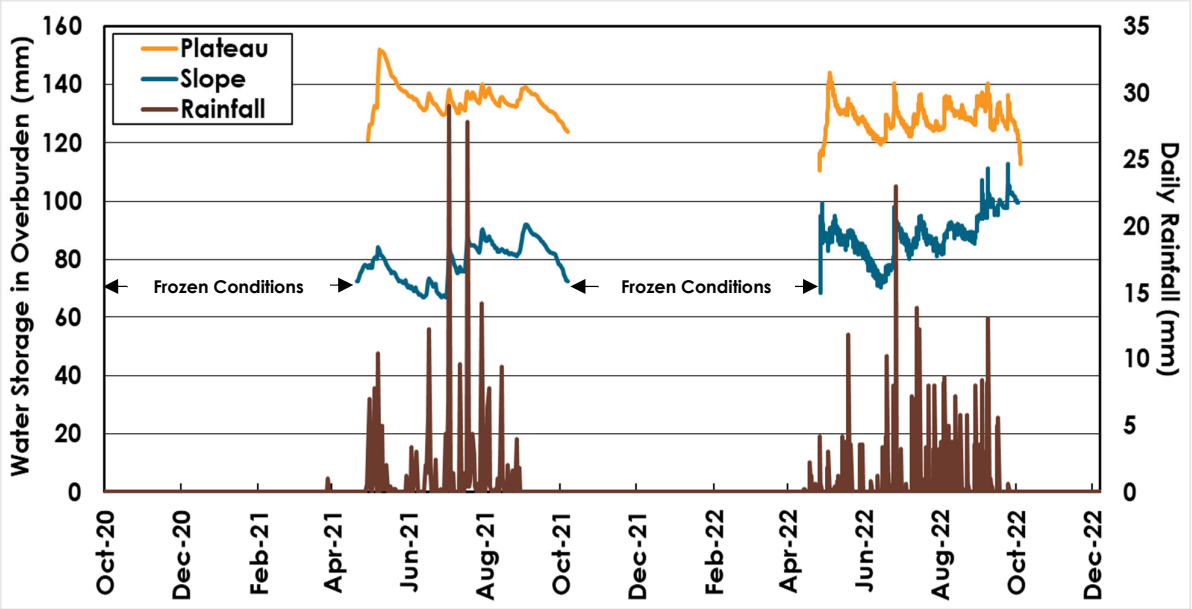

Figure 5.3: Total soil water storage calculated for the cover system trial Plateau and Slope monitoring stations, and daily rainfall recorded since the onset of monitoring.

5.4 Water Balances

Cumulative water balance fluxes were calculated over the monitoring period for both Slope and Plateau cover system monitoring locations to estimate the volume of water percolating through the cover system to the underlying waste rock. This section begins with a description of the model and methods used to obtain each component of the water balance, followed by presentation and discussion of water balance results.

5.4.1 Model and Methods

Water balance models for Slope and Plateau locations were completed with Okane's proprietary "Water Balance Model", developed with GoldSim Software (GoldSim, 2022) for the period between January 1, 2022 and December 31, 2022 and monitoring data summarized in the previous sections. The following water fluxes in mm/day were measured or estimated to solve the water balance equation:

$$\Delta S = P + M - AET - R - NP$$

where:

- P = rainfall;
- M = snowmelt;
- AET = actual evapotranspiration;

- R = runoff;
- NP = net percolation; and,
- ΔS = change in soil water storage.

Effective precipitation (rainfall + snowmelt) was estimated by combining both rainfall and snow water equivalent (SWE). SWE was calculated based on snow depths measured at both the Slope and Plateau stations, and snow density calculated from the "Dustfall Above Pit" snow survey completed in 2022. Snow melt events were assumed to occur when snow depth decreased, and the maximum daily air temperature was above freezing. The effective precipitation flux was used as a direct input to the Water Balance Model.

The AET flux was calculated as a term in the water balance calculation with RE (Section 5.1.1), soil suction, and soil water storage as limitations. Net percolation was estimated using VWC data, matric suction gradient, and soil water storage changes in both the entire cover system depth, and bottom 30 cm of the cover system.

Runoff was assumed to occur based on climate and soil input data. Responses in the upper layer of soil sensors can estimate how much precipitation may be infiltrating the cover system through measuring decreases in matric suction and increases in VWC and storage. If the surface sensors recorded frozen temperatures, snowmelt and rainfall occurring during these times was assumed to be mostly runoff (some AET may occur depending on solar insolation and climatic conditions).

Known material characteristics were input into the model to further refine the water balance estimation. The amount of water required to fully saturate the cover system was estimated by multiplying the thickness of the cover system by the material porosity. Material porosity of the cover system material was set as 0.34 based on laboratory results from samples collected during the material characterization program. Hydraulic conductivity of the cover system material was measured during the 2022 site visit to be 3.0×10^{-5} m/s on average (Okane, 2022c). The numerical simulation software utilizes the Soil Conservation Science (SCS) curve number (CN) to increase the accuracy of runoff estimation. The CN is determined through defining the Hydrologic Soil Group (HSG), cover description, and hydrologic condition. The conditions on the 1370 bench are most accurately described as an arid rangeland herbaceous mixture of grass, weeds, and low-growing brush in poor condition (<30% ground cover). Based on hydraulic conductivity testing, this soil is classified as HSG A, meaning the soil has a high infiltration rate with low runoff potential. CN estimates have not been developed for these conditions but are estimated to be <80, therefore, a CN of 77 was selected for analysis (USACE et al., 2022).

Upon inputting all soil, climatic, and material characteristic conditions into the numerical software, an estimation of the water balance equation is solved for each day of the monitoring period. Although differences between the soil monitoring data is inherently included in the measurements, manual adjustments to the numerical software solution are made to account for site specific conditions that the simulation may not account for, such as site topography, to further improve the accuracy of the water balance results. A water balance is an indirect method to calculate NP;

therefore, the uncertainty associated with the individual components of the water balance are compounded when estimating NP. Water balance uncertainties are constrained to the extent possible using engineering judgement.

Percentages reported for each water balance parameter are expected to change year over year due to varying meteorological conditions and cover system evolution. The water balance method is approximate, and as such, understanding trends and ranges of net percolation rates, and how they compare to the conceptual model is the focus of the monitoring program.

5.4.2 Model Results and Discussion

Estimated cumulative water balance fluxes for the cover system Plateau and Slope monitoring locations are summarized in Table 5.1, and shown in Figure 5.4 and Figure 5.5, respectively. The water balance results indicate:

- Net percolation is predicted to be 26% and 36% of effective precipitation for Slope and Plateau locations, respectively, corresponding with NP rates classified as high according to the INAP Guidance Document for the climate region (INAP 2017).
- Runoff accounts for 25% and 40% of the total water balances for the Plateau and Slope locations, respectively. For the Plateau location, most runoff was produced during spring snowmelt while the cover system surface was still frozen, slows for the summer months, and then increases due to late-fall precipitation events. The percentage of runoff at the Slope station was higher than the Plateau station due to the slope topography, and the increased snowmelt on the slope compared to the Plateau.
- The site experienced the largest rainfall event for the 2022 reporting period of 39 mm between July 16 and July 18, 2022, which resulted in increased rates in storage, net percolation, and AET for the days following.
- Snowmelt is variable across a landform due to differences in parameters such as snow drift and accumulation, vegetation, and slope aspect.

Table 5.1: Water balance fluxes during the 2020/2021 and 2022 monitoring periods (mm and % effective precipitation).

Year	Site	Rainfall	Snowmelt	Runoff	AET	NP	ΔStorage
2020/2021*	Plateau	269 (63%)	160 (37%)	125 (29%)	146 (34%)	160 (37%)	3 (1%)
	Slope	269 (77%)	80 (23%)	111 (32%)	118 (34%)	109 (31%)	10 (3%)
2022	Plateau	295 (80%)	73 (20%)	94 (25%)	156 (42%)	132 (36%)	-12 (-3%)
	Slope	295 (70%)	126 (30%)	166 (40%)	134 (32%)	109 (26%)	12 (3%)

* The 2020/2021 monitoring period is December 1, 2020, to November 30, 2021.

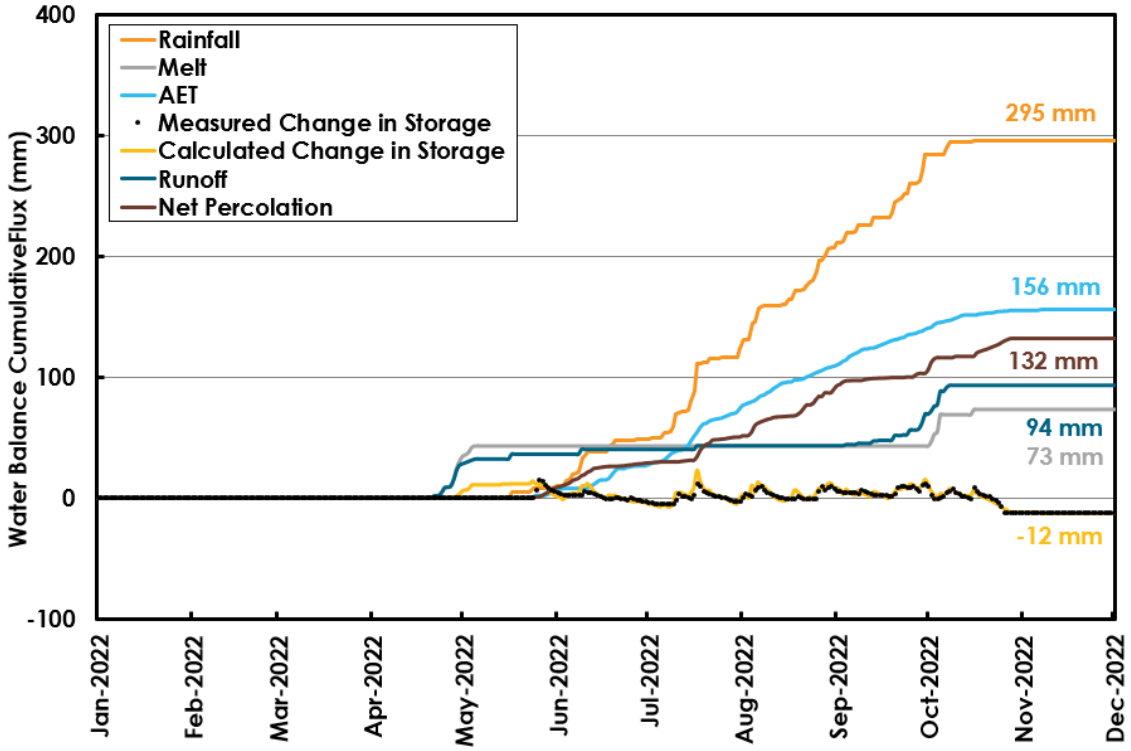

Figure 5.4: Water balance cumulative flux at the Plateau station for the 2022 monitoring period.

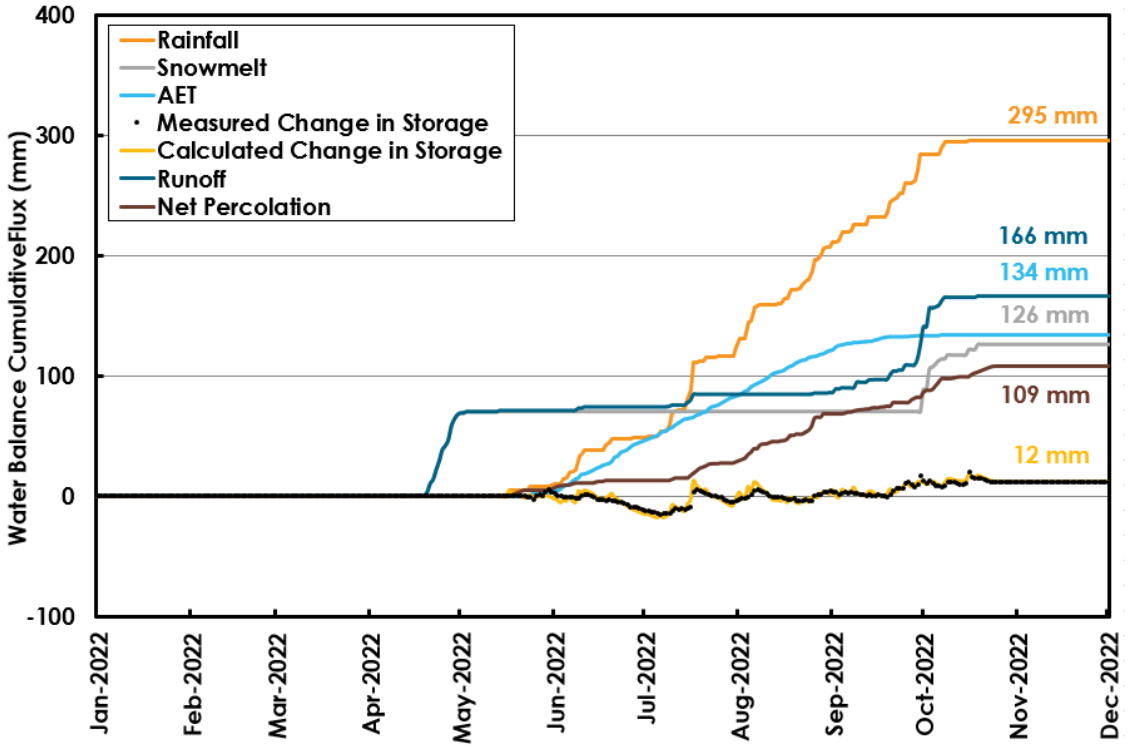

Figure 5.5: Water balance cumulative flux at the Slope station for the 2022 monitoring period.

Water balance results generally align with the conceptual model of performance for the base case cover system. Net percolation rates are higher on the Plateau than the Slope, fall within the expected range (20% to 50%), and occur primarily during the spring and fall periods following large precipitation events. As expected, spring runoff and runoff from rainfall events throughout the non-frozen period from the Slope area is greater than on the Plateau.

When compared to the 2020/2021 monitoring period, moderate snowfall events were recorded in October 2022, followed by above freezing temperatures, resulting in increases in NP and runoff late in the monitoring period of 2022. Higher runoff on the Slope during the 2022 monitoring period is likely due to a larger fall snowmelt occurrence for the monitoring period, compared to 2020/2021. As 2022 is the second year of monitoring since the placement of material in late 2020, geomorphic conditions may have developed, such as erosion rills, resulting in favourable pathways for runoff to occur.

Net percolation rates between the two monitoring periods followed similar trends, likely a result of minimal vegetation development and similar cumulative precipitation. Timing and magnitude of substantial precipitation events differed but resulted in similar volumes of input precipitation. In 2022, NP was greatest during the fall, as there were large rainfall and snowmelt events corresponding with low AET. Similarly, in 2020/2021 monitoring period, the majority of NP occurred in August due to substantial rainfall.

6 SUMMARY

The BCCS is a simple monolithic layer of overburden and can be expected to perform as a store and release cover system. Based on INAP (2017), a cover system of this type would be expected to allow rates of NP between 20% to 50% of annual precipitation. However, the spatial distribution of NP would be expected to vary over the entirety of the WRSA.

Data from performance monitoring and material characterization programs were used to evaluate NP through the cover system using a water balance model. As outlined by the conceptual model, results from 2022 water balance modelling indicate that there is a high rate of NP through the cover system and greater NP is observed on the Plateau (36% of effective precipitation) relative to the Slope (26% of effective precipitation). Variability in performance of the cover system monitoring locations is associated with localized variations in snow depth, freeze thaw cycles, and water storage. The NP rates estimated for both monitoring years were similar to the modelled rates assumed in the Eagle Mine WBWQM. It is expected that NP rates will trend downward as vegetative cover improves and matures, resulting in higher rates of evapotranspiration, and consequently, lower NP. Cover system modelling will help refine the expected range of NP across a range of climatic conditions and vegetative covers.

Similar to the 2020/2021 monitoring period, meteorological conditions in the 2022 monitoring period were consistent with climate trends for the area. Trends in VWC at the Plateau station during the 2022 monitoring period were similar to the 2020/2021 monitoring period, with VWC measurements slightly lower during the 2022 monitoring period, indicating greater available storage capacity in the cover system. Generally, the Slope cover system monitoring station recorded lower volumetric water contents and greater temperature variations than the Plateau station.

Continued field trial cover system performance monitoring will provide additional data for characterization cover system performance on a year to year basis and allow various types of climate years to be evaluated.

7 RECOMMENDATIONS

The following actions are recommended for the next monitoring period to continue to provide high quality monitoring data and progress reclamation research at Eagle Mine:

1) Continuation of monthly data collection and visual inspections of performance monitoring stations by VG.

2) Completion of snow surveys, to be completed at a minimum annually in spring prior to snowmelt.

3) Completion field saturated hydraulic conductivity testing campaign to capture differences in this parameter across the cover system field trial, and track cover system evolution over time.

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Okane Consultants Inc., 2022b. 1048-221-003 Eagle Gold Mine Overburden Material Characterization Program – results Summary. Prepared for Victoria Gold Corp., March 2022.

Okane Consultants Inc., 2022c. 1048-221-007 Eagle Gold Mine 1370 Base Case Cover System Field Trial Site Visit Summary. Prepared for Victoria Gold Corp., November 2022.

USACE Hydrologic Engineering Center. (2022). HEC-HMS Technical Reference Manual SCS TR-55 Table 2-2c "Runoff curve numbers for other agricultural lands". Accessed at: https://www.hec.usace.army.mil/confluence/hmsdocs/hmstrm/cn-tables

9 CLOSURE

We trust information provided is satisfactory for your requirements. Please do not hesitate to contact the undersigned at ldoucette@okc-sk.com for further information or questions.

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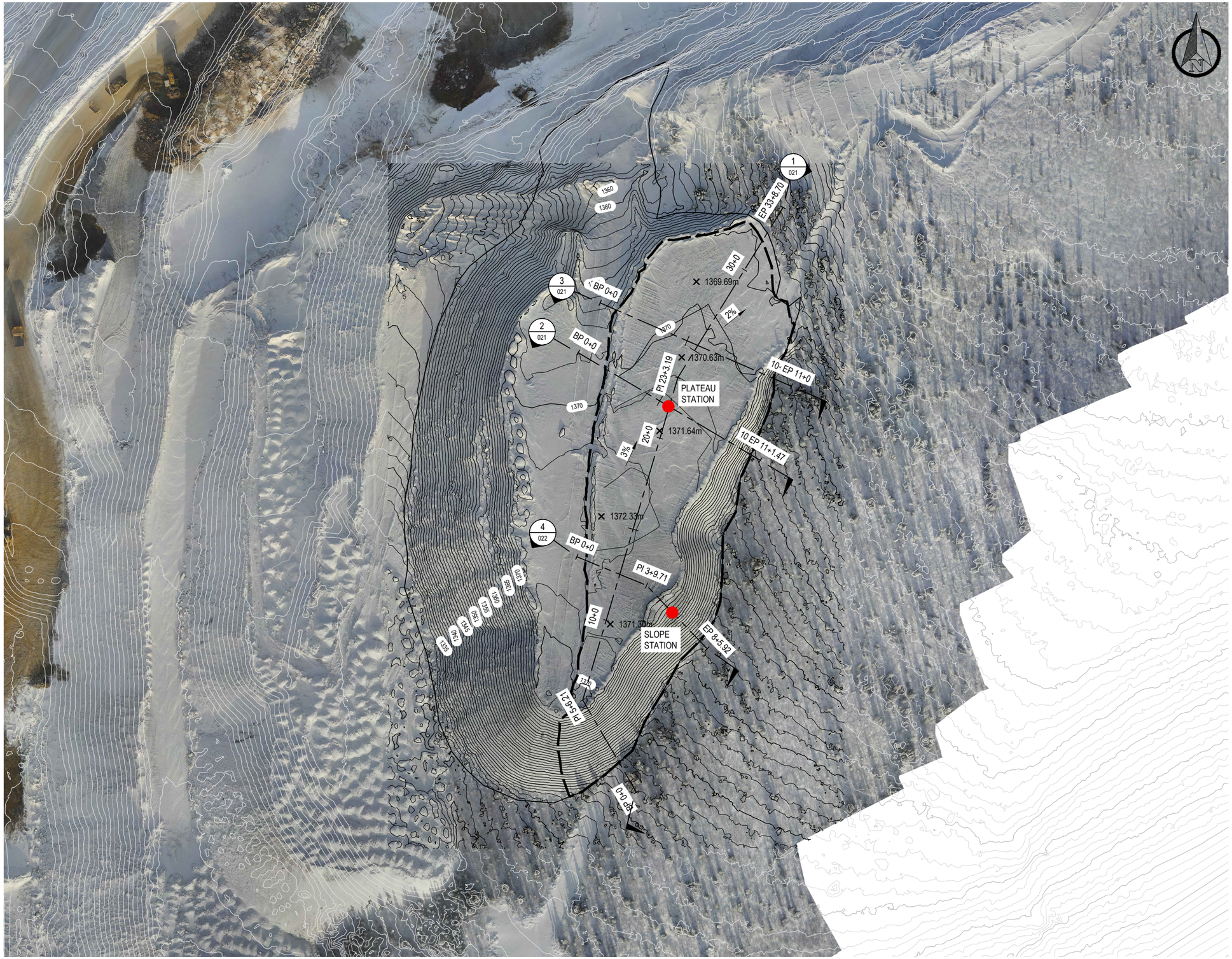
Appendix A

Drawings



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Cadfile Name:1048-005-020.dwg

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Integrated Mine Waste Management and Closure Services
Specialists in Geochemistry and Unsaturated Zone Hydrology

AS BUILT

Legend/Notes

NOTE

1. ALL UNITS IN METRES U.N.O.
2. IMAGERY AND TOPOGRAPHY PROVIDED BY THE CLIENT.
3. CLIENT PROVIDED AS-BUILT DATA FOR COVER SYSTEM PLACE ON PLATEAU, COLLECTED 10-29-2020.
4. FINAL TRIAL BOUNDARY ESTIMATED BASED ON CONTOUR DATA.

LEGEND

AS-BUILT COVER CONTOUR — 1300

EXISTING CONTOUR — 1300

TRIAL BOUNDARY

1370 DUMP BOUNDARY

20 10 0 20 40 60 80 100m

SCALE 1:2000

Revision	Description	Date
3		
2		
1		
0	AS-BUILT DATA	2020/11/24
A	ISSUED FOR CLIENT REVIEW	2020/09/24

Client/Project

VICTORIA GOLD CORP
TSX | VGCX

VICTORIA GOLD CORP.
WASTE ROCK STORAGE FACILITY
COVER SYSTEM TRIAL

Drawn by
H. COOPER

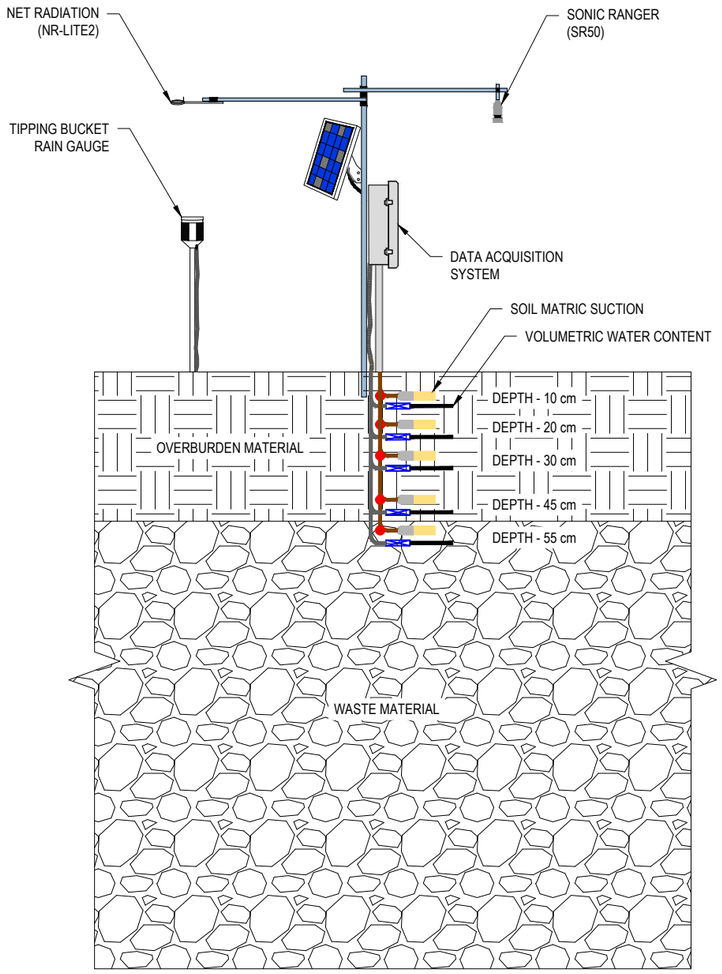
Designed by
L. DOUCETTE

Approved by
L. TALLON

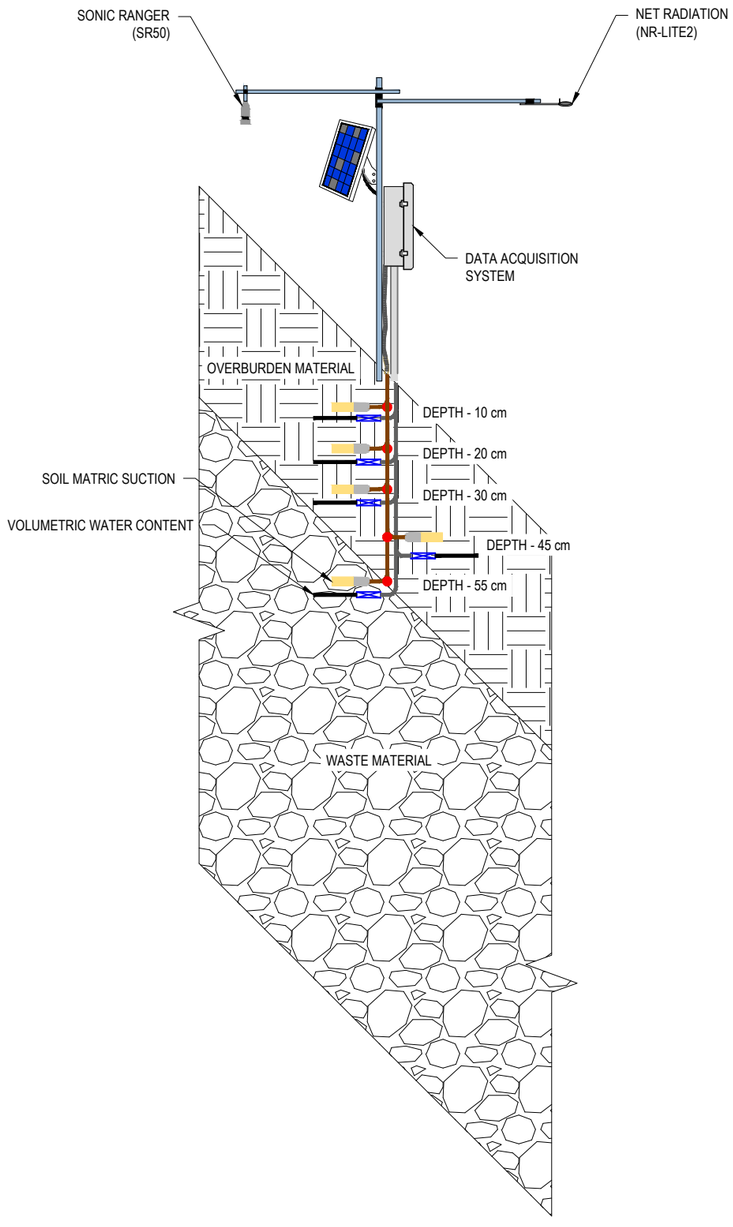
Drawing title

PLATEAU COVER SYSTEM
PLACEMENT - AS-BUILT

Project no.	Drawing no.	Sheet	Revision
1048-005	1048-005-020	ANSI B	0



PLATEAU SURFACE MONITORING STATION
1:20



SLOPE SURFACE MONITORING STATION
1:20

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Specialists in Geochemistry and Unsaturated Zone Hydrology

PRELIMINARY
NOT FOR CONSTRUCTION

Legend/Notes

NOTE

1. ALL UNITS IN METRES U.N.O.
2. INSTRUMENTATION DEPTHS ARE PROPOSED AND SUBJECT TO CHANGE.

LEGEND

CS616 VOLUMETRIC WATER CONTENT SENSOR

CS229 SOIL MATRIC SUCTION SENSOR

Revision	Description	Date
3		
2		
1		
0		
A	ISSUED FOR CLIENT REVIEW	2020/09/01

Client/Project

VICTORIA GOLD CORP
TSX | VGCX

VICTORIA GOLD CORP
2020 RECLAMATION AND CLOSURE
PLAN ACTIVITIES

Drawn by
H. COOPER

Designed by
OKANE CONSULTANTS

Approved by
L. DOUCETTE

Drawing title

SOIL MONITORING STATION
COVER PROFILES

Project no.	Drawing no.	Sheet	Revision
1048-005	1048-005-002	ANSI B	A

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Cadfile Name:1048-005 Victoria Gold Proposed Instrumentation.dwg

Appendix B

Site Photos

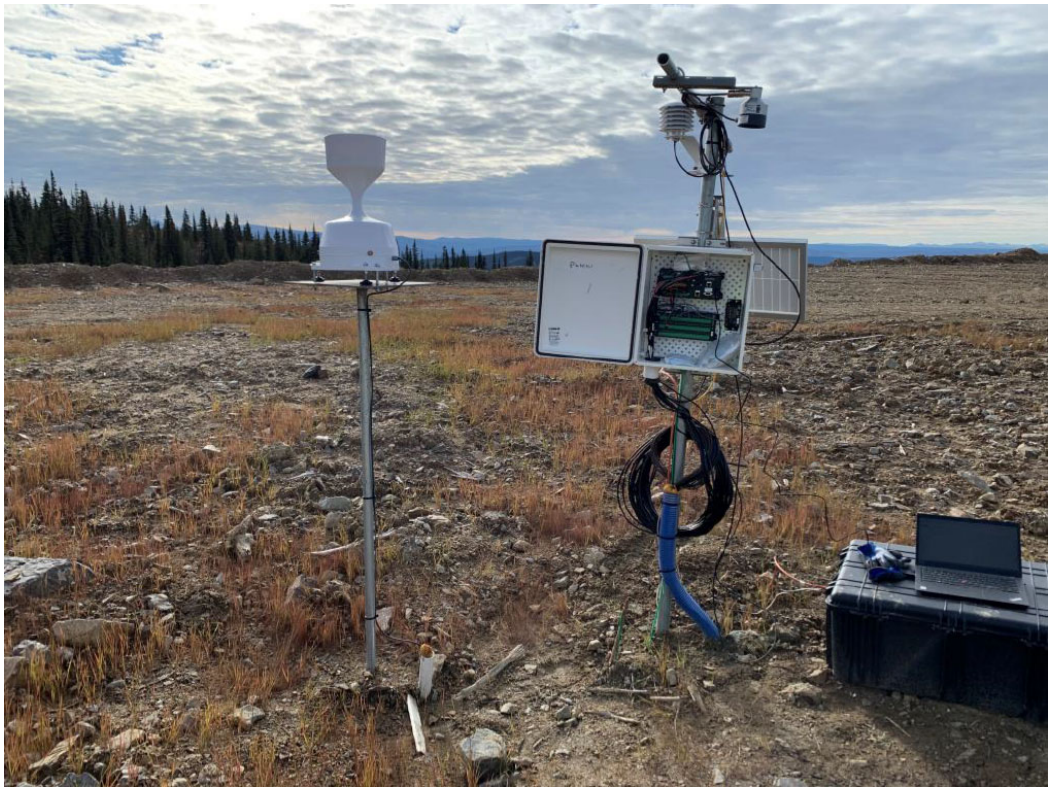

Figure B.1: Plateau performance monitoring station.

Figure B.2: Slope performance monitoring station.

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Memorandum

To: Hugh Coyle and Katie Chakhova;Victoria Gold Corp.

From: Rachel Martz and Andrew Gault; Ensero Solutions

Date: March 29, 2023

Re: CWTS Bench-Scale Trials Memorandum

1 INTRODUCTION

Ensero Solutions Canada, Inc. (Ensero) was retained by Victoria Gold Corp. (VGC) to undertake a constructed wetland treatment system (CWTS) bench-scale trial to advance the design of a treatment wetland at VGC's Eagle Gold Mine (the Site). A CWTS is being evaluated as the preferred passive treatment system (PTS) to be implemented at the toe of the Platinum Gulch Waste Rock Storage Area (PG WRSA) for the treatment of arsenic. The CWTS for Platinum Gulch will be used to guide further passive treatment implementation for other locations at the Site, such as for seepage from the Eagle Pup Waste Rock Storage Area (EP WRSA), and the Heap Leach Facility (HLF).

This memorandum is an update to work previously completed (Steps 1 and 2 below) and provides results for bench-scale trials completed to date (Steps 3 and 4, with stagnation phase to be completed as future scope) of the following process for developing refinements to the on-site PG CWTS pilot-scale design:

1. Site Fieldwork: including evaluation of CWTS location and the collection of field data including substrate and vegetation (Ensero, 2022a);
2. Lab scale trial design, design criteria, and inputs, and trial set-up;
3. Bench-scale trial commissioning (system maturation);
4. Bench-scale trial testing and stagnation phases; and
5. Applying the findings to refine the PG CWTS design for an on-site pilot-scale system.

A desktop study was completed in May and June 2021, followed by Site fieldwork in July 2021. The desktop study included a review of information available for the Site to guide the identification of borrow source options for the CWTS and inform on the initial CWTS design (Ensero, 2022a). Using information gathered from the desktop study and through guidance from VGC personnel, potential borrow sources for plants and substrate were identified during the July 2021 site fieldwork and the location of the on-site CWTS for the Platinum Gulch was refined. Samples from the selected substrate borrow sources were sent for analytical testing and plants were harvested from the selected plant borrow sources and brought back to Ensero's pilot facility to establish in a nursery for use in bench-scale trials.

2 BENCH-SCALE TRIAL OBJECTIVE

The objective of the CWTS bench-scale trial is to de-risk the implementation of an on-site pilot-scale system by testing multiple designs at a smaller scale with the intention of using the information to refine the on-site pilot-scale design. The trials assessed the suitability of the substrates and plants sourced from the Site in a CWTS environment and evaluated the magnitude of potential leaching of constituents with the main goal of determining the extent of arsenic treatment achievable in a passively designed CWTS. The design criteria tested during the bench-scale testing to refine the on-site pilot-scale design include:

- Water depth: assessing the suitability of a 10 cm water depth for plant establishment and maintaining aerobic conditions,
- Substrate: evaluating three different substrate sources from site, based on particle size, risk of leaching constituents into the water column, extent of iron availability in the substrates to understand the need for additional iron amendments for arsenic treatment, and the need for screening to remove fines,
- Hydraulic retention times (HRT): testing multiple HRTs to evaluate the influence of HRT on maintaining aerobic conditions and arsenic treatment,
- Channel design: evaluating the difference in arsenic treatment in a rip rap channel versus a step cascade, and
- Plant type: evaluating the establishment of *Carex aquatilis* in a CWTS environment and the influence of this plant type on arsenic treatment.

This memorandum describes the work performed during the commissioning and testing phases of the bench-scale trials to refine the Platinum Gulch on-site CWTS pilot-scale design. Additional information is provided in Appendix A – laboratory certificates, and Appendix B - *In situ* results.

3 TREATMENT MECHANISM

Arsenic is the primary constituent of concern (COC) that is being evaluated through the current bench-scale trials. Current water quality data indicate arsenic is above the effluent quality standard (EQS, 0.053 mg/L total arsenic) and the Site water quality model predicts arsenic concentrations will remain above the current production and active closure phase EQS in closure. For the treatment of arsenic at the Site, an aerobic CWTS design is most suitable. While arsenic can be removed via co-precipitation with iron sulphides or direct precipitation as authigenic arsenic sulphide minerals under anaerobic conditions, treatment occurs faster and can be to a greater extent under aerobic conditions with sorption and coprecipitation of arsenic to iron (hydroxy)oxides. Furthermore, there are risks associated with an anaerobic wetland becoming too reducing and resulting in the formation of soluble thioarsenic species which would decrease treatment efficacy of the wetland.

For the treatment of arsenic in an aerobic CWTS, the molar ratio of iron to arsenic in the water is important to facilitate arsenic removal. An ideal iron to arsenic molar ratio to achieve low arsenic concentrations is 10:1. However, Ensero has had success with CWTS at lower iron to arsenic molar ratios similar to those predicted for the Platinum Gulch CWTS. For the purposes of this phase of the research program, an aerobic CWTS design using only material sources from the immediate mine site (plants and substrate) without additional iron amendments was tested as a first step in the bench-scale trials to evaluate the extent of arsenic removal achievable in the CWTS design.

4 BENCH-SCALE TRIAL OVERVIEW

4.1 TRIAL DESIGN

The bench-scale trials were constructed at Ensero's Saskatoon temperature-controlled greenhouse facility with setup completed and commissioning started on September 2, 2022. The bench-scale trials comprise four series each with two treatment cells (Figure 4-1 and Figure 4-2) with either a rip rap channel (Series 1, 2, and 3) or a cascade (Series 4) between the cells. Cascades designed as a step cascade or sloped rip rap channel were evaluated to determine their influence on treatment of arsenic and inform on the design of the cascade to be built in the on-site pilot-scale CWTS. It is thought that a rip rap channel may be a simpler design to implement on site but that a step cascade may provide additional dissolved oxygen as the water flows over the cascade. While additional oxygenation may not be necessary as the dissolved oxygen in the provided Platinum Gulch WRSA Seep data showed dissolved oxygen consistently above 10 mg/L, the options were tested to inform the on-site design. Either a step cascade or a rip rap channel will be utilized on site based on the elevation change in the area of the Platinum Gulch WRSA.

For the trials, rip rap channels were constructed using corrugated pipe while step cascades were created using pails. A height difference of 61 cm between cells was used when designing the rip rap channels and cascades with cells spaced 122 cm apart within each series. Each channel and step cascade received 2.99 kg of rock from Ditch A (the drainage ditch that receives flow from the Platinum Gulch WRSA rock drain). Ditch A rock was approximately 1-7 cm in size and all series received the same amount of rock to evaluate leaching potential.

Bins were used to create the cells for each series and were filled with the different substrates provided by VGC personnel to a targeted depth of 30 cm. Three different substrates were used in the trials, which were collected from Eagle Pup Road (described herein as SUB03), lower Haggart Road (described herein as SUB07), and the borrow pit at km 42.5 (described herein as gravel) (Figure 4-3). Substrates used in the bench-scale trials were selected based on analytical data (Table 4-1) as well as availability for use on Site. Substrate source SUB03 was selected as it contained the greatest concentration of leachable iron of the three substrates, which can facilitate arsenic treatment. However, SUB03 also contained the highest leachable arsenic content out of the three substrates, therefore arsenic leaching was also monitored throughout the trials. Substrate source SUB07 was selected as it contained some leachable iron but had a lower leachable arsenic concentration below the EQS. Gravel sourced from km 42.5 was also used as it was available to use as a potential borrow source for construction of a future pilot-scale trial. The gravel source had leachable iron results that were at detection limit in all three sub samples collected and contained low leachable arsenic (below EQS). The gravel provided by VGC included fine particulates, therefore a 0.5-inch sieve was used during setup to remove finer material prior to addition to cells, as this substrate type was intended to inform on the potential benefit of using coarser material as the CWTS substrate (Figure 4-4).

Of the three plant types harvested from site (*Carex aquatilis, Carex utriculata, and Equisetum)*, *Carex aqualitis* transplanted and established the best within nursery systems at Ensero's greenhouse and was therefore selected for use in the trials. A 10 cm water depth was targeted for the trials and was evaluated as part of the trial assessment for suitability of plant establishment and ability to maintain aerobic conditions (Section 5.3.1).

Table 4-1: Leachable Metals of Interest from Substrate Borrow Source Samples

Sample Name	ALS Results File	ALS Results File Sample Name	Leachable Arsenic (mg/L)	Leachable Iron (mg/L)
SUB03	WR2100901	ENS21-SUB03	0.0866	1.92
SUB07	WR2100901	ENS21-SUB07	0.0044	0.676
Gravel (km 42.5)	L2100743	VICEAG-GCM-11	0.0286	<0.030
	L2160738	VICEAG-GCM-20	0.0039	<0.030
	L2160738	VICEAG-GCM-21	0.0072	<0.030

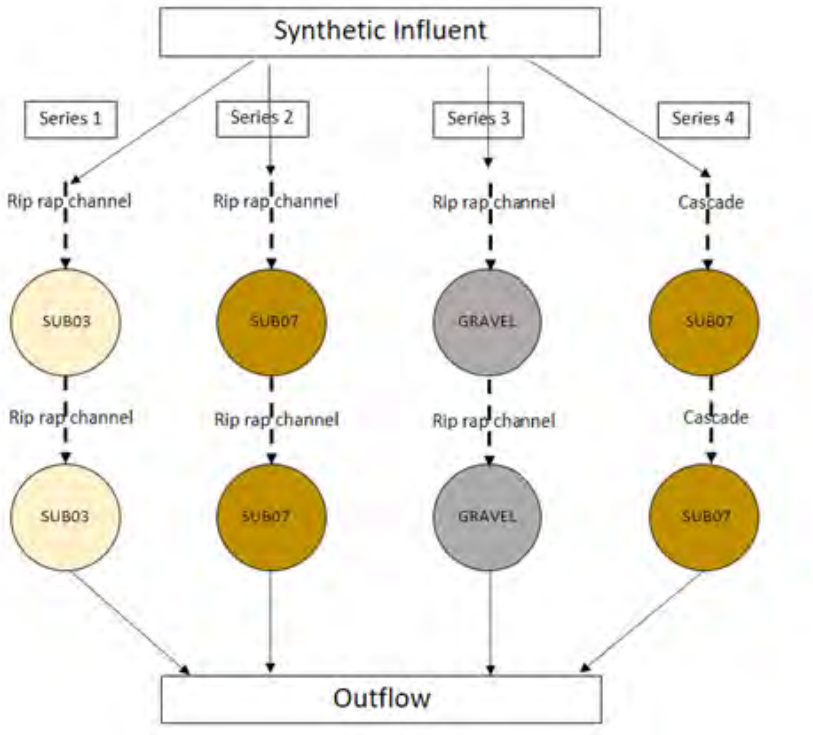

Figure 4-1: Bench-scale CWTS Trial Overview

Rip Rap Channel Design (Series 1)

Step Cascade Design (Series 4)

Figure 4-2: Rip Rap Channel vs. Step Cascade Design

SUB03 Substrate Series 1	**SUB07 Substrate Series 2 & 4**	**km 42.5 Substrate (post-sieving) Series 3**

Figure 4-3: Substrate Addition to Cells

Pre-Sieving	**During Sieving**

Figure 4-4: km 42.5 Gravel Substrate (Series 3)

4.2 SYNTHETIC INFLUENT

A synthetic water recipe (Table 4-2) was developed based on the maximum modelled water quality data for the Platinum Gulch PTS, which corresponded to the month of May in year 2029 (modelled data provided by VGC on June 9th, 2021). Additionally, the synthetic water recipe was based on the use of tap water (i.e., some constituents are higher in tap water than the modelled data) and recent water quality data from the Platinum Gulch Seep (i.e., 2020-2022 data set). The arsenic concentration chosen for the trials was based on the 90th percentile of the dissolved arsenic concentrations from the Platinum Gulch Seep 2020-2022 data set (0.169 mg/L), to be conservative with higher arsenic concentrations currently observed on Site (compared to the model predicted arsenic concentration of 0.087 mg/L) and fluctuations observed in arsenic concentrations. Updated modelled water quality data (75th percentile [P75]) was provided by VGC on September 13th, 2022, which was used to conceptually size the full-scale PG CWTS using proxy removal rates (Ensero, 2022b). Although the updated P75 model data was not used for the bench-scale trials, the main constituent of concern (arsenic) has comparable concentrations to the modelled data (i.e., May 2029 P75 predicted water quality concentration of 0.175 mg/L). Total arsenic concentrations in the synthetic influent were within 16% of the target at each of the sampling events through the bench trials.

Nitrite concentrations in the predicted water chemistry are above the current production and active closure phase EQS (0.44 mg/L, EQS: 0.12 mg/L) and nitrate concentrations in the predicted water chemistry are marginally below the EQS (19.2 mg/L, EQS: 19.5 mg/L). Although nitrite and nitrate treatment are not targeted in an aerobic CWTS design, nitrite will oxidize to nitrate and may be used as a nutrient by the plants in the CWTS, and some nitrate may be removed by plants. Furthermore, it is likely that ammonia will oxidize to nitrite and then nitrate in the wetland, if not prior to the wetland. The extent of nitrate removal by plant uptake (and other nitrogen species by plant uptake or oxidation) was therefore assessed in the bench-scale trials.

The use of tap water versus reverse osmosis water was discussed with VGC personnel and tap water was approved for use in trials as the use of reverse osmosis water was logistically challenging due to the volume required on a weekly basis. The average calcium in the influent (140 mg/L) was similar to the predicted water concentrations (104 mg/L) but the Platinum Gulch Seep 2020-2022 data show much lower concentrations (41 mg/L). However, the effect of calcium on arsenic sorption is expected to be minimal at these concentrations and circumneutral pH. By using tap water, certain constituents were higher in concentration than the model predicted concentrations. Copper was found to be much higher in the tap water during initial development of the synthetic water recipe (0.181 mg/L) compared to the predicted water chemistry (0.00307 mg/L). Although higher, it was not anticipated to affect arsenic treatment. Additionally, copper concentrations were anticipated to decrease upon influent preparation as PHREEQC simulations of the influent water quality identified the copper hydroxycarbonate mineral malachite as slightly supersaturated. While the copper concentration was higher in the tap water than the EQS it is important to note that these concentrations are not expected on Site, and they are below concentrations that can cause issues with plants or microbes.

Alkalinity in the tap water was found to be 30% higher (127 mg/L) than the predicted water chemistry during recipe development, therefore sulphuric acid was added in an attempt to lower the influent just below calcite saturation as initial PHREEQC runs for the synthetic influent suggested calcite would be supersaturated and would likely precipitate.

Table 4-2: Synthetic Water Recipe

Constituents	Synthetic Water Recipe Target (mg/L)	Average Concentration Bench Trials (mg/L)		Constituents	Synthetic Water Recipe Target (mg/L)	Average Concentration Bench Trials (mg/L)	
		Dissolved	Total			Dissolved	Total
pH	7.99[1]	7.99		**Copper**	0.00307	0.0941[3]	0.111[3]
Alkalinity (as $CaCO_3$)	88.9	127[3]		**Iron**	0.0736	0.03	0.03
Ammonium (as N)	2.45	0.0551		**Lead**	0.00027	0.00005	0.000482
Chloride	4.57	15.4[3]		**Magnesium**	21.4	24.8	24.8
Nitrate (as N)	19.2	21.9		**Manganese**	0.16	0.15	0.158
Nitrite (as N)	0.44	3.98		**Molybdenum**	0.0156	0.0172	0.0178
Phosphorus	0.272	0.289	0.309	**Nickel**	0.00444	0.00496	0.00509
Sulphate	314	367[4]		**Potassium**	32.0	36.1[4]	35.7[4]
Aluminum	0.0147	0.0120	0.019	**Selenium**	0.0231	0.0279	0.0276
Antimony	0.0553	0.0630	0.0670	**Silicon**	4.53	4.49	4.59
Arsenic	0.1692[2]	0.169[2]	0.181	**Silver**	0.000011	0.00001	0.00001
Cadmium	0.000055	0.00006	0.00006	**Sodium**	22.2	42.3[4]	43.2[4]
Calcium	104	140[4]	142[4]	**Uranium**	0.0673	0.0723	0.0757
Cobalt	0.007	0.00089	0.001	**Zinc**	0.0074	0.0124[3]	0.0142[3]

Synthetic water recipe target values highlighted red exceed the EQS.EQS are for total constituents, except for aluminum is dissolved.

[1] Target pH used was an average of the Platinum Gulch Seep 2020-2022 data set.

[2] Based on the P90 concentration of the dissolved As Platinum Gulch Seep 2020-2022 data set.

[3] Tap water concentrations were higher than the predicted water quality data for PTS 2029 max scenario.

[4] Higher concentrations compared to target value due to constituents used in recipe.

4.3 BENCH-SCALE TRIAL TESTING TO DATE

4.3.1 COMMISSIONING

To begin commissioning, tap water with additional nutrients began flowing through each series at a targeted two-day HRT to maintain aerobic conditions while minimizing water volume requirements on a weekly basis. Nutrients of nitrate, phosphorus, and ammonium (in the form of calcium nitrate tetrahydrate, monopotassium phosphate, and ammonium sulfate) were added to the tap water to promote the establishment and maturation of the *Carex aquatilis.* The targeted nutrient concentrations of nitrate, phosphorus, and ammonium were the same concentrations targeted in the synthetic influent recipe in Table 4-2. Daily monitoring of plant health and flow checks were performed throughout commissioning to ensure that plants established, and flow remained on target to maintain aerobic conditions in the cells. A schedule outlining the dates at which the transition occurred from tap water containing nutrients to synthetic influent is shown in Table 4-3.

Original length of commissioning using tap water and nutrients was planned for a four-week duration but was extended to eight weeks to optimize the synthetic influent prior to use within the trials. The length of commissioning using 100% influent was decreased from four weeks to two weeks as the plants were well established and the commissioning criterion of greater than 50% of the initial plant density was met. Weekly monitoring of the cells was performed during the commissioning stage using a YSI handheld multiparameter meter to monitor dissolved oxygen concentrations to ensure that aerobic conditions were maintained.

Table 4-3: Commissioning Schedule

Dates	Synthetic Influent	Duration
September 2, 2022 – October 27, 2022	Tap water + Nutrients	Eight weeks
October 27, 2022 – November 12, 2022	50% Tap Water + Nutrients[1] 50% Synthetic Influent	Four weeks
November 12, 2022 – November 23, 2022	100% Synthetic Influent	Two weeks

[1]Nutrient concentrations remained consistent through the transition to 100% synthetic influent (Table 4-2) for plant establishment.

4.3.1.1 LEACH TESTING DURING COMMISSIONING

Two different leach tests were performed during commissioning on September 22 and October 13, 2022, to determine arsenic leaching from rock used for the rip rap channels and cascades as well as the substrates used within the treatment cells. Tests occurred when synthetic influent consisted of tap water and nutrients (Table 5-3).

4.3.2 TESTING

After commissioning using 100% synthetic influent for two weeks, the testing period commenced. Three different HRTs were tested. A two-day HRT was targeted for the first three sampling events, followed by a four-day HRT for two sampling events, and an eight-day HRT for the final two sampling events (Table 4-4). For each sampling event external samples were collected and sent to ALS laboratories for the analyses indicated in Table 4-4, followed by *in situ* measurements of pH, dissolved oxygen, conductivity, oxidation-reduction potential, and temperature using a YSI handheld multiparameter meter. Flow rates were also checked during testing days after sampling occurred, so flow was not disrupted.

Table 4-4: External Sampling Parameters and Testing Schedule

Date	Targeted HRT (days)	Total & Dissolved Metals	Anions[1]	Alkalinity	Conductivity	pH	Hardness	Ammonia
November 24, 2022	2	X	X	X	X	X	X	-
December 2, 2022	2	X	X	X	X	X	X	X
December 7, 2022	2	X	X	X	X	X	X	-
December 22, 2022	4	X	X	X	X	X	X	-
January 6, 2023	4	X	X	X	X	X	X	X
January 30, 2023	8	X	X	X	X	X	X	X
March 3, 2023	8	X	X	X	X	X	X	-

[1]Anions included sulphate, fluoride, chloride, nitrate, nitrite.

External samples were collected from the synthetic influent and the outflows of the A and B cells from each series. Ammonia samples were collected for the influent and B-cell outflows only.

5 RESULTS

5.1 IN SITU MEASUREMENTS

One of the design considerations surrounding water depth, substrate type, and hydraulic retention times was the ability of the CWTS to maintain aerobic conditions. Conceptual indicators that aerobic conditions were present in the CWTS cells include dissolved oxygen (DO) concentrations greater than 2 mg/L and an oxidation reduction potential (ORP) greater than +50 mV. Throughout commissioning and testing phases of the trials dissolved oxygen conditions (Figure 5-1) remained above 2 mg/L and ORP (Figure 5-2) remained greater than +50 mV. This indicates that consistent oxidizing conditions were maintained regardless of HRT and with all substrate types at the 10 cm water depth. There was also no significant difference between the cascade and rip rap channel for dissolved oxygen and ORP measurements, indicating either design would be suitable.

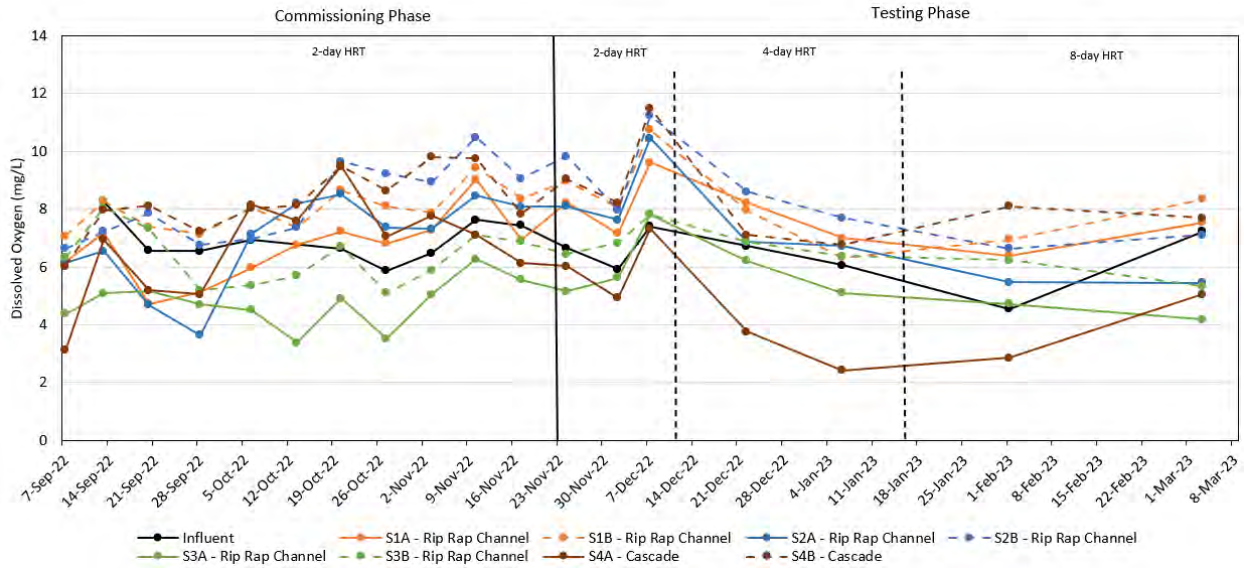

Figure 5-1: Dissolved Oxygen Measurements on Cells in Series 1–4

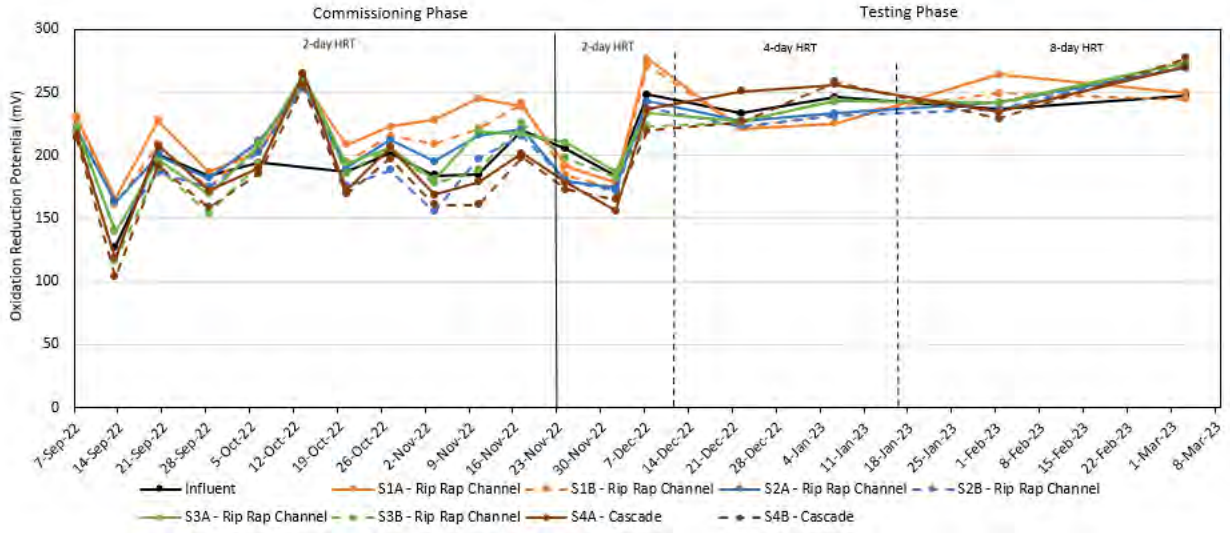

Figure 5-2: Oxidation Reduction Potential Measurements on Cells in Series 1–4

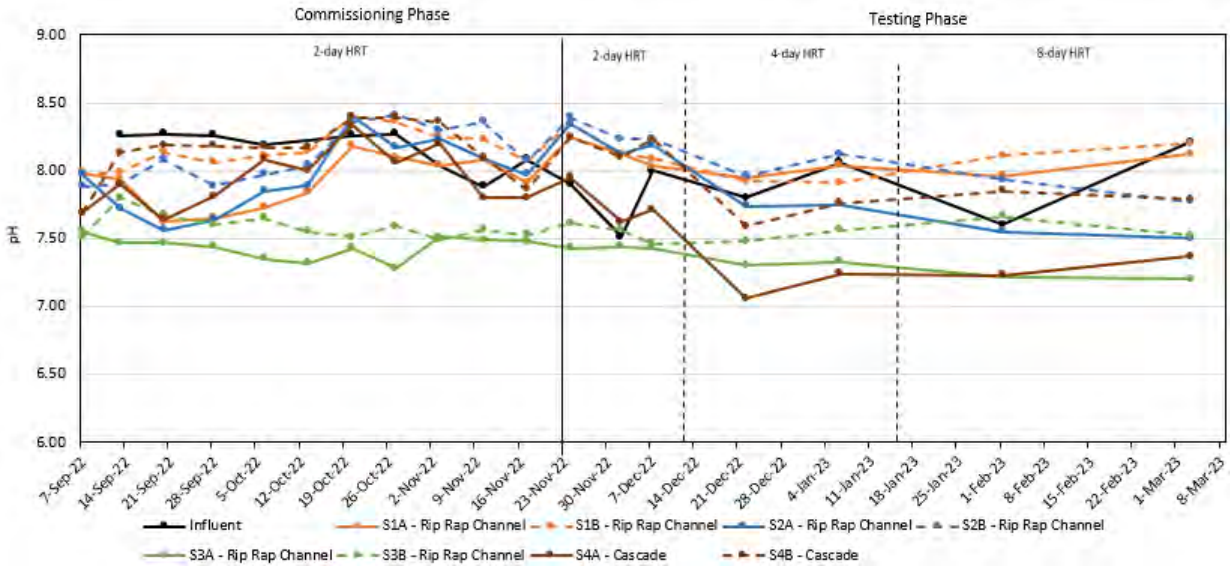

Figure 5-3: pH Measurements on Cells in Series 1—4

5.2 EXTERNAL ANALYTICAL

5.2.1 ARSENIC AND DISSOLVED IRON

Although treatment of a constituent is typically evaluated in the context of dissolved concentrations, total and dissolved arsenic concentrations are presented in Figure 5-4 and Figure 5-5 for Series 1—4, as the EQS is for total arsenic. Percent arsenic removal is outlined for each of the series in Table 5-1 in both the total and dissolved form.

Retention times of two, four, and eight days were selected for the testing phase of the bench-trials. Series 3, which contained substrate from the borrow pit at km 42.5, had the greatest total and dissolved arsenic removal at each HRT, with the highest percent removal (63% total arsenic removal) exhibited at the targeted 8-day HRT. Although Series 3 had the highest removal of arsenic overall on January 30 and March 3, 2023 (0.115 mg/L and 0.127 mg/L, respectively), it did not achieve an arsenic concentration below the current production and active closure phase EQS for total arsenic (0.053 mg/L) with outflow concentrations of 0.0683 mg/L and 0.0733 mg/L on January 30 and March 3, 2023, respectively. Series 2 and 4 contained the same substrate source (lower Haggart Road substrate) and had comparable total arsenic removal at the targeted 2- and 4- day HRT (5 to 25% removal); at an 8-day HRT, Series 4 had a higher total arsenic removal (34%) compared to Series 2 (23% removal). Out of the four series, Series 1 (Eagle Pup Road substrate) had the least arsenic treatment overall with its best total arsenic removal exhibited at a 2-day HRT sampling event (21% removal).

Dissolved iron results for the influent at each of the seven sampling events were at detection limit (0.03 mg/L). An increase in dissolved iron was also not exhibited and concentrations remained at the detection limit (0.03 mg/L) through the system at each of the seven sampling events which indicates that the substrate did not have notable iron leaching. With minimal iron in the predicted water chemistry (0.0736 mg/L) and minimal iron leaching from the substrates, the mechanism for the arsenic removal observed was likely through sorption to the CWTS substrate rather than co-precipitation with iron.

Although Series 1—4 were not able to achieve arsenic removal below the EQS (0.053 mg/L) it is important to note that a significant increase in arsenic was also not observed in the trials which is further discussed in Section 5.3.2.2.

Table 5-1: Arsenic Treatment in Series 1—4

Series	Targeted HRT (days)	Date	Influent Total Arsenic (mg/L)	Influent Dissolved Arsenic (mg/L)[2]	Effluent Total Arsenic (mg/L)	Effluent Dissolved Arsenic (mg/L)[2]	Total As Removal (%)[1]	Dissolved As Removal (%)[1]
Series 1	2	24-Nov-22	0.181	0.160	0.152	0.154	16	4
		2-Dec-22	0.185	0.165	0.147	0.159	21	4
		7-Dec-22	0.167	0.161	0.154	0.157	8	2
	4	22-Dec-22	0.165	0.153	0.166	0.171	-1	-12
		6-Jan-23	0.183	0.159	0.165	0.168	10	-6
	8	30-Jan-23	0.183	0.187	0.179	0.179	2	4
		3-Mar-23	0.200	0.199	0.176	0.174	12	13
Series 2	2	24-Nov-22	0.181	0.160	0.136	0.139	25	13
		2-Dec-22	0.185	0.165	0.140	0.146	24	12
		7-Dec-22	0.167	0.161	0.150	0.150	10	7
	4	22-Dec-22	0.165	0.153	0.151	0.155	8	-1
		6-Jan-23	0.183	0.159	0.151	0.152	17	4
	8	30-Jan-23	0.183	0.187	0.145	0.145	21	22
		3-Mar-23	0.200	0.199	0.154	0.158	23	21
Series 3	2	24-Nov-22	0.181	0.160	0.0938	0.0971	48	39
		2-Dec-22	0.185	0.165	0.0964	0.0948	48	43
		7-Dec-22	0.167	0.161	0.0927	0.0940	44	42
	4	22-Dec-22	0.165	0.153	0.0894	0.0912	46	40
		6-Jan-23	0.183	0.159	0.0919	0.0934	50	41
	8	30-Jan-23	0.183	0.187	0.0683	0.0676	63	64
		3-Mar-23	0.200	0.199	0.0733	0.0752	63	62
Series 4	2	24-Nov-22	0.181	0.160	0.142	0.142	22	11
		2-Dec-22	0.185	0.165	0.147	0.146	21	12
		7-Dec-22	0.167	0.161	0.146	0.146	13	9
	4	22-Dec-22	0.165	0.153	0.156	0.159	5	-4
		6-Jan-23	0.183	0.159	0.142	0.144	22	9
	8	30-Jan-23	0.183	0.187	0.121	0.123	34	34
		3-Mar-23	0.200	0.199	0.150	0.152	25	24

[1] Arsenic removal was calculated by subtracting effluent concentrations from influent concentrations, values obtained were then divided and multiplied by 100 to obtain percent removals for arsenic.

[2] Where dissolved is greater than total, results were verified using the relative percent difference (RPD) calculation and results presented in Table 5-1 above had up to a 14% RDP which is within an acceptable range. In cases where RPD >25%, a follow up with the analytical laboratory to confirm results would be completed.

An important factor when considering a wetland design is the treatment rate coefficient, which is site-specific based on the wetland design and water quality. For conceptual sizing of the Platinum Gulch CWTS, a proxy treatment rate coefficient for arsenic of 0.13 day^{-1} (zero order reaction) was used as a project-specific rate was not yet available (Ensero 2022b). The proxy treatment rate was from Ensero's experience with similar CWTS for arsenic treatment.

Preliminary removal rate coefficients were estimated for the Platinum Gulch CWTS through the bench-trials and are shown in Table 5-2.

Series 3 achieved the lowest arsenic concentrations and resulted in the highest treatment rate coefficient. However, the highest treatment rate developed through the bench-scale test work is lower than the proxy treatment rate previously used to estimate the conceptual size of the Platinum Gulch CWTS. In other words, if the treatment rate developed for Series 3 was applied to the conceptual sizing of the Platinum Gulch CWTS, it would result in a larger conceptual wetland size needed to treat the predicted water quality to EQS (0.053 mg/L total arsenic). However, the bench trials are intended to provide preliminary estimates of the removal rates, with further refinement and optimization intended through additional test work as discussed in later sections.

Table 5-2: Preliminary Estimates of Platinum Gulch Treatment Rate Coefficients for Arsenic

Series	k rate day^{-1}
1	0.0026
2	0.0059
3	0.0234
4	0.0070

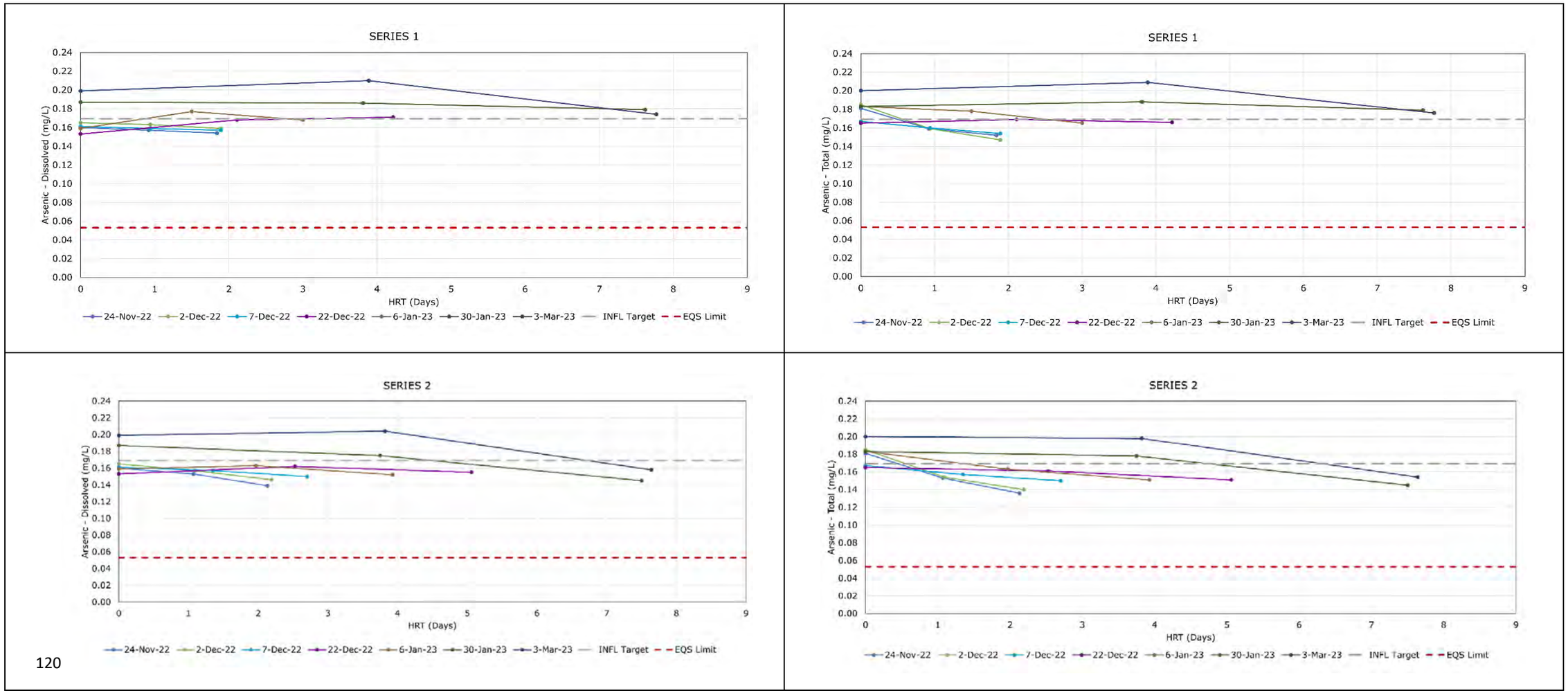

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Figure 5-4: Dissolved and Total Arsenic Concentrations in Series 1 and 2

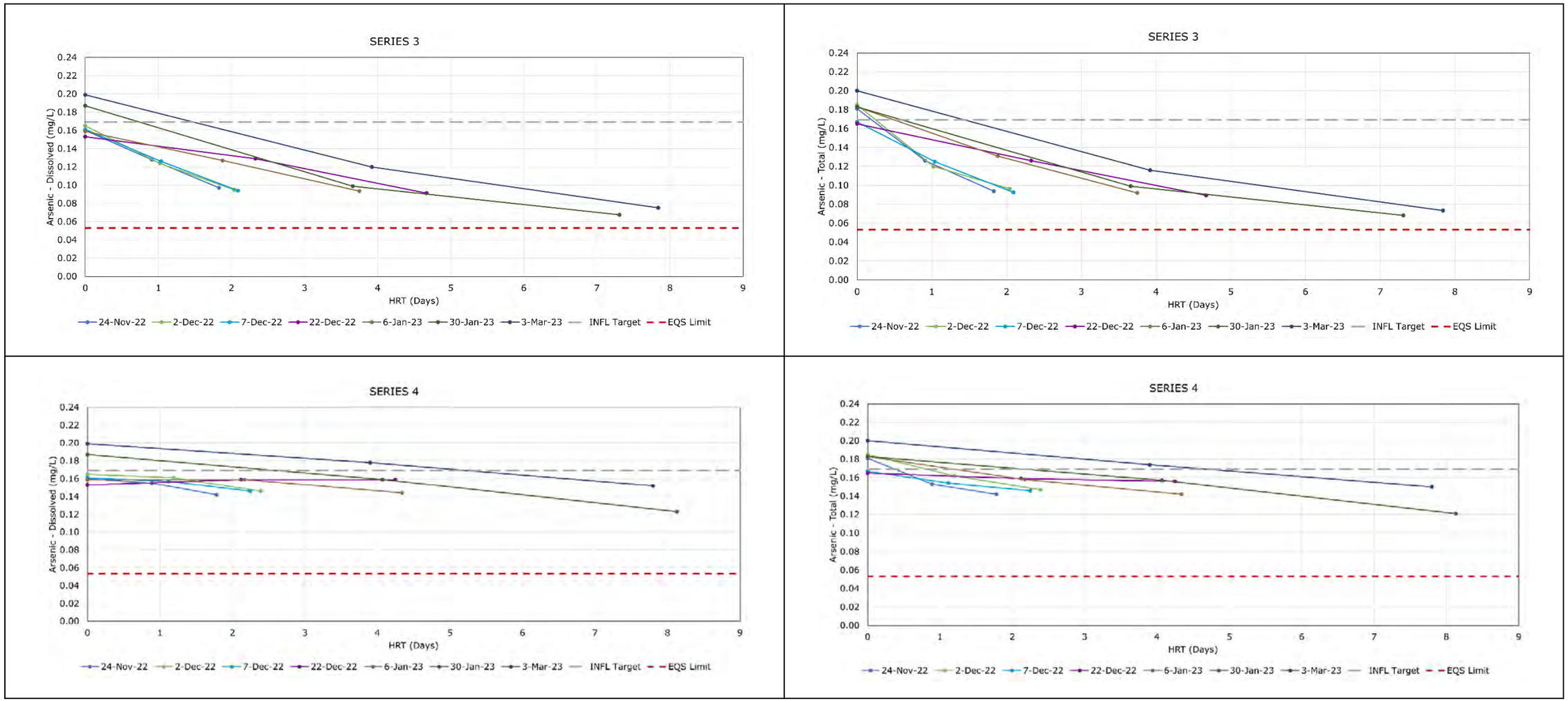

Figure 5-5: Dissolved and Total Arsenic Concentrations in Series 3 and 4

5.2.2 NITROGEN SPECIES

Although nitrate and nitrite treatment are not targeted in the aerobic CWTS design, the extent of nitrogen that may be removed through oxidation of ammonia and nitrite to form nitrate and/or through plant uptake was of interest based on the predicted water quality as discussed in Section 4.2. In the synthetic influent, ammonia oxidation was occurring resulting in a lower ammonia-N concentration and a higher nitrite-N concentration than targeted; however, it is expected that oxidation of ammonia would occur in the wetland if not prior to reaching the wetland. Oxidation and removal of nitrite was also observed in the CWTS, with outflow concentrations below the EQS limit of 0.12 mg/L (Figure 5-6) and a corresponding increase in nitrate concentrations observed through the CWTS (Figure 5-7). The extent of nitrate removal was minimal at a targeted 2- and 4- day HRT, while some nitrate was removed at a targeted 8-day HRT in Series 1-4 (Figure 5-6).

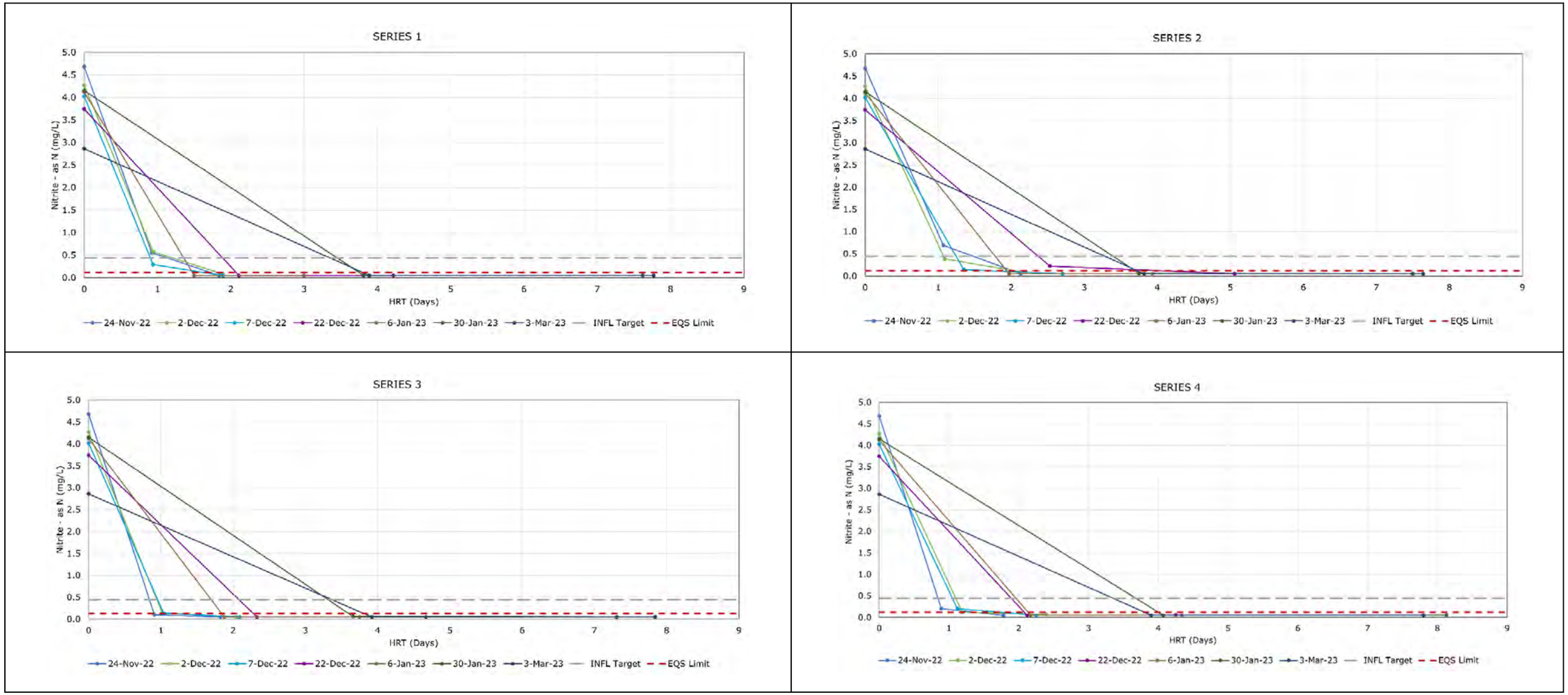

Figure 5-6: Nitrite-N Concentrations in Series 1 – 4

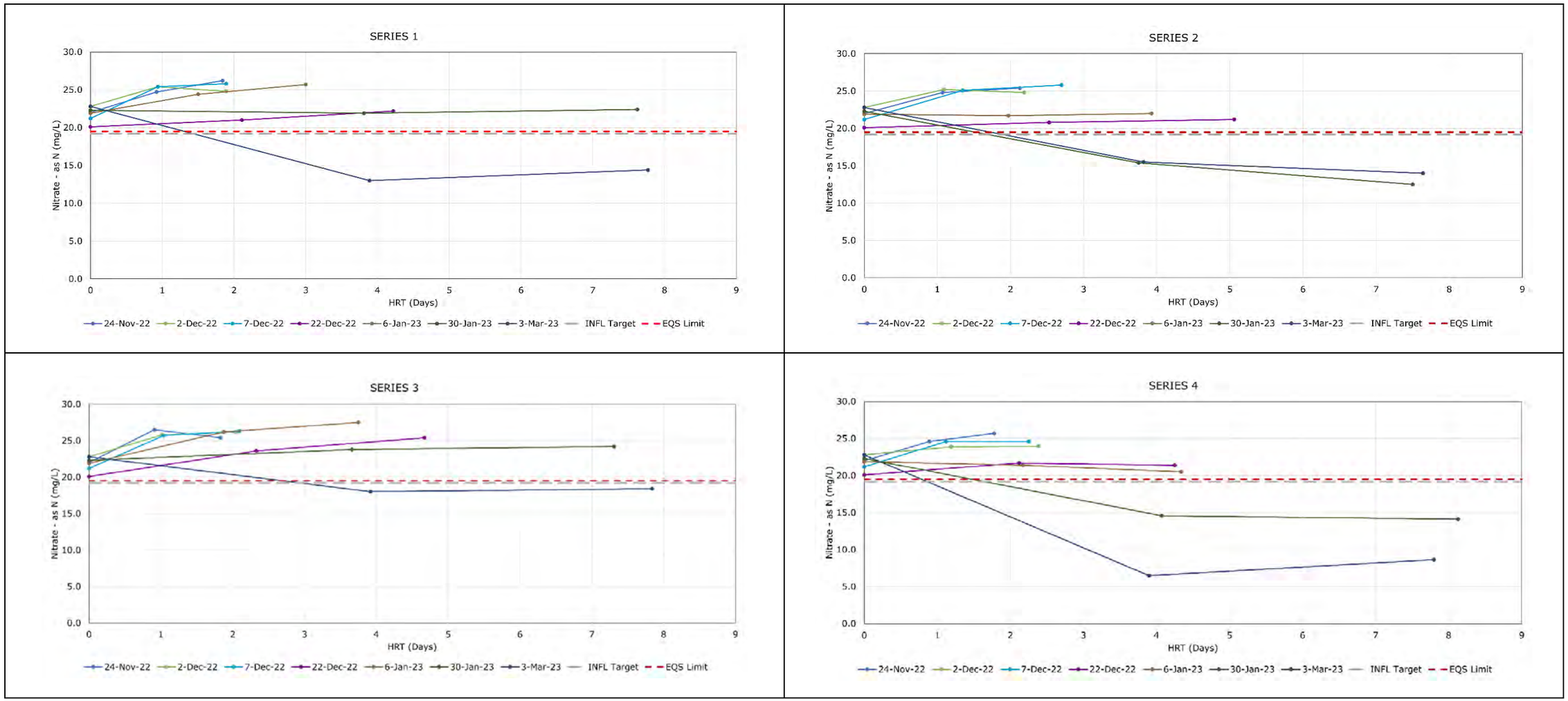

Figure 5-7: Nitrate-N Concentrations in Series 1 – 4

5.3 EVALUATION OF DESIGN CRITERIA

Design criteria evaluated in the bench-scale trials for arsenic treatment included:

- Water depth: assessing the suitability of a 10 cm water depth for plant establishment and maintaining aerobic conditions (Section 5.3.1),
- Hydraulic retention times (HRT): testing multiple HRTs to evaluate the influence of HRT on maintaining aerobic conditions and arsenic treatment (Section 5.3.1),
- Substrate: evaluating three different substrate sources from site, based on particle size, risk of leaching constituents into the water column, extent of iron availability in the substrates and understanding the need for additional iron amendments for the arsenic treatment, and the need for screening to remove fines (Section 5.3.2),
- Chanel design: evaluating the difference in arsenic treatment in a rip rap channel versus a step cascade (Section 5.3.3), and
- Plant type: evaluating the establishment of *Carex aquatilis* in a CWTS environment and the influence of this plant type on arsenic treatment (Section 5.3.4).

5.3.1 WATER DEPTH

A water depth of 10 cm was used in the cells to target an aerobic treatment system. Results from *in situ* DO (Figure 5-1) and ORP (Figure 5-2) indicate that the 10 cm water depth was able to maintain aerobic conditions (>2 mg/L DO and > +50mV ORP) with the targeted 2-, 4-, and 8-day HRTs. Water depth did not seem to impact plant health either as the plants were able to meet their commissioning target of 50% increase in plant density by the end of the commissioning phase (Section 5.3.4). Therefore, a water depth of 10 cm with an HRT up to 8 days are appropriate for use in an on-site CWTS to target aerobic conditions.

5.3.2 SUBSTRATE SUITABILITY

5.3.2.1 METAL LEACHING DURING CWTS BENCH TRIAL COMMISSIONING

Samples collected in September 2022 were from the outflow of the first rip rap channel in Series 1 and the outflow of the first cascade in Series 4 before flowing into the first treatment cell. Results indicated that although arsenic increased after the rip rap channel and cascade, in both cases the results were below the EQS of 0.053 mg/L for total arsenic. For the October 2022 leach test, no increase of total arsenic was observed in the Series 1 rip rap channel discharge, whereas total arsenic did increase in the outflow of the first cascade in Series 4, but showed a significant decrease compared to the September 2022 results (0.0118 mg/L to 0.00084 mg/L).

Arsenic concentrations at the outflow (i.e., B cell) for Series 1, 2, 3, and 4 were also higher than the influent, suggestive of some arsenic leaching by the substrate; however, the arsenic concentrations remained below the EQS of 0.053 mg/L. The pre-screening leachability testing showed that SUB03 (Series 1) had the highest leachable arsenic concentration (0.0866 mg/L; Table 4-1), while the results of the leach test in October 2022 show that Series 3 (Gravel) had the highest leachable arsenic concentration out of all the series (0.0258 mg/L), followed by Series 1 with 0.0132 mg/L arsenic. The pre-screening leachability testing showed that SUB07 (Series 2 and 4) had the lowest leachable

arsenic concentration (0.0044 mg/L; Table 4-1), and the results of the leach test in October 2022 show that Series 2 and 4 also had the lowest leachable arsenic concentration out of all the series (0.00179 mg/L and 0.00259 mg/L, respectively). Overall, any arsenic leaching that was observed during the leach tests were minimal.

Table 5-3: Leach Test Results

Date	Sample Name	Total Arsenic (mg/L)	Dissolved Arsenic (mg/L)
22-Sep-22	Influent	0.00055	0.00028
	Series 1 Channel 1	0.00268	0.00178
	Series 4 Cascade 1	0.0118	0.00129
13-Oct-22	Influent	0.00041	0.00037
	Series 1 Channel 1	0.00041	0.00038
	Series 4 Cascade 1	0.00084	0.00079
	Series 1 B cell outflow	0.0132	0.0102
	Series 2 B cell outflow	0.00179	0.00168
	Series 3 B cell outflow	0.0258	0.0255
	Series 4 B cell outflow	0.00259	0.00217

5.3.2.2 METALS LEACHING DURING CWTS BENCH-TRIAL TESTING

While there were a few instances of total or dissolved arsenic increasing slightly by the outflow of the trials (1%, 4%, 12%), any increases were within a 20% analytical uncertainty (Table 5-1). Therefore, no significant leaching was observed in these trials, which suggests that all three substrates are suitable for use on Site in terms of arsenic leachability. Further test work (stagnation trials) is planned to further evaluate leaching potential of the substrates.

Concentrations of other constituents were monitored at each of the sampling events to assess whether metal leaching was occurring from each of the substrates to above an EQS limit. Constituents described herein are described in total form rather than dissolved form as the EQS limits are for total values. Selenium and uranium had a few instances where the concentration increased through the series by more than 20% (analytical uncertainty) resulting in instances where the concentrations were above the EQS (Table 5-4). However, it should be noted that when the outflow rose above the EQS, the influent concentrations for selenium and uranium were above their target concentrations (maximum modelled water quality for PG PTS May 2029 of 0.0231 mg/L and 0.0673 mg/L, respectively). Specifically, both constituents demonstrated an increase greater than 20% during the 8-day HRT sampling events (Table 5-4), while the 2- and 4-day HRT events had some increases, but all were less than 20%. While there was no significant leaching of constituents from the substrate, the longer HRTs resulted in increased leaching. Further test work is planned through stagnation trials to evaluate substrate leaching potential should the flow to the wetland stop.

Table 5-4 – Constituents leaching >20% or above EQS limit

HRT	Date	Series	Constituent (total)	Influent (mg/L)	Outflow (mg/L)	Increase
8-Day	Jan 30, 2023	2	Uranium	0.0730	0.0891	22%
8-Day	Jan 30, 2023	3	Uranium	0.0730	0.0910	25%
8-Day	Mar 3, 2023	2	Selenium	0.0294	0.0364	24%

EQS: Total uranium 0.09 mg/L, Total selenium 0.025 mg/L. In instances where the outflow was above the EQS, the influent concentrations were greater than target. Values highlighted in red exceed the EQS.

5.3.3 CHANNEL DESIGN

No significant difference in DO concentrations was observed between the rip rap channel and cascade designs indicating that one design did not perform better over the other in maintaining aerobic conditions. Series 4B (cascade) cell averaged 8.35 mg/L of dissolved oxygen throughout the testing phase whereas Series 2B (rip rap channel) cell containing the same substrate type (SUB07) had an average of 8.45 mg/L dissolved oxygen. Series 2 vs Series 4 had comparable arsenic treatment throughout the trials at a targeted 2- and 4- day HRT (Table 5-1). At the targeted 8-day HRT on January 30, 2023, Series 2 had 21% total arsenic removal whereas 34% removal was exhibited in Series 4 which was the greatest difference in arsenic treatment between the two series out of the seven sampling events performed. The second 8-day HRT sampling event on March 3, 2023, showed similar arsenic removal between Series 2 and 4 with 23% and 25% removal respectively. Overall, arsenic removal was comparable between Series 2 and 4 suggesting that one design did not perform better over the other for treatment of arsenic.

5.3.4 PLANT SUITABILITY

Carex aquatilis plants were chosen to be used in the trials as they transplanted and established the best within nursery systems in Ensero's greenhouse facility. Photos were taken on a weekly basis throughout commissioning and the testing period to monitor plant health and to aid in determining when the commissioning criteria of 50% increase in plant density had been established. Photos of each individual cell in each series are shown in Figure 5-8 to Figure 5-15. Each figure shows the plants post-setup of trials in the greenhouse facility (September 2, 2022), at the end of the commissioning period (end of commissioning occurred on November 23, 2022) and the end of the trials. *Carex aqualitis* plants in Series 3 cells contained the gravel substrate from the borrow pit at km 42.5 and appeared the healthiest throughout the trials with the greatest amount of new growth and minimal die off of plants occurring (Figure 5-12 and Figure 5-13). Plants in Series 1 cells containing substrate from Eagle Pup Road (SUB03) had the least amount of new growth throughout the trials in comparison to Series 2 – 4 and the most die off (Figure 5-8 and Figure 5-9) and therefore was the least successful of the substrates in terms of plant health and growth. Plants in Series 2 and Series 4 cells containing substrate from lower Haggart Road (SUB07) established better than Series 1 but less so than plants in Series 3. Series 3 substrate was sieved and was the most coarse substrate used, which could have been a contributing factor to the greater health and growth of plants.

Set up (Sept. 2, 2022)	**End of Commissioning (Nov. 18, 2022)**	**End of Trial (Mar. 3, 2023)**

Figure 5-8: Series 1 – Cell 1A Plant Establishment

Set up (Sept. 2, 2022)	**End of Commissioning (Nov. 18, 2022)**	**End of Trial (Mar. 3, 2023)**

Figure 5-9: Series 1 – Cell 1B Plant Establishment

Set up (Sept. 2, 2022)	**End of Commissioning (Nov. 18, 2022)**	**End of Trial (Mar. 3, 2023)**

Figure 5-10**: Series 2 – Cell 2A Plant Establishment**

Set up (Sept. 2, 2022)	**End of Commissioning (Nov. 18, 2022)**	**End of Trial (Mar. 3, 2023)**

Figure 5-11: Series 2 – Cell 2B Plant Establishment

Set up (Sept. 2, 2022)	**End of Commissioning (Nov. 18, 2022)**	**End of Trial (Mar. 3, 2023)**

Figure 5-12: Series 3 – Cell 3A Plant Establishment

Set up (Sept. 2, 2022)	**End of Commissioning (Nov. 18, 2022)**	**End of Trial (Mar. 3, 2023)**

Figure 5-13: Series 3 – Cell 3B Plant Establishment

Set up (Sept. 2, 2022)	**End of Commissioning (Nov. 18, 2022)**	**End of Trial (Mar. 3, 2023)**

Figure 5-14: Series 4 – Cell 4A Plant Establishment

Set up (Sept. 2, 2022)	**End of Commissioning (Nov. 18, 2022)**	**End of Trial (Mar. 3, 2023)**

Figure 5-15: Series 4 – Cell 4B Plant Establishment

6 NEXT STEPS

Results from the bench-scale testing performed at a 2-, 4-, and 8-day HRT showed arsenic treatment, particularly in Series 3 using a coarse substrate, although arsenic was not treated below the current production and active closure phase EQS concentration. The trials also demonstrated minimal available iron in the substrate to support arsenic removal. Iron is needed to facilitate co-precipitation with arsenic in an aerobic CWTS. It is recommended as a next step in advancing the CWTS for the Platinum Gulch WRSA to continue off-site bench-scale testing to evaluate the extent of arsenic removal with iron amendments or iron rich substrates. Following iron amendment trials, stagnation testing is recommended to evaluate the risk of the system going anaerobic during no flow/low flow scenarios and the potential of constituent leaching from the substrate. The findings of the iron amendment and stagnation trial will be used to refine the on-site pilot CWTS design for Platinum Gulch.

It is also recommended that anaerobic CWTS bench-scale trials be completed to evaluate the extent of treatment achievable for constituents that require an anaerobic system for treatment, including nitrate, nitrite, selenium, and uranium. Additionally, an anaerobic trial will continue to screen the substrates sourced from Site to evaluate the extent of leaching under anaerobic conditions.

Additional information that would support the on-site pilot-scale CWTS design for the PG WRSA include:

- Refining the location of the CWTS and determine if additional test pitting of Geotechnical work is required,
- Determining a borrow source of *Carex aquatilis* on site with enough plants, or alternatively establishing a nursery system to provide sufficient plants for the pilot-scale CWTS, and
- Gathering additional flow data for Ditch A in the area the PG CWTS will be built. This will inform the onsite wetland design, including if any water management is needed for the pilot-scale CWTS.

7 REFERENCES

Ensero Solutions Inc. (Ensero). (2022a). *Eagle Mine Treatment Wetland Information Review and Site Visit.* March 2022.

Ensero Solutions Inc. (Ensero). (2022b). *Eagle Gold Mine Preliminary CWTS Design.* September 2022.

APPENDIX A:

LABORATORY CERTIFICATES

STRATAGOLD CORPORATION
ATTN: Hugh Coyle
Suite 1000 - 1050 W. Pender St
Vancouver BC V6E 3S7

Date Received: 25-MAY-18
Report Date: 11-JUL-18 17:11 (MT)
Version: FINAL

Client Phone: 604-682-5122

Certificate of Analysis

Lab Work Order #: L2100743

Project P.O. #: NOT SUBMITTED
Job Reference: STR125-EAGLEGOLD-VA
C of C Numbers: 1 of 1
Legal Site Desc:

Heather McKenzie
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2100743-1 VICEAG-GCM-06	L2100743-2 VICEAG-GCM-07	L2100743-3 VICEAG-GCM-08	L2100743-4 VICEAG-GCM-09	L2100743-5 VICEAG-GCM-10
Sample ID / **Description** / **Sampled Date** / **Sampled Time** / **Client ID**						
SOIL						
Physical Tests	Moisture (%)	<0.25	<0.25	<0.25	<0.25	<0.25
Leachable Anions & Nutrients	Conductivity (uS/cm)	107	103	103	56.0	26.4
	pH (pH)	8.17	8.12	9.16	7.68	6.89
Total Metals	Aluminum (Al) (%)	0.86	0.49	3.83	1.23	1.39
	Antimony (Sb) (ppm)	0.42	3.11	0.45	5.88	13.95
	Arsenic (As) (ppm)	20.9	240	210	260	218
	Barium (Ba) (ppm)	70	40	80	220	140
	Beryllium (Be) (ppm)	0.28	0.28	0.89	0.56	0.87
	Bismuth (Bi) (ppm)	0.09	0.20	0.87	0.25	0.52
	Boron (B) (ppm)	<10	10	10	<10	<10
	Cadmium (Cd) (ppm)	0.03	0.47	1.25	0.19	0.16
	Calcium (Ca) (%)	0.44	0.14	7.27	0.33	0.12
	Cerium (Ce) (ppm)	34.1	45.2	60.8	55.4	58.2
	Cesium (Cs) (ppm)	1.97	1.93	1.51	2.87	2.46
	Chromium (Cr) (ppm)	26	11	31	29	22
	Cobalt (Co) (ppm)	4.2	5.5	7.2	7.4	13.6
	Copper (Cu) (ppm)	8.7	9.2	30.8	16.8	30.9
	Gallium (Ga) (ppm)	3.08	1.44	10.40	4.76	4.58
	Germanium (Ge) (ppm)	<0.05	0.06	0.11	0.07	0.08
	Gold (Au) (ppm)	<0.02	<0.02	0.02	0.02	<0.02
	Hafnium (Hf) (ppm)	0.07	0.08	0.16	0.23	0.16
	Indium (In) (ppm)	0.009	0.008	0.028	0.016	0.014
	Iron (Fe) (%)	1.64	1.55	1.29	2.04	2.88
	Lanthanum (La) (ppm)	16.1	22.4	33.6	28.5	28.6
	Lead (Pb) (ppm)	3.1	18.3	13.4	32.0	86.4
	Lithium (Li) (ppm)	17.2	2.5	19.6	21.2	28.1
	Magnesium (Mg) (%)	0.28	0.02	0.48	0.40	0.41
	Manganese (Mn) (ppm)	169	227	265	153	345
	Mercury (Hg) (ppm)	<0.01	0.08	<0.01	0.01	<0.01
	Molybdenum (Mo) (ppm)	0.12	0.18	0.26	0.62	0.68
	Nickel (Ni) (ppm)	10.9	12.8	22.8	20.3	26.8
	Niobium (Nb) (ppm)	0.29	0.09	0.55	0.59	0.72
	Phosphorus (P) (ppm)	80	100	440	350	300
	Potassium (K) (%)	0.37	0.26	0.38	0.49	0.49
	Rhenium (Re) (ppm)	<0.001	<0.001	0.001	0.001	<0.001
	Rubidium (Rb) (ppm)	26.4	15.0	28.9	44.3	39.2
	Scandium (Sc) (ppm)	2.1	1.3	3.4	3.6	2.8

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2100743-6	L2100743-7	L2100743-8	L2100743-9	L2100743-10
Description					
Sampled Date					
Sampled Time					
Client ID	VICEAG-GCM-11	VICEAG-GCM-12	VICEAG-GCM-13	VICEAG-GCM-14	VICEAG-GCM-15
Grouping **Analyte**					
SOIL					
Physical Tests Moisture (%)	<0.25	<0.25	<0.25	<0.25	<0.25
Leachable Anions & Nutrients Conductivity (uS/cm)	270	95.9	22.9	91.5	88.6
pH (pH)	7.49	7.90	7.06	7.98	8.03
Total Metals Aluminum (Al) (%)	0.78	0.61	0.74	0.68	1.03
Antimony (Sb) (ppm)	6.44	3.11	2.87	4.80	0.61
Arsenic (As) (ppm)	563	63.5	45.2	21.3	10.1
Barium (Ba) (ppm)	110	70	90	100	170
Beryllium (Be) (ppm)	0.34	0.19	0.21	0.24	0.11
Bismuth (Bi) (ppm)	3.14	0.17	0.26	0.24	0.11
Boron (B) (ppm)	<10	<10	<10	<10	<10
Cadmium (Cd) (ppm)	0.24	0.07	0.24	0.16	0.22
Calcium (Ca) (%)	0.16	0.25	0.17	0.17	1.59
Cerium (Ce) (ppm)	38.6	24.4	28.7	30.4	13.25
Cesium (Cs) (ppm)	1.06	0.83	0.43	0.43	0.33
Chromium (Cr) (ppm)	14	16	14	16	28
Cobalt (Co) (ppm)	8.5	4.1	6.7	6.6	8.6
Copper (Cu) (ppm)	22.8	10.1	15.9	16.9	37.5
Gallium (Ga) (ppm)	2.75	2.15	2.30	2.23	2.88
Germanium (Ge) (ppm)	0.05	<0.05	<0.05	<0.05	<0.05
Gold (Au) (ppm)	0.02	<0.02	<0.02	<0.02	<0.02
Hafnium (Hf) (ppm)	0.18	0.12	0.08	0.15	0.11
Indium (In) (ppm)	0.014	0.015	0.009	0.012	0.010
Iron (Fe) (%)	2.11	1.77	1.76	2.61	2.00
Lanthanum (La) (ppm)	18.9	11.6	13.1	13.9	6.5
Lead (Pb) (ppm)	24.0	7.0	14.1	20.9	10.9
Lithium (Li) (ppm)	11.0	9.6	9.4	7.4	11.4
Magnesium (Mg) (%)	0.28	0.20	0.21	0.19	0.95
Manganese (Mn) (ppm)	282	350	448	331	440
Mercury (Hg) (ppm)	0.04	0.02	0.01	<0.01	0.02
Molybdenum (Mo) (ppm)	0.45	0.44	0.64	0.34	0.50
Nickel (Ni) (ppm)	18.8	11.2	16.3	19.5	24.1
Niobium (Nb) (ppm)	0.33	0.28	0.20	0.15	0.25
Phosphorus (P) (ppm)	260	140	250	190	490
Potassium (K) (%)	0.24	0.15	0.14	0.13	0.11
Rhenium (Re) (ppm)	<0.001	0.001	<0.001	0.002	0.001
Rubidium (Rb) (ppm)	15.6	11.1	7.8	7.0	6.2
Scandium (Sc) (ppm)	1.8	1.4	1.5	1.4	2.2

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2100743-1	L2100743-2	L2100743-3	L2100743-4	L2100743-5
Description					
Sampled Date					
Sampled Time					
Client ID	VICEAG-GCM-06	VICEAG-GCM-07	VICEAG-GCM-08	VICEAG-GCM-09	VICEAG-GCM-10
Grouping / **Analyte**					
SOIL					
Total Metals Selenium (Se) (ppm)	<0.2	<0.2	0.2	<0.2	0.5
Silver (Ag) (ppm)	0.09	0.48	0.10	0.16	0.13
Sodium (Na) (%)	0.02	<0.01	0.08	0.05	0.02
Strontium (Sr) (ppm)	14.2	5.5	195.0	34.0	22.5
Sulfur (S) (%)	0.07	0.01	0.12	0.01	0.03
Tantalum (Ta) (ppm)	<0.01	<0.01	0.02	<0.01	<0.01
Tellurium (Te) (ppm)	<0.01	0.01	0.03	0.03	0.01
Thallium (Tl) (ppm)	0.18	0.16	0.17	0.28	0.31
Thorium (Th) (ppm)	8.1	10.2	13.5	12.1	11.2
Tin (Sn) (ppm)	0.4	<0.2	1.8	0.6	0.5
Titanium (Ti) (%)	0.043	<0.005	0.156	0.092	0.041
Tungsten (W) (ppm)	0.16	1.67	1.27	14.50	0.87
Uranium (U) (ppm)	0.62	0.91	2.62	1.35	1.37
Vanadium (V) (ppm)	15	5	31	27	25
Yttrium (Y) (ppm)	3.11	3.48	12.00	5.58	4.65
Zinc (Zn) (ppm)	17	163	166	69	66
Zirconium (Zr) (ppm)	2.4	3.2	4.6	7.4	7.1
Leachable Metals Aluminum (Al)-Leachable (mg/L)	0.512	0.262	0.160	0.532	1.18
Antimony (Sb)-Leachable (mg/L)	0.00259	0.00372	0.00147	0.0109	0.0284
Arsenic (As)-Leachable (mg/L)	0.0166	0.221	0.329	0.224	0.0511
Barium (Ba)-Leachable (mg/L)	0.0086	0.0013	0.0037	0.0138	0.0163
Beryllium (Be)-Leachable (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Bismuth (Bi)-Leachable (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Leachable (mg/L)	0.011	0.060	0.015	<0.010	<0.010
Cadmium (Cd)-Leachable (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Calcium (Ca)-Leachable (mg/L)	10.3	9.45	11.2	2.50	1.65
Chromium (Cr)-Leachable (mg/L)	<0.00050	0.00082	<0.00050	0.00080	0.00131
Cobalt (Co)-Leachable (mg/L)	<0.00010	<0.00010	<0.00010	0.00023	0.00108
Copper (Cu)-Leachable (mg/L)	<0.0010	<0.0010	<0.0010	0.0017	0.0077
Iron (Fe)-Leachable (mg/L)	<0.030	<0.030	<0.030	0.593	2.09
Lead (Pb)-Leachable (mg/L)	<0.00010	<0.00010	<0.00010	0.00172	0.00771
Lithium (Li)-Leachable (mg/L)	0.0091	0.0091	0.0107	0.0163	0.0179
Magnesium (Mg)-Leachable (mg/L)	1.38	0.327	0.318	1.04	0.738
Manganese (Mn)-Leachable (mg/L)	0.00242	<0.00050	<0.00050	0.00425	0.0457
Mercury (Hg)-Leachable (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Molybdenum (Mo)-Leachable (mg/L)	0.00043	0.00197	0.00048	0.00198	0.00112
Nickel (Ni)-Leachable (mg/L)	<0.00050	<0.00050	<0.00050	0.00081	0.00537

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2100743-6	L2100743-7	L2100743-8	L2100743-9	L2100743-10
Description					
Sampled Date					
Sampled Time					
Client ID	VICEAG-GCM-11	VICEAG-GCM-12	VICEAG-GCM-13	VICEAG-GCM-14	VICEAG-GCM-15
Grouping / **Analyte**					
SOIL					
Total Metals Selenium (Se) (ppm)	0.8	0.4	<0.2	<0.2	<0.2
Silver (Ag) (ppm)	0.22	0.10	0.14	0.13	0.17
Sodium (Na) (%)	0.01	0.02	0.02	0.01	0.02
Strontium (Sr) (ppm)	18.6	14.6	13.8	20.5	36.7
Sulfur (S) (%)	0.17	0.02	0.01	0.01	0.02
Tantalum (Ta) (ppm)	<0.01	<0.01	<0.01	<0.01	<0.01
Tellurium (Te) (ppm)	0.04	0.01	0.03	0.02	0.02
Thallium (Tl) (ppm)	0.16	0.09	0.07	0.07	0.06
Thorium (Th) (ppm)	7.9	5.6	5.3	6.3	2.4
Tin (Sn) (ppm)	0.6	0.3	0.3	0.3	0.2
Titanium (Ti) (%)	0.022	0.025	0.015	0.012	0.075
Tungsten (W) (ppm)	6.94	1.71	0.62	0.39	0.10
Uranium (U) (ppm)	0.94	0.64	0.72	1.07	0.54
Vanadium (V) (ppm)	13	11	13	12	39
Yttrium (Y) (ppm)	4.16	2.92	3.32	3.42	5.07
Zinc (Zn) (ppm)	63	31	48	93	51
Zirconium (Zr) (ppm)	6.2	4.0	4.1	6.2	3.4
Leachable Metals Aluminum (Al)-Leachable (mg/L)	0.0319	0.222	0.611	0.220	0.411
Antimony (Sb)-Leachable (mg/L)	0.00721	0.00751	0.00222	0.00329	0.00074
Arsenic (As)-Leachable (mg/L)	0.0286	0.0282	0.0115	0.0053	0.0049
Barium (Ba)-Leachable (mg/L)	0.0398	0.0097	0.0113	0.0552	0.0779
Beryllium (Be)-Leachable (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Bismuth (Bi)-Leachable (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Leachable (mg/L)	<0.010	<0.010	<0.010	<0.010	0.010
Cadmium (Cd)-Leachable (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Calcium (Ca)-Leachable (mg/L)	31.8	10.4	0.94	10.8	9.60
Chromium (Cr)-Leachable (mg/L)	<0.00050	<0.00050	0.00106	0.00058	<0.00050
Cobalt (Co)-Leachable (mg/L)	0.00013	<0.00010	0.00046	<0.00010	<0.00010
Copper (Cu)-Leachable (mg/L)	<0.0010	<0.0010	0.0029	<0.0010	0.0017
Iron (Fe)-Leachable (mg/L)	<0.030	<0.030	1.21	0.145	0.051
Lead (Pb)-Leachable (mg/L)	<0.00010	<0.00010	0.00138	0.00022	<0.00010
Lithium (Li)-Leachable (mg/L)	0.0142	0.0119	<0.0050	0.0061	<0.0050
Magnesium (Mg)-Leachable (mg/L)	7.48	1.92	0.317	1.08	2.24
Manganese (Mn)-Leachable (mg/L)	0.0641	0.00393	0.0394	0.00768	0.00259
Mercury (Hg)-Leachable (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Molybdenum (Mo)-Leachable (mg/L)	0.00127	0.00351	0.00355	0.00202	0.00287
Nickel (Ni)-Leachable (mg/L)	0.00080	<0.00050	0.00189	<0.00050	<0.00050

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2100743-1	L2100743-2	L2100743-3	L2100743-4	L2100743-5
Description					
Sampled Date					
Sampled Time					
Client ID	VICEAG-GCM-06	VICEAG-GCM-07	VICEAG-GCM-08	VICEAG-GCM-09	VICEAG-GCM-10
Grouping **Analyte**					
SOIL					
Leachable Metals Phosphorus (P)-Leachable (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Leachable (mg/L)	9.90	16.1	9.08	7.70	2.56
Selenium (Se)-Leachable (mg/L)	0.00066	<0.00050	0.00088	0.00054	<0.00050
Silicon (Si)-Leachable (mg/L)	2.61	4.58	12.1	5.31	6.28
Silver (Ag)-Leachable (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.000063
Sodium (Na)-Leachable (mg/L)	3.29	0.724	2.02	2.79	1.18
Strontium (Sr)-Leachable (mg/L)	0.0383	0.0153	0.0581	0.0253	0.0125
Thallium (Tl)-Leachable (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Leachable (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Titanium (Ti)-Leachable (mg/L)	<0.010	<0.010	<0.010	0.013	0.030
Uranium (U)-Leachable (mg/L)	0.000627	0.000386	0.000023	0.000151	0.000224
Vanadium (V)-Leachable (mg/L)	0.0015	<0.0010	0.0107	0.0014	0.0020
Zinc (Zn)-Leachable (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2100743-6	L2100743-7	L2100743-8	L2100743-9	L2100743-10
Description					
Sampled Date					
Sampled Time					
Client ID	VICEAG-GCM-11	VICEAG-GCM-12	VICEAG-GCM-13	VICEAG-GCM-14	VICEAG-GCM-15
Grouping **Analyte**					
SOIL					
Leachable Metals Phosphorus (P)-Leachable (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Leachable (mg/L)	8.79	5.55	2.82	5.46	3.93
Selenium (Se)-Leachable (mg/L)	<0.00050	0.00070	<0.00050	0.00071	<0.00050
Silicon (Si)-Leachable (mg/L)	3.11	3.40	5.07	4.22	3.13
Silver (Ag)-Leachable (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium (Na)-Leachable (mg/L)	1.48	2.30	1.61	3.02	2.27
Strontium (Sr)-Leachable (mg/L)	0.154	0.0418	0.00491	0.100	0.0336
Thallium (Tl)-Leachable (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Leachable (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Titanium (Ti)-Leachable (mg/L)	<0.010	<0.010	0.017	<0.010	<0.010
Uranium (U)-Leachable (mg/L)	0.000071	0.000178	0.000121	0.000787	0.000271
Vanadium (V)-Leachable (mg/L)	<0.0010	0.0010	0.0014	<0.0010	0.0025
Zinc (Zn)-Leachable (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2100743-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Iron (Fe)-Leachable	MS-B	L2100743-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Leachable	MS-B	L2100743-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Leachable	MS-B	L2100743-1, -10, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
EC-SHKFLSK-PCT-VA	Soil	EC by PCT (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials (MEND Report 1.20.1)" (William A. Price, 2009). In summary, a sample is extracted with deionized water at a 3:1 liquid to solids ratio for 24 hours. The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using procedures adapted from APHA Method 2510 "Conductivity".

HG-SHKFLSK-CVAFS-VA	Soil	Mercury by CVAAS (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials (MEND Report 1.20.1)" (William A. Price, 2009). In summary, a sample is extracted with deionized water at a 3:1 liquid to solids ratio for 24 hours. The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using atomic absorption spectrophotometry (EPA Method 245.7). The Shakeflask extraction is an empirical procedure with pre-defined characteristics. Recovery of some elements (Ag, Bi, Hg, and Sn) by this method can be variable due to the neutral pH of the extraction fluid. LCS QC sample DQOs for these elements have been established at 50-130% for this reason

ME-MS41-AX	Soil	Aqua Regia ICPMS	Aqua Regia ICPMS

A prepared sample (0.50 g) is digested with aqua regia in a graphite heating block. After cooling, the resulting solution is diluted to with deionized water, mixed and analyzed by inductively coupled plasma-atomic emission spectrometry. Following this analysis, the results are reviewed for high concentrations of bismuth, mercury, molybdenum, silver and tungsten and diluted accordingly. Samples are then analysed by ICP-MS for the remaining suite of elements. The analytical results are corrected for inter-element spectral interferences.

MET-SHKFLSK-MS-VA	Soil	Metals by ICPMS (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials (MEND Report 1.20.1)" (William A. Price, 2009). In summary, a sample is extracted with deionized water at a 3:1 liquid to solids ratio for 24 hours. The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using inductively coupled plasma - mass spectrophotometry (EPA Method 6020A).
The Shakeflask extraction is an empirical procedure with pre-defined characteristics. Recovery of some elements (Ag, Bi, Hg, and Sn) by this method can be variable due to the neutral pH of the extraction fluid. LCS QC sample DQOs for these elements have been established at 50-130% for this reason.

MOISTURE-VA	Soil	Moisture content	CWS for PHC in Soil - Tier 1

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

PH-SHKFLSK-PCT-VA	Soil	pH by PCT (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Minesites in British Columbia" BC Ministry of Energy and Mines, (Dr. William A. Price, 1997). In summary, the sample is extracted at a 3:1 liquid to solids ratio for 24 hours using deionized water . The extract is then allowed to settle and subsequently analysed using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
AX	ALS MINERALS - VANCOUVER, B.C., CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 6-JUL-2018
Account: APN

CERTIFICATE WH18122606

Project: L2100743

This report is for 10 Rock samples submitted to our lab in Whitehorse, YT, Canada on 25-MAY-2018.

The following have access to data associated with this certificate:

ALSE VANCOUVER WEBTRIEVE SOFTWARE DEVELOPMENT GROUP	ALSEV DATASUBLET	HEATHER MCKENZIE

SAMPLE PREPARATION

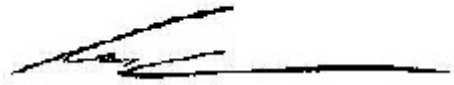
ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
SPL-21s	Split Sample - Rotary or Riffle
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test
CRU-31	Fine crushing - 70% <2mm
SND-01	Send samples to external laboratory
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
S-GRA06a	Sulfate Sulfur (HCl leachable)	WST-SEQ
S-CAL06	Sulfide Sulfur (calculated)	LECO
C-GAS05	Inorganic Carbon (CO2)	
ME-MS41	Ultra Trace Aqua Regia ICP-MS	
OA-VOL08mn	NP MEND 1991	
S-IR08	Total Sulphur (Leco)	LECO
OA-ELE07	Paste pH	
S-GRA06	Sulfate Sulfur-carbonate leach	WST-SEQ

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature: 

Colin Ramshaw, Vancouver Laboratory Manager

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
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Finalized Date: 6-JUL-2018
Account: APN

Project: L2100743

CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method / Analyte / Units / LOD	WEI-21 Recvd Wt. kg 0.02	OA-VOL08m MPA tCaCO3/1Kt 0.3	OA-VOL08m FIZZ RAT Unity 1	OA-VOL08m NNP tCaCO3/1Kt 1	OA-VOL08m NP tCaCO3/1Kt 1	OA-ELE07 pH Unity 0.1	OA-VOL08m Ratio (N Unity 0.01	S-IR08 S % 0.01	S-GRA06 S % 0.01	S-GRA06a S % 0.01	S-CAL06 S % 0.01	C-GAS05 C % 0.05	C-GAS05 CO2 % 0.2	ME-MS41 Ag ppm 0.01	ME-MS41 Al % 0.01
VICEAG-GCM-06		6.07	1.9	2	11	13	8.9	6.93	0.06	<0.01	0.01	0.06	0.18	0.7	0.09	0.86
VICEAG-GCM-07		6.01	<0.3	1	3	3	8.7	19.20	<0.01	<0.01	<0.01	<0.01	<0.05	<0.2	0.48	0.49
VICEAG-GCM-08		6.89	3.4	2	91	94	8.9	27.35	0.11	0.01	0.01	0.10	0.44	1.6	0.10	3.83
VICEAG-GCM-09		7.31	<0.3	1	4	4	8.5	25.60	<0.01	0.01	0.01	<0.01	<0.05	<0.2	0.16	1.23
VICEAG-GCM-10		5.96	0.6	1	2	3	7.5	4.80	0.02	0.02	0.01	<0.01	<0.05	<0.2	0.13	1.39
VICEAG-GCM-11		7.15	4.7	1	-2	3	7.6	0.64	0.15	0.02	<0.01	0.13	0.05	0.2	0.22	0.78
VICEAG-GCM-12		5.74	0.6	1	5	6	8.7	9.60	0.02	<0.01	0.01	0.02	0.07	0.3	0.10	0.61
VICEAG-GCM-13		6.60	0.3	1	2	2	7.8	6.40	0.01	0.01	<0.01	<0.01	<0.05	<0.2	0.14	0.74
VICEAG-GCM-14		6.72	0.3	1	4	4	8.3	12.80	0.01	<0.01	<0.01	0.01	<0.05	<0.2	0.13	0.68
VICEAG-GCM-15		6.31	0.6	2	47	48	9.0	76.80	0.02	0.01	<0.01	0.01	0.51	1.9	0.17	1.03

***** See Appendix Page for comments regarding this certificate *****

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 6-JUL-2018
Account: APN

Project: L2100743

CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	As	Au	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga
	Units	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm
	LOD	0.1	0.02	10	10	0.05	0.01	0.01	0.01	0.02	0.1	1	0.05	0.2	0.01	0.05
VICEAG-GCM-06		20.9	<0.02	<10	70	0.28	0.09	0.44	0.03	34.1	4.2	26	1.97	8.7	1.64	3.08
VICEAG-GCM-07		240	<0.02	10	40	0.28	0.20	0.14	0.47	45.2	5.5	11	1.93	9.2	1.55	1.44
VICEAG-GCM-08		210	0.02	10	80	0.89	0.87	7.27	1.25	60.8	7.2	31	1.51	30.8	1.29	10.40
VICEAG-GCM-09		260	0.02	<10	220	0.56	0.25	0.33	0.19	55.4	7.4	29	2.87	16.8	2.04	4.76
VICEAG-GCM-10		218	<0.02	<10	140	0.87	0.52	0.12	0.16	58.2	13.6	22	2.46	30.9	2.88	4.58
VICEAG-GCM-11		563	0.02	<10	110	0.34	3.14	0.16	0.24	38.6	8.5	14	1.06	22.8	2.11	2.75
VICEAG-GCM-12		63.5	<0.02	<10	70	0.19	0.17	0.25	0.07	24.4	4.1	16	0.83	10.1	1.77	2.15
VICEAG-GCM-13		45.2	<0.02	<10	90	0.21	0.26	0.17	0.24	28.7	6.7	14	0.43	15.9	1.76	2.30
VICEAG-GCM-14		21.3	<0.02	<10	100	0.24	0.24	0.17	0.16	30.4	6.6	16	0.43	16.9	2.61	2.23
VICEAG-GCM-15		10.1	<0.02	<10	170	0.11	0.11	1.59	0.22	13.25	8.6	28	0.33	37.5	2.00	2.88

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100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Project: L2100743

CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Ge	Hf	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P	Pb
	Units	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm
	LOD	0.05	0.02	0.01	0.005	0.01	0.2	0.1	0.01	5	0.05	0.01	0.05	0.2	10	0.2
VICEAG-GCM-06		<0.05	0.07	<0.01	0.009	0.37	16.1	17.2	0.28	169	0.12	0.02	0.29	10.9	80	3.1
VICEAG-GCM-07		0.06	0.08	0.08	0.008	0.26	22.4	2.5	0.02	227	0.18	<0.01	0.09	12.8	100	18.3
VICEAG-GCM-08		0.11	0.16	<0.01	0.028	0.38	33.6	19.6	0.48	265	0.26	0.08	0.55	22.8	440	13.4
VICEAG-GCM-09		0.07	0.23	0.01	0.016	0.49	28.5	21.2	0.40	153	0.62	0.05	0.59	20.3	350	32.0
VICEAG-GCM-10		0.08	0.16	<0.01	0.014	0.49	28.6	28.1	0.41	345	0.68	0.02	0.72	26.8	300	86.4
VICEAG-GCM-11		0.05	0.18	0.04	0.014	0.24	18.9	11.0	0.28	282	0.45	0.01	0.33	18.8	260	24.0
VICEAG-GCM-12		<0.05	0.12	0.02	0.015	0.15	11.6	9.6	0.20	350	0.44	0.02	0.28	11.2	140	7.0
VICEAG-GCM-13		<0.05	0.08	0.01	0.009	0.14	13.1	9.4	0.21	448	0.64	0.02	0.20	16.3	250	14.1
VICEAG-GCM-14		<0.05	0.15	<0.01	0.012	0.13	13.9	7.4	0.19	331	0.34	0.01	0.15	19.5	190	20.9
VICEAG-GCM-15		<0.05	0.11	0.02	0.010	0.11	6.5	11.4	0.95	440	0.50	0.02	0.25	24.1	490	10.9

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BURNABY BC V5A 1W9

Finalized Date: 6-JUL-2018
Account: APN

Project: L2100743

CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Rb	Re	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V
	Units	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
	LOD	0.1	0.001	0.01	0.05	0.1	0.2	0.2	0.2	0.01	0.01	0.2	0.005	0.02	0.05	1
VICEAG-GCM-06		26.4	<0.001	0.07	0.42	2.1	<0.2	0.4	14.2	<0.01	<0.01	8.1	0.043	0.18	0.62	15
VICEAG-GCM-07		15.0	<0.001	0.01	3.11	1.3	<0.2	<0.2	5.5	<0.01	0.01	10.2	<0.005	0.16	0.91	5
VICEAG-GCM-08		28.9	0.001	0.12	0.45	3.4	0.2	1.8	195.0	0.02	0.03	13.5	0.156	0.17	2.62	31
VICEAG-GCM-09		44.3	0.001	0.01	5.88	3.6	<0.2	0.6	34.0	<0.01	0.03	12.1	0.092	0.28	1.35	27
VICEAG-GCM-10		39.2	<0.001	0.03	13.95	2.8	0.5	0.5	22.5	<0.01	0.01	11.2	0.041	0.31	1.37	25
VICEAG-GCM-11		15.6	<0.001	0.17	6.44	1.8	0.8	0.6	18.6	<0.01	0.04	7.9	0.022	0.16	0.94	13
VICEAG-GCM-12		11.1	0.001	0.02	3.11	1.4	0.4	0.3	14.6	<0.01	0.01	5.6	0.025	0.09	0.64	11
VICEAG-GCM-13		7.8	<0.001	0.01	2.87	1.5	<0.2	0.3	13.8	<0.01	0.03	5.3	0.015	0.07	0.72	13
VICEAG-GCM-14		7.0	0.002	0.01	4.80	1.4	<0.2	0.3	20.5	<0.01	0.02	6.3	0.012	0.07	1.07	12
VICEAG-GCM-15		6.2	0.001	0.02	0.61	2.2	<0.2	0.2	36.7	<0.01	0.02	2.4	0.075	0.06	0.54	39

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BURNABY BC V5A 1W9

Finalized Date: 6-JUL-2018
Account: APN

Project: L2100743

CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method Analyte Units LOD	ME-MS41 W ppm 0.05	ME-MS41 Y ppm 0.05	ME-MS41 Zn ppm 2	ME-MS41 Zr ppm 0.5	CRU-QC Pass2mm % 0.01	PUL-QC Pass75um % 0.01
VICEAG-GCM-06		0.16	3.11	17	2.4	83.4	97.4
VICEAG-GCM-07		1.67	3.48	163	3.2		97.2
VICEAG-GCM-08		1.27	12.00	166	4.6		
VICEAG-GCM-09		14.50	5.58	69	7.4		
VICEAG-GCM-10		0.87	4.65	66	7.1		
VICEAG-GCM-11		6.94	4.16	63	6.2		
VICEAG-GCM-12		1.71	2.92	31	4.0		
VICEAG-GCM-13		0.62	3.32	48	4.1		
VICEAG-GCM-14		0.39	3.42	93	6.2		
VICEAG-GCM-15		0.10	5.07	51	3.4		

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CERTIFICATE OF ANALYSIS WH18122606

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Applies to Method: Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g).
ME-MS41

LABORATORY ADDRESSES

Applies to Method: Processed at ALS Whitehorse located at 78 Mt. Sima Rd, Whitehorse, YT, Canada.

CRU-31	CRU-QC	LOG-22	PUL-31
PUL-QC	SND-01	SPL-21	SPL-21s
WEI-21			

Applies to Method: Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

C-GAS05	ME-MS41	OA-ELE07	OA-VOL08mn
S-CAL06	S-GRA06	S-GRA06a	S-IR08

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QC CERTIFICATE WH18122606

Project: L2100743

This report is for 10 Rock samples submitted to our lab in Whitehorse, YT, Canada on 25-MAY-2018.

The following have access to data associated with this certificate:

ALSE VANCOUVER WEBTRIEVE SOFTWARE DEVELOPMENT GROUP	ALSEV DATASUBLET	HEATHER MCKENZIE

SAMPLE PREPARATION

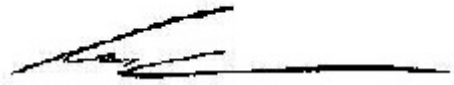
ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
SPL-21s	Split Sample - Rotary or Riffle
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test
CRU-31	Fine crushing - 70% <2mm
SND-01	Send samples to external laboratory
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
S-GRA06a	Sulfate Sulfur (HCl leachable)	WST-SEQ
S-CAL06	Sulfide Sulfur (calculated)	LECO
C-GAS05	Inorganic Carbon (CO2)	
ME-MS41	Ultra Trace Aqua Regia ICP-MS	
OA-VOL08mn	NP MEND 1991	
S-IR08	Total Sulphur (Leco)	LECO
OA-ELE07	Paste pH	
S-GRA06	Sulfate Sulfur-carbonate leach	WST-SEQ

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature: 

Colin Ramshaw, Vancouver Laboratory Manager

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Finalized Date: 6-JUL-2018
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QC CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method Analyte Units LOD	OA-VOL08m MPA tCaCO3/1Kt 0.3	OA-VOL08m FIZZ RAT Unity 1	OA-VOL08m NNP tCaCO3/1Kt 1	OA-VOL08m NP tCaCO3/1Kt 1	OA-ELE07 pH Unity 0.1	OA-VOL08m Ratio (N Unity 0.01	S-IR08 S % 0.01	S-GRA06 S % 0.01	S-GRA06a S % 0.01	C-GAS05 C % 0.05	C-GAS05 CO2 % 0.2	ME-MS41 Ag ppm 0.01	ME-MS41 Al % 0.01	ME-MS41 As ppm 0.1	ME-MS41 Au ppm 0.02
STANDARDS																
Buffer pH6						6.0										
Buffer pH6						6.0										
Target Range - Lower Bound						5.3										
Upper Bound						6.7										
CO-ASSAY											0.47	1.7				
CO-ASSAY											0.47	1.7				
Target Range - Lower Bound											0.42	1.5				
Upper Bound											0.64	2.4				
DS-1								2.66								
Target Range - Lower Bound								2.51								
Upper Bound								2.71								
GS313-8								1.29								
Target Range - Lower Bound								1.19								
Upper Bound								1.29								
KZK-1		25.0	2	33	58		2.32									
KZK-1		25.0	2	32	57		2.28									
Target Range - Lower Bound		22.9	<1	30	54		2.18									
Upper Bound		27.1	2	38	64		2.53									
MA-2c											1.61	5.9				
MA-2c											1.56	5.7				
Target Range - Lower Bound											1.50	5.5				
Upper Bound											1.84	6.8				
MRGeo08													4.42	2.75	33.1	<0.02
Target Range - Lower Bound													4.00	2.44	29.6	<0.02
Upper Bound													4.92	3.00	36.4	0.04
OREAS 905													0.53	0.83	34.6	0.43
Target Range - Lower Bound													0.45	0.73	28.4	0.33
Upper Bound													0.58	0.91	35.0	0.45
UTS-1									0.89							
Target Range - Lower Bound									0.83							
Upper Bound									0.93							
UTS-1										0.91						
Target Range - Lower Bound										0.81						
Upper Bound										0.95						
UTS-4									1.78							
Target Range - Lower Bound									1.64							
Upper Bound									1.84							
UTS-4										1.76						
Target Range - Lower Bound										1.61						
Upper Bound										1.87						

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Account: APN

Project: L2100743

QC CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method Analyte Units LOD	ME-MS41 B ppm 10	ME-MS41 Ba ppm 10	ME-MS41 Be ppm 0.05	ME-MS41 Bi ppm 0.01	ME-MS41 Ca % 0.01	ME-MS41 Cd ppm 0.01	ME-MS41 Ce ppm 0.02	ME-MS41 Co ppm 0.1	ME-MS41 Cr ppm 1	ME-MS41 Cs ppm 0.05	ME-MS41 Cu ppm 0.2	ME-MS41 Fe % 0.01	ME-MS41 Ga ppm 0.05	ME-MS41 Ge ppm 0.05	ME-MS41 Hf ppm 0.02
STANDARDS																
Buffer pH6																
Buffer pH6																
Target Range - Lower Bound																
Upper Bound																
CO-ASSAY																
CO-ASSAY																
Target Range - Lower Bound																
Upper Bound																
DS-1																
Target Range - Lower Bound																
Upper Bound																
GS313-8																
Target Range - Lower Bound																
Upper Bound																
KZK-1																
KZK-1																
Target Range - Lower Bound																
Upper Bound																
MA-2c																
MA-2c																
Target Range - Lower Bound																
Upper Bound																
MRGeo08		<10	450	0.82	0.66	1.10	2.27	71.1	18.9	90	9.88	625	3.63	9.77	0.15	0.72
Target Range - Lower Bound		<10	370	0.67	0.60	1.00	2.01	66.2	17.0	81	9.40	587	3.22	8.73	0.07	0.64
Upper Bound		20	530	0.95	0.76	1.24	2.47	81.0	21.0	102	11.60	675	3.96	10.80	0.29	0.83
OREAS 905		<10	250	0.95	6.16	0.34	0.36	79.6	14.4	19	1.19	1595	3.55	6.64	0.09	1.14
Target Range - Lower Bound		<10	200	0.78	5.16	0.29	0.30	69.7	12.4	15	1.05	1450	3.14	5.45	<0.05	1.02
Upper Bound		20	300	1.08	6.32	0.38	0.38	85.3	15.4	20	1.39	1670	3.86	6.77	0.22	1.29
UTS-1																
Target Range - Lower Bound																
Upper Bound																
UTS-1																
Target Range - Lower Bound																
Upper Bound																
UTS-4																
Target Range - Lower Bound																
Upper Bound																
UTS-4																
Target Range - Lower Bound																
Upper Bound																

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BURNABY BC V5A 1W9

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QC CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method Analyte Units LOD	ME-MS41 Hg ppm 0.01	ME-MS41 In ppm 0.005	ME-MS41 K % 0.01	ME-MS41 La ppm 0.2	ME-MS41 Li ppm 0.1	ME-MS41 Mg % 0.01	ME-MS41 Mn ppm 5	ME-MS41 Mo ppm 0.05	ME-MS41 Na % 0.01	ME-MS41 Nb ppm 0.05	ME-MS41 Ni ppm 0.2	ME-MS41 P ppm 10	ME-MS41 Pb ppm 0.2	ME-MS41 Rb ppm 0.1	ME-MS41 Re ppm 0.001
STANDARDS																
Buffer pH6																
Buffer pH6																
Target Range - Lower Bound																
Upper Bound																
CO-ASSAY																
CO-ASSAY																
Target Range - Lower Bound																
Upper Bound																
DS-1																
Target Range - Lower Bound																
Upper Bound																
GS313-8																
Target Range - Lower Bound																
Upper Bound																
KZK-1																
KZK-1																
Target Range - Lower Bound																
Upper Bound																
MA-2c																
MA-2c																
Target Range - Lower Bound																
Upper Bound																
MRGeo08		0.06	0.148	1.28	35.4	30.9	1.14	415	14.65	0.34	0.72	706	1010	1075	138.0	0.008
Target Range - Lower Bound		0.04	0.137	1.12	33.2	29.6	1.03	378	13.10	0.30	0.79	622	900	959	132.0	0.006
Upper Bound		0.10	0.179	1.40	41.0	36.4	1.29	473	16.10	0.39	1.09	760	1130	1175	162.0	0.010
OREAS 905		0.03	0.601	0.32	40.8	4.7	0.15	352	3.06	0.08	0.35	9.8	250	17.2	18.4	<0.001
Target Range - Lower Bound		<0.01	0.517	0.28	34.7	4.0	0.13	310	2.65	0.07	0.19	7.8		14.4	16.3	<0.001
Upper Bound		0.04	0.643	0.36	42.9	5.2	0.19	390	3.35	0.12	0.43	10.0		18.0	20.1	0.002
UTS-1																
Target Range - Lower Bound																
Upper Bound																
UTS-1																
Target Range - Lower Bound																
Upper Bound																
UTS-4																
Target Range - Lower Bound																
Upper Bound																
UTS-4																
Target Range - Lower Bound																
Upper Bound																

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QC CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y
	Units	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
	LOD	0.01	0.05	0.1	0.2	0.2	0.2	0.01	0.01	0.2	0.005	0.02	0.05	1	0.05	0.05
STANDARDS																
Buffer pH6																
Buffer pH6																
Target Range - Lower Bound																
Upper Bound																
CO-ASSAY																
CO-ASSAY																
Target Range - Lower Bound																
Upper Bound																
DS-1																
Target Range - Lower Bound																
Upper Bound																
GS313-8																
Target Range - Lower Bound																
Upper Bound																
KZK-1																
KZK-1																
Target Range - Lower Bound																
Upper Bound																
MA-2c																
MA-2c																
Target Range - Lower Bound																
Upper Bound																
MRGeo08		0.30	3.34	7.2	0.7	3.4	79.6	0.01	0.04	20.3	0.366	0.74	5.41	100	2.86	19.45
Target Range - Lower Bound		0.27	2.80	6.7	0.6	2.8	72.1	<0.01	<0.01	19.1	0.338	0.64	4.93	90	2.44	17.50
Upper Bound		0.35	3.90	8.4	1.5	4.0	88.5	0.03	0.04	23.7	0.424	0.92	6.13	112	3.42	21.5
OREAS 905		0.07	1.16	1.8	2.4	1.4	12.5	0.01	0.08	9.1	0.019	0.12	2.40	6	0.66	7.15
Target Range - Lower Bound		0.04	0.83	1.5	1.8	0.8	10.9	<0.01	0.04	7.4	0.008	0.06	1.92	4	0.41	6.32
Upper Bound		0.09	1.23	2.0	2.8	1.7	13.7	0.02	0.09	9.4	0.030	0.16	2.46	8	0.73	7.84
UTS-1																
Target Range - Lower Bound																
Upper Bound																
UTS-1																
Target Range - Lower Bound																
Upper Bound																
UTS-4																
Target Range - Lower Bound																
Upper Bound																
UTS-4																
Target Range - Lower Bound																
Upper Bound																

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 6-JUL-2018
Account: APN

Project: L2100743

QC CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method Analyte Units LOD	ME-MS41 Zn ppm 2	ME-MS41 Zr ppm 0.5
		STANDARDS	
Buffer pH6			
Buffer pH6			
Target Range - Lower Bound			
Upper Bound			
CO-ASSAY			
CO-ASSAY			
Target Range - Lower Bound			
Upper Bound			
DS-1			
Target Range - Lower Bound			
Upper Bound			
GS313-8			
Target Range - Lower Bound			
Upper Bound			
KZK-1			
KZK-1			
Target Range - Lower Bound			
Upper Bound			
MA-2c			
MA-2c			
Target Range - Lower Bound			
Upper Bound			
MRGeo08		766	20.4
Target Range - Lower Bound		708	18.1
Upper Bound		870	25.7
OREAS 905		66	43.8
Target Range - Lower Bound		56	39.9
Upper Bound		72	55.1
UTS-1			
Target Range - Lower Bound			
Upper Bound			
UTS-1			
Target Range - Lower Bound			
Upper Bound			
UTS-4			
Target Range - Lower Bound			
Upper Bound			
UTS-4			
Target Range - Lower Bound			
Upper Bound			

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QC CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method / Analyte / Units / LOD	OA-VOL08m MPA tCaCO3/1Kt 0.3	OA-VOL08m FIZZ RAT Unity 1	OA-VOL08m NNP tCaCO3/1Kt 1	OA-VOL08m NP tCaCO3/1Kt 1	OA-ELE07 pH Unity 0.1	OA-VOL08m Ratio (N Unity 0.01	S-IR08 S % 0.01	S-GRA06 S % 0.01	S-GRA06a S % 0.01	C-GAS05 C % 0.05	C-GAS05 CO2 % 0.2	ME-MS41 Ag ppm 0.01	ME-MS41 Al % 0.01	ME-MS41 As ppm 0.1	ME-MS41 Au ppm 0.02
BLANKS																
BLANK											<0.05	<0.2				
BLANK											<0.05	<0.2				
Target Range - Lower Bound											<0.05	<0.2				
Upper Bound											0.10	0.4				
BLANK													<0.01	<0.01	0.1	<0.02
Target Range - Lower Bound													<0.01	<0.01	<0.1	<0.02
Upper Bound													0.02	0.02	0.2	0.04
BLANK						6.0										
Target Range - Lower Bound						5.5										
Upper Bound						6.9										
BLANK									<0.01							
Target Range - Lower Bound									<0.01							
Upper Bound									0.02							
BLANK										<0.01						
Target Range - Lower Bound										<0.01						
Upper Bound										0.02						
BLANK								<0.01								
Target Range - Lower Bound								<0.01								
Upper Bound								0.02								
DUPLICATES																
ORIGINAL													0.15	2.35	8.5	<0.02
DUP													0.16	2.47	9.0	<0.02
Target Range - Lower Bound													0.14	2.28	8.2	<0.02
Upper Bound													0.17	2.54	9.3	0.04
ORIGINAL						9.3										
DUP						9.3										
Target Range - Lower Bound						8.7										
Upper Bound						9.9										
ORIGINAL									0.04							
DUP									0.04							
Target Range - Lower Bound									0.03							
Upper Bound									0.05							

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QC CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga	Ge	Hf
	Units	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
	LOD	10	10	0.05	0.01	0.01	0.01	0.02	0.1	1	0.05	0.2	0.01	0.05	0.05	0.02
BLANKS																
BLANK																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK		<10	<10	<0.05	<0.01	<0.01	<0.01	<0.02	<0.1	<1	<0.05	<0.2	<0.01	<0.05	<0.05	<0.02
Target Range - Lower Bound		<10	<10	<0.05	<0.01	<0.01	<0.01	<0.02	<0.1	<1	<0.05	<0.2	<0.01	<0.05	<0.05	<0.02
Upper Bound		20	20	0.10	0.02	0.02	0.02	0.04	0.2	2	0.10	0.4	0.02	0.10	0.10	0.04
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
DUPLICATES																
ORIGINAL		10	240	1.25	0.22	0.45	0.37	36.2	7.6	29	2.12	17.8	2.36	7.09	0.08	0.22
DUP		10	250	1.12	0.22	0.45	0.42	38.2	8.0	30	2.24	18.9	2.42	7.65	0.08	0.24
Target Range - Lower Bound		<10	220	1.08	0.20	0.42	0.37	35.3	7.3	27	2.02	17.5	2.26	6.95	<0.05	0.20
Upper Bound		20	270	1.29	0.24	0.48	0.42	39.1	8.3	32	2.34	19.2	2.52	7.79	0.10	0.26
ORIGINAL																
DUP																
Target Range - Lower Bound																
Upper Bound																
ORIGINAL																
DUP																
Target Range - Lower Bound																
Upper Bound																

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BURNABY BC V5A 1W9

Project: L2100743

QC CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method Analyte Units LOD	ME-MS41 Hg ppm 0.01	ME-MS41 In ppm 0.005	ME-MS41 K % 0.01	ME-MS41 La ppm 0.2	ME-MS41 Li ppm 0.1	ME-MS41 Mg % 0.01	ME-MS41 Mn ppm 5	ME-MS41 Mo ppm 0.05	ME-MS41 Na % 0.01	ME-MS41 Nb ppm 0.05	ME-MS41 Ni ppm 0.2	ME-MS41 P ppm 10	ME-MS41 Pb ppm 0.2	ME-MS41 Rb ppm 0.1	ME-MS41 Re ppm 0.001
BLANKS																
BLANK																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK		<0.01	<0.005	<0.01	<0.2	0.2	<0.01	<5	<0.05	<0.01	0.05	<0.2	<10	<0.2	<0.1	<0.001
Target Range - Lower Bound		<0.01	<0.005	<0.01	<0.2	<0.1	<0.01	<5	<0.05	<0.01	<0.05	<0.2	<10	<0.2	<0.1	<0.001
Upper Bound		0.02	0.010	0.02	0.4	0.2	0.02	10	0.10	0.02	0.10	0.4	20	0.4	0.2	0.002
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
DUPLICATES																
ORIGINAL		<0.01	0.033	0.39	18.9	18.1	0.45	363	0.58	<0.01	0.71	23.9	300	11.4	38.7	<0.001
DUP		<0.01	0.039	0.41	20.3	18.5	0.47	364	0.60	<0.01	0.78	25.1	300	11.7	41.7	<0.001
Target Range - Lower Bound		<0.01	0.029	0.37	18.4	17.3	0.43	340	0.51	<0.01	0.66	23.1	280	10.8	38.1	<0.001
Upper Bound		0.02	0.043	0.43	20.8	19.3	0.49	387	0.67	0.02	0.83	25.9	330	12.3	42.3	0.002
ORIGINAL																
DUP																
Target Range - Lower Bound																
Upper Bound																
ORIGINAL																
DUP																
Target Range - Lower Bound																
Upper Bound																

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BURNABY BC V5A 1W9

Finalized Date: 6-JUL-2018
Account: APN

Project: L2100743

QC CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y
	Units	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
	LOD	0.01	0.05	0.1	0.2	0.2	0.2	0.01	0.01	0.2	0.005	0.02	0.05	1	0.05	0.05
BLANKS																
BLANK																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK		<0.01	0.09	<0.1	<0.2	<0.2	<0.2	<0.01	0.01	<0.2	<0.005	<0.02	<0.05	<1	<0.05	<0.05
Target Range - Lower Bound		<0.01	<0.05	<0.1	<0.2	<0.2	<0.2	<0.01	<0.01	<0.2	<0.005	<0.02	<0.05	<1	<0.05	<0.05
Upper Bound		0.02	0.10	0.2	0.4	0.4	0.4	0.02	0.02	0.4	0.010	0.04	0.10	2	0.10	0.10
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
BLANK																
Target Range - Lower Bound																
Upper Bound																
DUPLICATES																
ORIGINAL		0.01	1.02	5.1	<0.2	1.1	54.8	<0.01	0.04	6.3	0.038	0.32	1.42	60	0.40	16.30
DUP		0.01	0.91	5.6	0.2	1.2	58.8	<0.01	0.03	6.7	0.043	0.36	1.53	62	0.38	16.65
Target Range - Lower Bound		<0.01	0.84	5.0	<0.2	0.9	53.8	<0.01	0.02	6.0	0.033	0.29	1.35	57	0.31	15.60
Upper Bound		0.02	1.09	5.7	0.4	1.4	59.8	0.02	0.05	7.0	0.048	0.39	1.60	65	0.47	17.35
ORIGINAL																
DUP																
Target Range - Lower Bound																
Upper Bound																
ORIGINAL																
DUP																
Target Range - Lower Bound																
Upper Bound																

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BURNABY BC V5A 1W9

Finalized Date: 6-JUL-2018
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Project: L2100743

QC CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method Analyte Units LOD	ME-MS41 Zn ppm 2	ME-MS41 Zr ppm 0.5
		BLANKS	
BLANK			
BLANK			
Target Range - Lower Bound			
Upper Bound			
BLANK		<2	<0.5
Target Range - Lower Bound		<2	<0.5
Upper Bound		4	1.0
BLANK			
Target Range - Lower Bound			
Upper Bound			
BLANK			
Target Range - Lower Bound			
Upper Bound			
BLANK			
Target Range - Lower Bound			
Upper Bound			
BLANK			
Target Range - Lower Bound			
Upper Bound			
		DUPLICATES	
ORIGINAL		82	8.4
DUP		85	9.3
Target Range - Lower Bound		77	7.7
Upper Bound		90	10.0
ORIGINAL			
DUP			
Target Range - Lower Bound			
Upper Bound			
ORIGINAL			
DUP			
Target Range - Lower Bound			
Upper Bound			

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QC CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method / Analyte / Units / LOD	OA-VOL08m MPA tCaCO3/1Kt 0.3	OA-VOL08m FIZZ RAT Unity 1	OA-VOL08m NNP tCaCO3/1Kt 1	OA-VOL08m NP tCaCO3/1Kt 1	OA-ELE07 pH Unity 0.1	OA-VOL08m Ratio (N Unity 0.01	S-IR08 S % 0.01	S-GRA06 S % 0.01	S-GRA06a S % 0.01	C-GAS05 C % 0.05	C-GAS05 CO2 % 0.2	ME-MS41 Ag ppm 0.01	ME-MS41 Al % 0.01	ME-MS41 As ppm 0.1	ME-MS41 Au ppm 0.02
DUPLICATES																
VICEAG-GCM-07								<0.01								
DUP								<0.01								
Target Range - Lower Bound								<0.01								
Upper Bound								0.02								
VICEAG-GCM-08											0.44	1.6				
DUP											0.44	1.6				
Target Range - Lower Bound											0.37	1.3				
Upper Bound											0.51	1.9				
VICEAG-GCM-15		0.6	2	47	48		76.80			<0.01	0.51	1.9				
DUP		0.6	2	46	47		75.20			0.02	0.50	1.8				
Target Range - Lower Bound		<0.3	<1	43	44		72.19			<0.01	0.43	1.6				
Upper Bound		0.9	3	50	51		79.81			0.02	0.58	2.1				

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QC CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga	Ge	Hf
	Units	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
	LOD	10	10	0.05	0.01	0.01	0.01	0.02	0.1	1	0.05	0.2	0.01	0.05	0.05	0.02
DUPLICATES																
VICEAG-GCM-07 DUP																
Target Range - Lower Bound																
Upper Bound																
VICEAG-GCM-08 DUP																
Target Range - Lower Bound																
Upper Bound																
VICEAG-GCM-15 DUP																
Target Range - Lower Bound																
Upper Bound																

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QC CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P	Pb	Rb	Re
	Units	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
	LOD	0.01	0.005	0.01	0.2	0.1	0.01	5	0.05	0.01	0.05	0.2	10	0.2	0.1	0.001
DUPLICATES																
VICEAG-GCM-07 DUP																
Target Range - Lower Bound																
Upper Bound																
VICEAG-GCM-08 DUP																
Target Range - Lower Bound																
Upper Bound																
VICEAG-GCM-15 DUP																
Target Range - Lower Bound																
Upper Bound																

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QC CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y
	Units	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
	LOD	0.01	0.05	0.1	0.2	0.2	0.2	0.01	0.01	0.2	0.005	0.02	0.05	1	0.05	0.05
		DUPLICATES														
VICEAG-GCM-07																
DUP																
Target Range - Lower Bound																
Upper Bound																
VICEAG-GCM-08																
DUP																
Target Range - Lower Bound																
Upper Bound																
VICEAG-GCM-15																
DUP																
Target Range - Lower Bound																
Upper Bound																

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QC CERTIFICATE OF ANALYSIS WH18122606

Sample Description	Method	ME-MS41	ME-MS41
	Analyte	Zn	Zr
	Units	ppm	ppm
	LOD	2	0.5
DUPLICATES			
VICEAG-GCM-07 DUP			
Target Range - Lower Bound			
Upper Bound			
VICEAG-GCM-08 DUP			
Target Range - Lower Bound			
Upper Bound			
VICEAG-GCM-15 DUP			
Target Range - Lower Bound			
Upper Bound			

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CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Applies to Method: Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g).
ME-MS41

LABORATORY ADDRESSES

Applies to Method: Processed at ALS Whitehorse located at 78 Mt. Sima Rd, Whitehorse, YT, Canada.

CRU-31	CRU-QC	LOG-22	PUL-31
PUL-QC	SND-01	SPL-21	SPL-21s
WEI-21			

Applies to Method: Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

C-GAS05	ME-MS41	OA-ELE07	OA-VOL08mn
S-CAL06	S-GRA06	S-GRA06a	S-IR08

743

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: -

Page of

Report To	Contact and company name below will appear on the final report
Company:	JDS ENERGY & MINING
Contact:	Clint Abel
Phone:	867-334-6336
	Company address below will appear on the final report
Street:	3200 RICHTER ST.
City/Province:	Kelowna, B.C.
Postal Code:	V1W3R4
Invoice To	Same as Report To ☐ ☑ NO
	Copy of Invoice with Report ☑ ☐ NO
Company:	JDS ENERGY & MINING
Contact:	Chris Copley

Report Format / Distribution

Select Report Format: ☑ ☐ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report ☐ ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax clinta@jdsmining.ca
Email 2 chrisc@jdsmining.ca
Email 3 mikeb@jdsmining.ca

Invoice Distribution

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax
Email 2

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Pre-Arrival Sample): 4 day [P4-20%] ☐ 3 day [P3-25%] ☐ 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E1 - 100%] ☐ Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #:
Job #:
PO / AFE:
LSD:
ALS Lab Work Order # (lab use only):

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#
Major/Minor Code: Routing Code:
Requisitioner:
Location:
ALS Contact: Sampler: SW

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

further data

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type
	VICEAG-GCM-06			
	VICEAG-GCM-07			
	VICEAG-GCM-08			
	VICEAG-GCM-09			
	VICEAG-GCM-10			
	VICEAG-GCM-11			
	VICEAG-GCM-12			
	VICEAG-GCM-13			
	VICEAG-GCM-14			
	VICEAG-GCM-15			

SAMPLES ON HOLD

L2100743-COFC

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ ☐ NO
Are samples for human consumption/ use? ☐ ☐ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C | FINAL COOLER TEMPERATURES °C

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date: May 24/18	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.
If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

STRATAGOLD CORPORATION
ATTN: Hugh Coyle
Suite 1000 - 1050 W. Pender St
Vancouver BC V6E 3S7

Date Received: 06-SEP-18
Report Date: 26-SEP-18 17:25 (MT)
Version: FINAL

Client Phone: 604-682-5122

Certificate of Analysis

Lab Work Order #: L2160738

Project P.O. #: NOT SUBMITTED
Job Reference: WH18215145
C of C Numbers:
Legal Site Desc:

Heather McKenzie
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L2160738-1	L2160738-2	L2160738-3	L2160738-4	L2160738-5
Description					
Sampled Date					
Sampled Time					
Client ID	VICEAG-GCM-20	VICEAG-GCM-21	VICEAG-GCM-22	VICEAG-GCM-23	VICEAG-GCM-24
Grouping / **Analyte**					
SOIL					
Physical Tests Moisture (%)	0.30	0.38	0.50	0.48	0.42
Leachable Anions & Nutrients Conductivity (uS/cm)	223	203	60.4	68.5	101
pH (pH)	7.42	7.65	8.76	8.66	8.72
Leachable Metals Aluminum (Al)-Leachable (mg/L)	0.0203	0.0300	0.281	0.335	0.269
Antimony (Sb)-Leachable (mg/L)	0.00414	0.00531	0.00110	0.00166	0.00081
Arsenic (As)-Leachable (mg/L)	0.0039	0.0072	0.0024	0.0107	0.309
Barium (Ba)-Leachable (mg/L)	0.0253	0.0313	0.0015	0.0026	<0.0010
Beryllium (Be)-Leachable (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Bismuth (Bi)-Leachable (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Leachable (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd)-Leachable (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Calcium (Ca)-Leachable (mg/L)	20.8	17.9	9.55	10.2	12.1
Chromium (Cr)-Leachable (mg/L)	<0.00050	<0.00050	0.00060	0.00062	<0.00050
Cobalt (Co)-Leachable (mg/L)	0.00015	<0.00010	<0.00010	0.00012	<0.00010
Copper (Cu)-Leachable (mg/L)	<0.0010	<0.0010	<0.0010	0.0015	<0.0010
Iron (Fe)-Leachable (mg/L)	<0.030	<0.030	0.089	0.248	<0.030
Lead (Pb)-Leachable (mg/L)	<0.00010	<0.00010	0.00017	0.00042	<0.00010
Lithium (Li)-Leachable (mg/L)	0.0087	0.0106	<0.0050	<0.0050	0.0059
Magnesium (Mg)-Leachable (mg/L)	7.44	6.87	0.377	0.798	0.755
Manganese (Mn)-Leachable (mg/L)	0.0560	0.0348	0.00234	0.00505	0.00255
Mercury (Hg)-Leachable (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Molybdenum (Mo)-Leachable (mg/L)	0.00042	0.00123	0.00132	0.00114	0.00155
Nickel (Ni)-Leachable (mg/L)	0.00065	0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)-Leachable (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Leachable (mg/L)	5.30	5.49	1.52	1.96	5.31
Selenium (Se)-Leachable (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	0.00132
Silicon (Si)-Leachable (mg/L)	1.91	2.61	2.41	2.94	2.86
Silver (Ag)-Leachable (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium (Na)-Leachable (mg/L)	0.837	1.15	0.363	0.474	1.58
Strontium (Sr)-Leachable (mg/L)	0.110	0.108	0.0191	0.0368	0.0304
Thallium (Tl)-Leachable (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Leachable (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Titanium (Ti)-Leachable (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
Uranium (U)-Leachable (mg/L)	0.000016	0.000038	0.000326	0.000431	0.000567
Vanadium (V)-Leachable (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (Zn)-Leachable (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2160738-6				
	Description					
	Sampled Date					
	Sampled Time					
	Client ID	VICEAG-GCM-25				
Grouping	**Analyte**					
SOIL						
Physical Tests	Moisture (%)	0.82				
Leachable Anions & Nutrients	Conductivity (uS/cm)	77.0				
	pH (pH)	8.72				
Leachable Metals	Aluminum (Al)-Leachable (mg/L)	0.319				
	Antimony (Sb)-Leachable (mg/L)	0.00073				
	Arsenic (As)-Leachable (mg/L)	0.100				
	Barium (Ba)-Leachable (mg/L)	0.0031				
	Beryllium (Be)-Leachable (mg/L)	<0.00050				
	Bismuth (Bi)-Leachable (mg/L)	<0.00050				
	Boron (B)-Leachable (mg/L)	<0.010				
	Cadmium (Cd)-Leachable (mg/L)	<0.000050				
	Calcium (Ca)-Leachable (mg/L)	8.80				
	Chromium (Cr)-Leachable (mg/L)	<0.00050				
	Cobalt (Co)-Leachable (mg/L)	0.00010				
	Copper (Cu)-Leachable (mg/L)	0.0017				
	Iron (Fe)-Leachable (mg/L)	0.165				
	Lead (Pb)-Leachable (mg/L)	0.00012				
	Lithium (Li)-Leachable (mg/L)	<0.0050				
	Magnesium (Mg)-Leachable (mg/L)	1.71				
	Manganese (Mn)-Leachable (mg/L)	0.00319				
	Mercury (Hg)-Leachable (mg/L)	<0.000050				
	Molybdenum (Mo)-Leachable (mg/L)	0.00108				
	Nickel (Ni)-Leachable (mg/L)	<0.00050				
	Phosphorus (P)-Leachable (mg/L)	<0.30				
	Potassium (K)-Leachable (mg/L)	2.84				
	Selenium (Se)-Leachable (mg/L)	0.00050				
	Silicon (Si)-Leachable (mg/L)	2.50				
	Silver (Ag)-Leachable (mg/L)	<0.000050				
	Sodium (Na)-Leachable (mg/L)	0.718				
	Strontium (Sr)-Leachable (mg/L)	0.0402				
	Thallium (Tl)-Leachable (mg/L)	<0.00010				
	Tin (Sn)-Leachable (mg/L)	<0.00050				
	Titanium (Ti)-Leachable (mg/L)	<0.010				
	Uranium (U)-Leachable (mg/L)	0.000982				
	Vanadium (V)-Leachable (mg/L)	0.0014				
	Zinc (Zn)-Leachable (mg/L)	<0.010				

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Leachable	MS-B	L2160738-1, -2, -3, -4, -5, -6
Matrix Spike	Magnesium (Mg)-Leachable	MS-B	L2160738-1, -2, -3, -4, -5, -6
Matrix Spike	Silicon (Si)-Leachable	MS-B	L2160738-1, -2, -3, -4, -5, -6

Qualifiers for Individual Parameters Listed:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
EC-SHKFLSK-PCT-VA	Soil	EC by PCT (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials (MEND Report 1.20.1)" (William A. Price, 2009). In summary, a sample is extracted with deionized water at a 3:1 liquid to solids ratio for 24 hours. The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using procedures adapted from APHA Method 2510 "Conductivity".

HG-SHKFLSK-CVAFS-VA	Soil	Mercury by CVAAS (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials (MEND Report 1.20.1)" (William A. Price, 2009). In summary, a sample is extracted with deionized water at a 3:1 liquid to solids ratio for 24 hours. The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using atomic absorption spectrophotometry (EPA Method 245.7). The Shakeflask extraction is an empirical procedure with pre-defined characteristics. Recovery of some elements (Ag, Bi, Hg, and Sn) by this method can be variable due to the neutral pH of the extraction fluid. LCS QC sample DQOs for these elements have been established at 50-130% for this reason

MET-SHKFLSK-MS-VA	Soil	Metals by ICPMS (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials (MEND Report 1.20.1)" (William A. Price, 2009). In summary, a sample is extracted with deionized water at a 3:1 liquid to solids ratio for 24 hours. The extract is then allowed to settle and subsequently filtered through a 0.45 micron membrane filter and analysed using inductively coupled plasma - mass spectrophotometry (EPA Method 6020A).
The Shakeflask extraction is an empirical procedure with pre-defined characteristics. Recovery of some elements (Ag, Bi, Hg, and Sn) by this method can be variable due to the neutral pH of the extraction fluid. LCS QC sample DQOs for these elements have been established at 50-130% for this reason.

MOISTURE-VA	Soil	Moisture content	CWS for PHC in Soil - Tier 1

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

PH-SHKFLSK-MAN-VA	Soil	pH by Manual Meter (SHAKEFLASK)	BC MINISTRY OF ENERGY AND MINES

This analysis is based upon the extraction procedure outlined in "Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials (MEND Report 1.20.1)" (William A. Price, 2009). In summary, a sample is extracted with deionized water at a 3:1 liquid to solids ratio for 24 hours. The extract is then allowed to settle and subsequently analysed using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS Canada Ltd.

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www.alsglobal.com/geochemistry

To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 19-SEP-2018
Account: APN

CERTIFICATE WH18215145

Project: EGP

This report is for 6 Rock samples submitted to our lab in Whitehorse, YT, Canada on 9-AUG-2018.

The following have access to data associated with this certificate:

ALSE VANCOUVER WEBTRIEVE SOFTWARE DEVELOPMENT GROUP	ALSEV DATASUBLET	HEATHER MCKENZIE

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
SPL-21X	Addnl Crush Split w No Analysis
SND-01	Send samples to external laboratory
CRU-31	Fine crushing - 70% <2mm
DRY-21	High Temperature Drying
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
S-GRA06a	Sulfate Sulfur (HCl leachable)	WST-SEQ
S-CAL06	Sulfide Sulfur (calculated)	LECO
C-GAS05	Inorganic Carbon (CO2)	
ME-MS41	Ultra Trace Aqua Regia ICP-MS	
OA-VOL08mn	NP MEND 1991	
S-IR08	Total Sulphur (Leco)	LECO
OA-ELE07	Paste pH	
S-GRA06	Sulfate Sulfur-carbonate leach	WST-SEQ

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:

Colin Ramshaw, Vancouver Laboratory Manager

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Phone: +1 (604) 984 0221 Fax: +1 (604) 984 0218
www.alsglobal.com/geochemistry

To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 19-SEP-2018
Account: APN

Project: EGP

CERTIFICATE OF ANALYSIS WH18215145

Sample Description	Method Analyte Units LOD	WEI-21 Recvd Wt. kg 0.02	OA-VOL08m MPA tCaCO3/1Kt 0.3	OA-VOL08m FIZZ RAT Unity 1	OA-VOL08m NNP tCaCO3/1Kt 1	OA-VOL08m NP tCaCO3/1Kt 1	OA-ELE07 pH Unity 0.1	OA-VOL08m Ratio (N Unity 0.01	S-IR08 S % 0.01	S-GRA06 S % 0.01	S-GRA06a S % 0.01	S-CAL06 S % 0.01	C-GAS05 C % 0.05	C-GAS05 CO2 % 0.2	ME-MS41 Ag ppm 0.01	ME-MS41 Al % 0.01
VICEAG-GCM-20		18.64	5.3	1	-2	3	6.6	0.56	0.17	0.02	0.01	0.15	0.10	0.4	0.19	0.68
VICEAG-GCM-21		18.40	3.8	1	0	4	7.2	1.07	0.12	0.02	<0.01	0.10	0.08	0.3	0.20	0.62
VICEAG-GCM-22		16.23	0.3	1	7	7	7.9	22.40	0.01	<0.01	<0.01	0.01	0.06	0.2	0.25	1.27
VICEAG-GCM-23		17.42	0.3	1	7	7	8.0	22.40	0.01	<0.01	<0.01	0.01	0.06	0.2	0.29	1.31
VICEAG-GCM-24		18.37	1.9	1	6	8	8.0	4.27	0.06	0.02	0.01	0.04	0.09	0.3	0.12	1.14
VICEAG-GCM-25		17.01	0.6	1	15	16	7.9	25.60	0.02	0.01	0.02	0.01	0.10	0.4	0.09	3.06

***** See Appendix Page for comments regarding this certificate *****

ALS Canada Ltd.
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www.alsglobal.com/geochemistry

To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 19-SEP-2018
Account: APN

Project: EGP

CERTIFICATE OF ANALYSIS WH18215145

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	As	Au	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga
	Units	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm
	LOD	0.1	0.02	10	10	0.05	0.01	0.01	0.01	0.02	0.1	1	0.05	0.2	0.01	0.05
VICEAG-GCM-20		258	<0.02	<10	60	0.29	1.04	0.14	0.24	36.1	7.6	14	0.83	23.1	2.41	2.19
VICEAG-GCM-21		201	<0.02	<10	70	0.28	0.85	0.14	0.24	35.4	7.3	14	0.76	23.8	2.30	2.12
VICEAG-GCM-22		24.1	<0.02	<10	70	0.33	0.79	0.29	0.38	63.6	14.7	17	0.84	55.1	3.59	3.72
VICEAG-GCM-23		68.3	<0.02	<10	60	0.33	1.44	0.27	0.21	64.3	12.3	18	0.95	40.5	3.21	3.92
VICEAG-GCM-24		385	0.07	<10	80	0.54	1.73	0.38	0.16	45.8	7.2	27	3.70	23.4	2.32	3.83
VICEAG-GCM-25		232	0.02	<10	120	1.05	0.62	0.79	0.08	51.2	20.8	59	3.01	88.4	5.05	9.81

***** See Appendix Page for comments regarding this certificate *****

ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: +1 (604) 984 0221 Fax: +1 (604) 984 0218
www.alsglobal.com/geochemistry

To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 19-SEP-2018
Account: APN

Project: EGP

CERTIFICATE OF ANALYSIS WH18215145

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Ge	Hf	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P	Pb
	Units	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm
	LOD	0.05	0.02	0.01	0.005	0.01	0.2	0.1	0.01	5	0.05	0.01	0.05	0.2	10	0.2
VICEAG-GCM-20		0.05	0.15	0.05	0.013	0.21	17.5	8.0	0.24	295	0.54	0.01	0.09	18.0	240	23.2
VICEAG-GCM-21		0.05	0.15	0.06	0.014	0.19	17.2	7.7	0.21	301	0.59	0.01	0.11	17.8	230	23.5
VICEAG-GCM-22		0.07	0.29	0.03	0.031	0.30	30.4	12.4	0.42	624	0.51	<0.01	<0.05	27.8	360	22.7
VICEAG-GCM-23		0.08	0.21	0.04	0.020	0.30	31.0	13.9	0.46	525	0.38	<0.01	0.05	24.4	260	27.9
VICEAG-GCM-24		0.07	0.14	0.01	0.011	0.51	23.4	23.5	0.35	287	0.41	0.02	0.25	17.6	230	17.8
VICEAG-GCM-25		0.09	0.23	0.02	0.034	0.79	24.6	59.1	1.28	543	0.38	0.03	0.53	43.7	340	10.3

***** See Appendix Page for comments regarding this certificate *****

ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: +1 (604) 984 0221 Fax: +1 (604) 984 0218
www.alsglobal.com/geochemistry

To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 19-SEP-2018
Account: APN

Project: EGP

CERTIFICATE OF ANALYSIS WH18215145

Sample Description	Method	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
	Analyte	Rb	Re	S	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V
	Units	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
	LOD	0.1	0.001	0.01	0.05	0.1	0.2	0.2	0.2	0.01	0.01	0.2	0.005	0.02	0.05	1
VICEAG-GCM-20		11.5	<0.001	0.18	6.86	1.5	<0.2	0.6	15.3	<0.01	0.01	7.0	0.009	0.13	0.88	11
VICEAG-GCM-21		10.7	<0.001	0.13	6.98	1.5	0.3	0.7	15.8	<0.01	0.02	6.9	0.010	0.13	0.91	11
VICEAG-GCM-22		14.2	<0.001	0.01	5.25	1.7	<0.2	0.7	29.5	<0.01	0.03	11.1	<0.005	0.14	1.12	15
VICEAG-GCM-23		14.6	<0.001	<0.01	5.70	2.0	0.2	0.9	22.4	<0.01	0.02	11.2	0.010	0.14	0.94	16
VICEAG-GCM-24		39.9	<0.001	0.06	1.29	2.6	<0.2	0.5	17.6	<0.01	0.07	10.1	0.060	0.28	1.00	21
VICEAG-GCM-25		40.6	<0.001	0.01	1.36	10.6	0.3	1.1	51.4	0.01	0.04	8.7	0.213	0.31	1.56	90

***** See Appendix Page for comments regarding this certificate *****

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BURNABY BC V5A 1W9

Finalized Date: 19-SEP-2018
Account: APN

Project: EGP

CERTIFICATE OF ANALYSIS WH18215145

Sample Description	Method Analyte Units LOD	ME-MS41 W ppm 0.05	ME-MS41 Y ppm 0.05	ME-MS41 Zn ppm 2	ME-MS41 Zr ppm 0.5
VICEAG-GCM-20		2.03	3.87	69	6.0
VICEAG-GCM-21		2.29	3.90	60	6.0
VICEAG-GCM-22		0.05	5.63	92	11.8
VICEAG-GCM-23		0.08	5.43	74	9.0
VICEAG-GCM-24		3.81	4.18	51	4.9
VICEAG-GCM-25		0.31	9.78	62	9.1

***** See Appendix Page for comments regarding this certificate *****

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Finalized Date: 19-SEP-2018
Account: APN

Project: EGP

CERTIFICATE OF ANALYSIS WH18215145

CERTIFICATE COMMENTS

ANALYTICAL COMMENTS

Applies to Method: Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g).
ME-MS41

LABORATORY ADDRESSES

Applies to Method: Processed at ALS Whitehorse located at 78 Mt. Sima Rd, Whitehorse, YT, Canada.

CRU-31	CRU-QC	DRY-21	LOG-22
PUL-31	PUL-QC	SND-01	SPL-21
SPL-21X	WEI-21		

Applies to Method: Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

C-GAS05	ME-MS41	OA-ELE07	OA-VOL08mn
S-CAL06	S-GRA06	S-GRA06a	S-IR08

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2160738-COFC

COC Number:

Page of

Report To	Contact and company name below will appear on the final report
Company:	Stratagold Corperation
Contact:	Hugh Coyle
Phone:	604-682-5122
	Company address below will appear on the final report
Street:	Suite 1000 - 1050 W. Pender St.
City/Province:	Vnacouver, B.C.
Postal Code:	V6E 3S7
Invoice To	Same as Report To ☐ ☑ NO
	Copy of Invoice with Report ☑ ☐ NO
Company:	
Contact:	

Report Format / Distribution	
Select Report Format:	☑ ☐ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report	☐ ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	clinta@jdsmining.ca / mikeb@jdsmining.ca
Email 2	chrisc@jdsmining.ca
Email 3	hcoyle@vitgoldcorp.com

Invoice Distribution	
Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	
Email 2	

Project Information	
ALS Account # / Quote #:	
Job #:	
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only):

ALS Contact:

Sampler:

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)
- 4 day [P4-20%] ☐
- 3 day [P3-25%] ☐
- 2 day [P2-50%] ☐

EMERGENCY
- 1 Business day [E1 - 100%] ☐
- Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type
	6 Grab samples on August 3-5, 2018			
	VICEAG-GCM-20			
	VICEAG-GCM-21			
	VICEAG-GCM-22			
	VICEAG-GCM-23			
	VICEAG-GCM-24			
	VICEAG-GCM-25			

EC by PCT (SHAKEFLASK)
Aqua Regia ICPMS
Metals by CCMS & CVAFS (SHAKEFLASK)
Moisture content
Shakeflask - Sample Preparation
Sample Handing and Disposal Fee
Special Request ALS Minerals Vancouver
SAMPLES ON HOLD
Sample is hazardous (please provide further deta
NUMBER OF CONTAINERS

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ ☐ NO

Are samples for human consumption/ use? ☐ ☐ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:		Time:	Received by:	Date:	Time:	Received by: HA	Date: SEP 6	Time: 13:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **WR2100901**	Page	: 1 of 7
Client	: **Ensero Solutions**	Laboratory	: Whitehorse - Environmental
Contact	: Rachel Martz	Account Manager	: Heather McKenzie
Address	: #3 Calcite Business Centre 151 Industrial Road Whitehorse YT Canada Y1A 2V3	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: 306 978 3111	Telephone	: +1 867 668 6689
Project	: ----	Date Samples Received	: 27-Jul-2021 15:51
PO	: 0000001061	Date Analysis Commenced	: 31-Jul-2021
C-O-C number	: ----	Issue Date	: 08-Oct-2021 13:44
Sampler	: ----		
Site	: ----		
Quote number	: VA2020-CAEG100-005		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Colby Bingham	Quality Systems Coordinator	Inorganics, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Kaitlyn Gardner	Account Manager Assistant	Internal Subcontracting, North Vancouver, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Melissa Houseman	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Nancy Cruse	Laboratory _ Supervisor	Inorganics, Saskatoon, Saskatchewan
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Xihua Yao	Laboratory Analyst	Inorganics, Saskatoon, Saskatchewan

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
dS/m	decisiemens per metre
kg	kilograms
meq/100g	milliequivalents per 100 grams
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
pH units	pH units
t/ha	tonnes per hectare
tCaCO3/kt	tons CaCO3 per kiloton

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLIS	*Detection Limit Adjusted due to insufficient sample.*

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	ENS21-SUB07	ENS21-SUB03	ENS21-SUB05	----	----
					Client sampling date / time	27-Jul-2021 15:00	27-Jul-2021 12:00	27-Jul-2021 13:00	----	----
						WR2100901-001	WR2100901-002	WR2100901-003	--------	--------
						Result	Result	Result	----	----
Physical Tests										
acidity, leachable (as CaCO3)	----	E285	4.0	mg/L		<4.0	<4.0	<4.0	----	----
conductivity, leachable	----	E103	2.0	µS/cm		34.3	76.2	64.3	----	----
moisture	----	E144	0.25	%		6.37	8.68	7.34	----	----
pH	----	E116	0.10	pH units		7.44	7.51	7.83	----	----
Particle Size										
texture class	----	E180A	-	-		Sand	Loamy Sand	Sandy Loam	----	----
silt (0.05mm - 0.002mm)	----	E180A	1.0	%		11.2	19.5	20.6	----	----
sand (2.0mm - 0.05mm)	----	E180A	1.0	%		87.2	76.7	73.4	----	----
clay (<0.002mm)	----	E180A	1.0	%		1.7	3.8	5.9	----	----
Anions and Nutrients										
phosphate, available (as P)	14265-44-2	E384	2.0	mg/kg		4.5	10.7	17.9	----	----
Organic / Inorganic Carbon										
carbon, total [TC]	----	E351	0.050	%		0.177	0.225	0.219	----	----
carbon, inorganic [IC]	----	E354	0.050	%		0.081	0.095	0.204	----	----
carbon, inorganic [IC], (as CaCO3 equivalent)	----	E354	0.40	%		0.68	0.79	1.70	----	----
carbon, total organic [TOC]	----	EC356	0.050	%		0.096	0.130	<0.050	----	----
Plant Available Nutrients										
cation exchange capacity	----	E407	0.80	meq/100g		0.94	1.34	3.42	----	----
nitrate + nitrite, available (as N)	----	E269.N+N	1.0	mg/kg		<1.0	1.3	<1.0	----	----
nitrate, available (as N)	14797-55-8	EC269.NO3	2.0	mg/kg		<2.0	<2.0	<2.0	----	----
nitrite, available (as N)	14797-65-0	E269.NO2	0.40	mg/kg		<0.40	<0.40	<0.40	----	----
potassium, available	7440-09-7	E390	20	mg/kg		28	43	67	----	----
sulfate, available (as S)	14808-79-8	E497.SO4	3.0	mg/kg		<3.0	19.6	26.6	----	----
Saturated Paste Extractables										
% saturation	----	E141	1.0	%		27.6	25.2	14.4	----	----
pH, saturated paste	----	E114	0.10	pH units		8.03	7.81	8.10	----	----
conductivity, saturated paste	----	E102	0.030	dS/m		0.108	0.647	0.267	----	----
sodium adsorption ratio [SAR]	----	EC102	0.10	-		<0.10	0.31	0.10	----	----
TGR (brine)	----	EC106	0.1	t/ha		incomputable	----	----	----	----
TGR (brine)	----	EC106	0.10	t/ha		----	<0.10	<0.10	----	----
TGR (sodic)	----	EC106	0.10	t/ha		<0.10	<0.10	<0.10	----	----

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	ENS21-SUB07	ENS21-SUB03	ENS21-SUB05	----	----
					Client sampling date / time	27-Jul-2021 15:00	27-Jul-2021 12:00	27-Jul-2021 13:00	----	----
						WR2100901-001	WR2100901-002	WR2100901-003	--------	--------
						Result	Result	Result	----	----
Saturated Paste Extractables										
calcium, soluble ion content	7440-70-2	EC442	0.30	mg/kg		2.98	21.8	5.76	----	----
calcium, soluble ion content	7440-70-2	E442	0.60	mg/L		10.8	86.7	40.0	----	----
magnesium, soluble ion content	7439-95-4	EC442	0.50	mg/kg		0.99	5.29	<0.50	----	----
magnesium, soluble ion content	7439-95-4	E442	1.0	mg/L		3.6	21.0	3.1	----	----
potassium, soluble ion content	7440-09-7	EC442	2.0	mg/kg		<2.0	<2.0	<2.0	----	----
potassium, soluble ion content	7440-09-7	E442	4.0	mg/L		<4.0	7.5	5.6	----	----
sodium, soluble ion content	17341-25-2	EC442	1.00	mg/kg		<1.00	3.12	<1.00	----	----
sodium, soluble ion content	17341-25-2	E442	2.0	mg/L		<2.0	12.4	2.5	----	----
chloride, soluble ion content	16887-00-6	EC239A.Cl	1.0	mg/kg		<5.5	<5.0	<2.9	----	----
chloride, soluble ion content	16887-00-6	E239.Cl	2.0	mg/L		<20.0	<20.0	<20.0	----	----
sulfate, soluble ion content	14808-79-8	EC239A.SO4	2.5	mg/kg		<13.8	60.0	10.9	----	----
sulfate, soluble ion content	14808-79-8	E239.SO4	5.0	mg/L		<50.0	238	75.9	----	----
nitrate (as N), soluble ion content	14797-55-8	EC239A.NO3	0.50	mg/kg		<1.38	<1.26	<0.72	----	----
nitrate (as N), soluble ion content	14797-55-8	E239.NO3	0.5	mg/L		<5.0	<5.0	<5.0	----	----
alkalinity, bicarbonate (as CaCO3)	----	EC293	2.0	mg/kg		<2.0	15.1	<2.0	----	----
alkalinity, bicarbonate (as CaCO3)	----	E293	10	mg/L		<50	60	<50	----	----
alkalinity, carbonate (as CaCO3)	----	EC293	2.0	mg/kg		<2.0	<2.0	<2.0	----	----
alkalinity, carbonate (as CaCO3)	----	E293	5.0	mg/L		<50.0	<50.0	<50.0	----	----
alkalinity, total (as CaCO3)	----	EC293	2.0	mg/kg		<2.0	15.1	<2.0	----	----
alkalinity, total (as CaCO3)	----	E293	10	mg/L		<50 DLIS	60	<50 DLIS	----	----
Acid Base Accounting										
carbon dioxide	124-38-9	C-GAS05	0.2	%		<0.2	<0.2	0.2	----	----
carbon, total inorganic [TIC]	----	C-GAS05	0.05	%		<0.05	<0.05	0.06	----	----
fizz rating	----	OA-VOL08m	1	-		1	1	1	----	----
maximum potential acidity [MPA]	----	OA-VOL08m	0.3	tCaCO3/kt		1.3	0.9	2.8	----	----
net neutralization potential [NNP]	----	OA-VOL08m	1	tCaCO3/kt		4	5	6	----	----
neutralization potential [NP]	----	OA-VOL08m	1	tCaCO3/kt		5	6	9	----	----
neutralization potential ratio [NPR], (NP/MPA)	----	OA-VOL08m	0.01	-		4	6.40	3.20	----	----
pH (1:1 soil:water)	----	OA-ELE07	0.10	pH units		8.40	8.30	8.70	----	----
sulfate (as S), HCl leach	14808-79-8	S-GRA06A	0.01	%		<0.01	<0.01	<0.01	----	----
sulfide (as S), total minus HCl leach	18496-25-8	S-CAL06a	0.01	%		0.04	0.03	0.09	----	----
sulfur, total	7704-34-9	S-IR08	0.01	%		0.04	0.03	0.09	----	----

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	ENS21-SUB07	ENS21-SUB03	ENS21-SUB05	----	----
					Client sampling date / time	27-Jul-2021 15:00	27-Jul-2021 12:00	27-Jul-2021 13:00	----	----
						WR2100901-001	WR2100901-002	WR2100901-003	--------	--------
						Result	Result	Result	----	----
Acid Base Accounting										
weight, sample received	NA	WEI-21	0.02	kg		3.12	3.32	2.96	----	----
Metals										
aluminum	7429-90-5	E440	50	mg/kg		5220	10500	14900	----	----
antimony	7440-36-0	E440	0.10	mg/kg		44.9	20.2	10.0	----	----
arsenic	7440-38-2	E440	0.10	mg/kg		55.3	341	71.1	----	----
barium	7440-39-3	E440	0.50	mg/kg		67.4	134	152	----	----
beryllium	7440-41-7	E440	0.10	mg/kg		0.21	0.67	0.60	----	----
bismuth	7440-69-9	E440	0.20	mg/kg		0.40	0.59	1.34	----	----
boron	7440-42-8	E440	5.0	mg/kg		<5.0	<5.0	<5.0	----	----
cadmium	7440-43-9	E440	0.020	mg/kg		0.607	0.328	0.259	----	----
calcium	7440-70-2	E440	50	mg/kg		996	2600	6200	----	----
chromium	7440-47-3	E440	0.50	mg/kg		11.2	19.2	31.3	----	----
cobalt	7440-48-4	E440	0.10	mg/kg		9.59	12.2	11.1	----	----
copper	7440-50-8	E440	0.50	mg/kg		34.1	32.8	30.2	----	----
iron	7439-89-6	E440	50	mg/kg		29100	31700	23000	----	----
lead	7439-92-1	E440	0.50	mg/kg		206	24.1	38.4	----	----
lithium	7439-93-2	E440	2.0	mg/kg		7.4	24.0	28.4	----	----
magnesium	7439-95-4	E440	20	mg/kg		2480	4240	6370	----	----
manganese	7439-96-5	E440	1.0	mg/kg		1230	391	253	----	----
molybdenum	7439-98-7	E440	0.10	mg/kg		1.17	1.37	0.80	----	----
nickel	7440-02-0	E440	0.50	mg/kg		26.7	27.8	27.8	----	----
phosphorus	7723-14-0	E440	50	mg/kg		260	395	638	----	----
potassium	7440-09-7	E440	100	mg/kg		960	3160	6500	----	----
selenium	7782-49-2	E440	0.20	mg/kg		0.32	0.26	<0.20	----	----
silver	7440-22-4	E440	0.10	mg/kg		<0.10	0.16	0.11	----	----
sodium	7440-23-5	E440	50	mg/kg		<50	174	159	----	----
strontium	7440-24-6	E440	0.50	mg/kg		13.8	29.8	24.7	----	----
sulfur	7704-34-9	E440	1000	mg/kg		<1000	<1000	<1000	----	----
thallium	7440-28-0	E440	0.050	mg/kg		0.090	0.247	0.384	----	----
tin	7440-31-5	E440	2.0	mg/kg		<2.0	<2.0	<2.0	----	----
titanium	7440-32-6	E440	1.0	mg/kg		94.2	551	934	----	----
tungsten	7440-33-7	E440	0.50	mg/kg		2.50	8.73	0.96	----	----

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	ENS21-SUB07	ENS21-SUB03	ENS21-SUB05	----	----
					Client sampling date / time	27-Jul-2021 15:00	27-Jul-2021 12:00	27-Jul-2021 13:00	----	----
						WR2100901-001	WR2100901-002	WR2100901-003	--------	--------
						Result	Result	Result	----	----
Metals										
uranium	7440-61-1	E440	0.050	mg/kg		1.39	1.94	2.06	----	----
vanadium	7440-62-2	E440	0.20	mg/kg		12.1	24.0	34.0	----	----
zinc	7440-66-6	E440	2.0	mg/kg		152	75.3	69.9	----	----
zirconium	7440-67-7	E440	1.0	mg/kg		7.2	8.8	2.6	----	----
Leachable Anions & Nutrients										
alkalinity, total (as CaCO3), leachable	----	E294	1.0	mg/L		14.8	16.6	22.9	----	----
bromide, leachable	24959-67-9	E243.Br	0.050	mg/L		<0.050	<0.050	<0.050	----	----
chloride, leachable	16887-00-6	E243.Cl	0.50	mg/L		<0.50	<0.50	<0.50	----	----
fluoride, leachable	16984-48-8	E243.F	0.020	mg/L		0.118	0.403	0.125	----	----
nitrite (as N), leachable	14797-65-0	E243.NO2	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
nitrate (as N), leachable	14797-55-8	E243.NO3	0.0050	mg/L		0.103	0.206	0.0252	----	----
sulfate, leachable	14808-79-8	E243.SO4	0.50	mg/L		1.64	15.3	8.65	----	----
Leachable Metals										
aluminum, leachable	7429-90-5	E446	0.0050	mg/L		0.312	0.545	0.135	----	----
antimony, leachable	7440-36-0	E446	0.00010	mg/L		0.00225	0.00669	0.00320	----	----
arsenic, leachable	7440-38-2	E446	0.0010	mg/L		0.0044	0.0866	0.0484	----	----
barium, leachable	7440-39-3	E446	0.0010	mg/L		0.0169	0.0196	0.0016	----	----
beryllium, leachable	7440-41-7	E446	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
bismuth, leachable	7440-69-9	E446	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
boron, leachable	7440-42-8	E446	0.010	mg/L		<0.010	<0.010	<0.010	----	----
cadmium, leachable	7440-43-9	E446	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
calcium, leachable	7440-70-2	E446	0.10	mg/L		4.08	8.44	9.23	----	----
chromium, leachable	7440-47-3	E446	0.00050	mg/L		0.00059	0.00078	<0.00050	----	----
cobalt, leachable	7440-48-4	E446	0.00010	mg/L		0.00030	0.00080	<0.00010	----	----
copper, leachable	7440-50-8	E446	0.0010	mg/L		0.0013	0.0037	<0.0010	----	----
iron, leachable	7439-89-6	E446	0.030	mg/L		0.676	1.92	0.037	----	----
lead, leachable	7439-92-1	E446	0.00010	mg/L		0.00082	0.00414	0.00025	----	----
lithium, leachable	7439-93-2	E446	0.0050	mg/L		<0.0050	<0.0050	<0.0050	----	----
magnesium, leachable	7439-95-4	E446	0.050	mg/L		1.18	2.03	0.612	----	----
manganese, leachable	7439-96-5	E446	0.00050	mg/L		0.0148	0.0342	0.00319	----	----
molybdenum, leachable	7439-98-7	E446	0.00010	mg/L		0.00094	0.00219	0.00367	----	----
nickel, leachable	7440-02-0	E446	0.00050	mg/L		0.00096	0.00207	<0.00050	----	----

Analytical Results

Sub-Matrix: **Soil**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	ENS21-SUB07	ENS21-SUB03	ENS21-SUB05	----	----
					Client sampling date / time	27-Jul-2021 15:00	27-Jul-2021 12:00	27-Jul-2021 13:00	----	----
						WR2100901-001	WR2100901-002	WR2100901-003	--------	--------
						Result	Result	Result	----	----
Leachable Metals										
phosphorus, leachable	7723-14-0	E446	0.30	mg/L		<0.30	<0.30	<0.30	----	----
potassium, leachable	7440-09-7	E446	0.050	mg/L		0.832	1.89	2.31	----	----
selenium, leachable	7782-49-2	E446	0.00050	mg/L		<0.00050	<0.00050	0.00166	----	----
silicon, leachable	7440-21-3	E446	0.050	mg/L		1.61	1.97	2.00	----	----
silver, leachable	7440-22-4	E446	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
sodium, leachable	7440-23-5	E446	0.050	mg/L		0.257	1.16	0.439	----	----
strontium, leachable	7440-24-6	E446	0.00050	mg/L		0.0240	0.0368	0.0397	----	----
sulfur, leachable	7704-34-9	E446	0.50	mg/L		0.59	5.03	2.99	----	----
thallium, leachable	7440-28-0	E446	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
tin, leachable	7440-31-5	E446	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
titanium, leachable	7440-32-6	E446	0.010	mg/L		<0.010	0.015	<0.010	----	----
uranium, leachable	7440-61-1	E446	0.000010	mg/L		0.000029	0.000236	0.00134	----	----
vanadium, leachable	7440-62-2	E446	0.0010	mg/L		<0.0010	0.0014	<0.0010	----	----
zinc, leachable	7440-66-6	E446	0.010	mg/L		<0.010	<0.010	<0.010	----	----
hardness (as CaCO3), dissolved	----	E446	0.60	mg/L		15.0	29.4	25.6	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WR2100901**	Page	: 1 of 24
Client	: **Ensero Solutions**	Laboratory	: Whitehorse - Environmental
Contact	: Rachel Martz	Account Manager	: Heather McKenzie
Address	: #3 Calcite Business Centre 151 Industrial Road Whitehorse YT Canada Y1A 2V3	Address	: #12 151 Industrial Road Whitehorse, Yukon Canada Y1A 2V3
Telephone	: 306 978 3111	Telephone	: +1 867 668 6689
Project	: ----	Date Samples Received	: 27-Jul-2021 15:51
PO	: 0000001061	Issue Date	: 08-Oct-2021 13:44
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: VA2020-CAEG100-005		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Soil/Solid**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Duplicate (DUP) RPDs								
Metals	Anonymous	Anonymous	cadmium	7440-43-9	E440	0.088 % DUP-H	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).
Metals	Anonymous	Anonymous	chromium	7440-47-3	E440	39.4 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	Anonymous	Anonymous	copper	7440-50-8	E440	38.9 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	Anonymous	Anonymous	uranium	7440-61-1	E440	34.9 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.
Metals	Anonymous	Anonymous	zinc	7440-66-6	E440	124 % DUP-H	30%	Duplicate RPD does not meet the DQO for this test.

Result Qualifiers

Qualifier	*Description*
DUP-H	*Duplicate results outside ALS DQO, due to sample heterogeneity.*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : Acid Base Accounting (Modified Sobek)										
LDPE bag										
ENS21-SUB03	OA-VOL08m	27-Jul-2021	----	----	----		27-Sep-2021	----	----	
Acid Base Accounting : Acid Base Accounting (Modified Sobek)										
LDPE bag										
ENS21-SUB05	OA-VOL08m	27-Jul-2021	----	----	----		27-Sep-2021	----	----	
Acid Base Accounting : Acid Base Accounting (Modified Sobek)										
LDPE bag										
ENS21-SUB07	OA-VOL08m	27-Jul-2021	----	----	----		27-Sep-2021	----	----	
Acid Base Accounting : Inorganic Carbon by Coulometer										
LDPE bag										
ENS21-SUB03	C-GAS05	27-Jul-2021	----	----	----		27-Sep-2021	----	----	
Acid Base Accounting : Inorganic Carbon by Coulometer										
LDPE bag										
ENS21-SUB05	C-GAS05	27-Jul-2021	----	----	----		27-Sep-2021	----	----	
Acid Base Accounting : Inorganic Carbon by Coulometer										
LDPE bag										
ENS21-SUB07	C-GAS05	27-Jul-2021	----	----	----		27-Sep-2021	----	----	
Acid Base Accounting : Received Sample Weight										
LDPE bag										
ENS21-SUB03	WEI-21	27-Jul-2021	----	----	----		27-Sep-2021	180 days	62 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : Received Sample Weight										
LDPE bag										
ENS21-SUB05	WEI-21	27-Jul-2021	----	----	----		27-Sep-2021	180 days	62 days	✓
Acid Base Accounting : Received Sample Weight										
LDPE bag										
ENS21-SUB07	WEI-21	27-Jul-2021	----	----	----		27-Sep-2021	180 days	62 days	✓
Acid Base Accounting : Saturated Paste pH										
LDPE bag										
ENS21-SUB03	OA-ELE07	27-Jul-2021	----	----	----		27-Sep-2021	----	----	
Acid Base Accounting : Saturated Paste pH										
LDPE bag										
ENS21-SUB05	OA-ELE07	27-Jul-2021	----	----	----		27-Sep-2021	----	----	
Acid Base Accounting : Saturated Paste pH										
LDPE bag										
ENS21-SUB07	OA-ELE07	27-Jul-2021	----	----	----		27-Sep-2021	----	----	
Acid Base Accounting : Sulfates by HCl Leaching and Gravimetry										
LDPE bag										
ENS21-SUB03	S-GRA06A	27-Jul-2021	----	----	----		27-Sep-2021	----	----	
Acid Base Accounting : Sulfates by HCl Leaching and Gravimetry										
LDPE bag										
ENS21-SUB05	S-GRA06A	27-Jul-2021	----	----	----		27-Sep-2021	----	----	
Acid Base Accounting : Sulfates by HCl Leaching and Gravimetry										
LDPE bag										
ENS21-SUB07	S-GRA06A	27-Jul-2021	----	----	----		27-Sep-2021	----	----	
Acid Base Accounting : Sulfide S (as S) Calc. (Total-S - SO4-S)										
LDPE bag										
ENS21-SUB03	S-CAL06a	27-Jul-2021	----	----	----		27-Sep-2021	----	----	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Acid Base Accounting : Sulfide S (as S) Calc. (Total-S - SO4-S)										
LDPE bag ENS21-SUB05	S-CAL06a	27-Jul-2021	----	----	----		27-Sep-2021	----	----	
Acid Base Accounting : Sulfide S (as S) Calc. (Total-S - SO4-S)										
LDPE bag ENS21-SUB07	S-CAL06a	27-Jul-2021	----	----	----		27-Sep-2021	----	----	
Acid Base Accounting : Total Sulfur by Combustion and IR										
LDPE bag ENS21-SUB03	S-IR08	27-Jul-2021	----	----	----		27-Sep-2021	----	----	
Acid Base Accounting : Total Sulfur by Combustion and IR										
LDPE bag ENS21-SUB05	S-IR08	27-Jul-2021	----	----	----		27-Sep-2021	----	----	
Acid Base Accounting : Total Sulfur by Combustion and IR										
LDPE bag ENS21-SUB07	S-IR08	27-Jul-2021	----	----	----		27-Sep-2021	----	----	
Anions and Nutrients : Available Phosphorus by FIALab (Modified Kelowna)										
LDPE bag ENS21-SUB03	E384	27-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	180 days	8 days	✓
Anions and Nutrients : Available Phosphorus by FIALab (Modified Kelowna)										
LDPE bag ENS21-SUB05	E384	27-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	180 days	8 days	✓
Anions and Nutrients : Available Phosphorus by FIALab (Modified Kelowna)										
LDPE bag ENS21-SUB07	E384	27-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	180 days	8 days	✓
Leachable Anions & Nutrients : Alkalinity by titration (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB03	E294	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Leachable Anions & Nutrients : Alkalinity by titration (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB05	E294	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Leachable Anions & Nutrients : Alkalinity by titration (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB07	E294	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Leachable Anions & Nutrients : Bromide by IC (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB03	E243.Br	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Leachable Anions & Nutrients : Bromide by IC (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB05	E243.Br	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Leachable Anions & Nutrients : Bromide by IC (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB07	E243.Br	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Leachable Anions & Nutrients : Chloride by IC (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB03	E243.Cl	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Leachable Anions & Nutrients : Chloride by IC (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB05	E243.Cl	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Leachable Anions & Nutrients : Chloride by IC (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB07	E243.Cl	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Leachable Anions & Nutrients : Fluoride by IC (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB03	E243.F	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Leachable Anions & Nutrients : Fluoride by IC (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB05	E243.F	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Leachable Anions & Nutrients : Fluoride by IC (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB07	E243.F	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Leachable Anions & Nutrients : Nitrate by IC (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB03	E243.NO3	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Leachable Anions & Nutrients : Nitrate by IC (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB05	E243.NO3	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Leachable Anions & Nutrients : Nitrate by IC (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB07	E243.NO3	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Leachable Anions & Nutrients : Nitrite by IC (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB03	E243.NO2	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Leachable Anions & Nutrients : Nitrite by IC (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB05	E243.NO2	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Leachable Anions & Nutrients : Nitrite by IC (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB07	E243.NO2	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Leachable Anions & Nutrients : Sulfate by IC (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB03	E243.SO4	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Leachable Anions & Nutrients : Sulfate by IC (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB05	E243.SO4	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Leachable Anions & Nutrients : Sulfate by IC (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB07	E243.SO4	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Leachable Metals : Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB03	E446	27-Jul-2021	04-Aug-2021	----	----		05-Aug-2021	----	9 days	
Leachable Metals : Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB05	E446	27-Jul-2021	04-Aug-2021	----	----		05-Aug-2021	----	9 days	
Leachable Metals : Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB07	E446	27-Jul-2021	04-Aug-2021	----	----		05-Aug-2021	----	9 days	
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag ENS21-SUB03	E440	27-Jul-2021	31-Jul-2021	----	----		03-Aug-2021	180 days	7 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag ENS21-SUB05	E440	27-Jul-2021	31-Jul-2021	----	----		03-Aug-2021	180 days	7 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
LDPE bag ENS21-SUB07	E440	27-Jul-2021	31-Jul-2021	----	----		03-Aug-2021	180 days	7 days	✓
Organic / Inorganic Carbon : Total Carbon by Combustion										
LDPE bag ENS21-SUB03	E351	27-Jul-2021	----	----	----		04-Aug-2021	180 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Total Carbon by Combustion										
LDPE bag ENS21-SUB05	E351	27-Jul-2021	----	----	----		04-Aug-2021	180 days	0 days	✓
Organic / Inorganic Carbon : Total Carbon by Combustion										
LDPE bag ENS21-SUB07	E351	27-Jul-2021	----	----	----		04-Aug-2021	180 days	0 days	✓
Organic / Inorganic Carbon : Total Inorganic Carbon by Acetic Acid pH Standard Curve										
LDPE bag ENS21-SUB03	E354	27-Jul-2021	----	----	----		03-Aug-2021	----	----	
Organic / Inorganic Carbon : Total Inorganic Carbon by Acetic Acid pH Standard Curve										
LDPE bag ENS21-SUB05	E354	27-Jul-2021	----	----	----		03-Aug-2021	----	----	
Organic / Inorganic Carbon : Total Inorganic Carbon by Acetic Acid pH Standard Curve										
LDPE bag ENS21-SUB07	E354	27-Jul-2021	----	----	----		03-Aug-2021	----	----	
Particle Size : CSSC Particle Size Classification (Mini Pipet Method)										
LDPE bag ENS21-SUB03	E180A	27-Jul-2021	----	----	----		03-Aug-2021	365 days	----	
Particle Size : CSSC Particle Size Classification (Mini Pipet Method)										
LDPE bag ENS21-SUB05	E180A	27-Jul-2021	----	----	----		03-Aug-2021	365 days	----	
Particle Size : CSSC Particle Size Classification (Mini Pipet Method)										
LDPE bag ENS21-SUB07	E180A	27-Jul-2021	----	----	----		03-Aug-2021	365 days	----	
Physical Tests : Acidity by titration (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB03	E285	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Acidity by titration (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB05	E285	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Physical Tests : Acidity by titration (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB07	E285	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Physical Tests : Conductivity by Electrode (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB03	E103	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Physical Tests : Conductivity by Electrode (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB05	E103	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Physical Tests : Conductivity by Electrode (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB07	E103	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag ENS21-SUB03	E144	27-Jul-2021	----	----	----		03-Aug-2021	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag ENS21-SUB05	E144	27-Jul-2021	----	----	----		03-Aug-2021	----	----	
Physical Tests : Moisture Content by Gravimetry										
LDPE bag ENS21-SUB07	E144	27-Jul-2021	----	----	----		03-Aug-2021	----	----	
Physical Tests : pH by Electrode (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB03	E116	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Electrode (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB05	E116	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Physical Tests : pH by Electrode (Shakeflask, 3:1 Ratio with Water)										
LDPE bag ENS21-SUB07	E116	27-Jul-2021	04-Aug-2021	----	----		06-Aug-2021	----	10 days	
Plant Available Nutrients : Ammonium Acetate CEC in Soil by Colourimetry										
LDPE bag ENS21-SUB03	E407	27-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	3 days	0 days	✓
Plant Available Nutrients : Ammonium Acetate CEC in Soil by Colourimetry										
LDPE bag ENS21-SUB05	E407	27-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	3 days	0 days	✓
Plant Available Nutrients : Ammonium Acetate CEC in Soil by Colourimetry										
LDPE bag ENS21-SUB07	E407	27-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	3 days	0 days	✓
Plant Available Nutrients : Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride										
LDPE bag ENS21-SUB03	E269.N+N	27-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	3 days	7 days	× EHT
Plant Available Nutrients : Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride										
LDPE bag ENS21-SUB05	E269.N+N	27-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	3 days	7 days	× EHT
Plant Available Nutrients : Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride										
LDPE bag ENS21-SUB07	E269.N+N	27-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	3 days	7 days	× EHT
Plant Available Nutrients : Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)										
LDPE bag ENS21-SUB03	E269.NO2	27-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	1 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Plant Available Nutrients : Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)										
LDPE bag ENS21-SUB05	E269.NO2	27-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	1 days	0 days	✓
Plant Available Nutrients : Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)										
LDPE bag ENS21-SUB07	E269.NO2	27-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	1 days	0 days	✓
Plant Available Nutrients : Available Potassium by flame photometry (Modified Kelowna)										
LDPE bag ENS21-SUB03	E390	27-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	180 days	8 days	✓
Plant Available Nutrients : Available Potassium by flame photometry (Modified Kelowna)										
LDPE bag ENS21-SUB05	E390	27-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	180 days	8 days	✓
Plant Available Nutrients : Available Potassium by flame photometry (Modified Kelowna)										
LDPE bag ENS21-SUB07	E390	27-Jul-2021	04-Aug-2021	----	----		04-Aug-2021	180 days	8 days	✓
Plant Available Nutrients : Available Sulfate by ICPOES (0.01M Calcium Chloride Ext.)										
LDPE bag ENS21-SUB03	E497.SO4	27-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	----	0 days	
Plant Available Nutrients : Available Sulfate by ICPOES (0.01M Calcium Chloride Ext.)										
LDPE bag ENS21-SUB05	E497.SO4	27-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	----	0 days	
Plant Available Nutrients : Available Sulfate by ICPOES (0.01M Calcium Chloride Ext.)										
LDPE bag ENS21-SUB07	E497.SO4	27-Jul-2021	03-Aug-2021	----	----		03-Aug-2021	----	0 days	
Saturated Paste Extractables : Alkalinity Species by Titration (Saturated Paste)										
LDPE bag ENS21-SUB03	E293	27-Jul-2021	----	----	----		31-Jul-2021	14 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Saturated Paste Extractables : Alkalinity Species by Titration (Saturated Paste)										
LDPE bag ENS21-SUB05	E293	27-Jul-2021	----	----	----		31-Jul-2021	14 days	0 days	✓
Saturated Paste Extractables : Alkalinity Species by Titration (Saturated Paste)										
LDPE bag ENS21-SUB07	E293	27-Jul-2021	----	----	----		31-Jul-2021	14 days	0 days	✓
Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)										
LDPE bag ENS21-SUB03	E442	27-Jul-2021	----	----	----		01-Aug-2021	365 days	5 days	✓
Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)										
LDPE bag ENS21-SUB05	E442	27-Jul-2021	----	----	----		01-Aug-2021	365 days	5 days	✓
Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)										
LDPE bag ENS21-SUB07	E442	27-Jul-2021	----	----	----		01-Aug-2021	365 days	5 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
LDPE bag ENS21-SUB03	E239.Cl	27-Jul-2021	----	----	----		31-Jul-2021	365 days	4 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
LDPE bag ENS21-SUB05	E239.Cl	27-Jul-2021	----	----	----		31-Jul-2021	365 days	4 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
LDPE bag ENS21-SUB07	E239.Cl	27-Jul-2021	----	----	----		31-Jul-2021	365 days	4 days	✓
Saturated Paste Extractables : Conductivity in Soil (Saturated Paste)										
LDPE bag ENS21-SUB03	E102	27-Jul-2021	----	----	----		31-Jul-2021	365 days	4 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Saturated Paste Extractables : Conductivity in Soil (Saturated Paste)										
LDPE bag ENS21-SUB05	E102	27-Jul-2021	----	----	----		31-Jul-2021	365 days	4 days	✓
Saturated Paste Extractables : Conductivity in Soil (Saturated Paste)										
LDPE bag ENS21-SUB07	E102	27-Jul-2021	----	----	----		31-Jul-2021	365 days	4 days	✓
Saturated Paste Extractables : Nitrate by IC (Saturated Paste)										
LDPE bag ENS21-SUB03	E239.NO3	27-Jul-2021	----	----	----		31-Jul-2021	----	4 days	EHT
Saturated Paste Extractables : Nitrate by IC (Saturated Paste)										
LDPE bag ENS21-SUB05	E239.NO3	27-Jul-2021	----	----	----		31-Jul-2021	----	4 days	EHT
Saturated Paste Extractables : Nitrate by IC (Saturated Paste)										
LDPE bag ENS21-SUB07	E239.NO3	27-Jul-2021	----	----	----		31-Jul-2021	----	4 days	EHT
Saturated Paste Extractables : pH by Meter (Saturated Paste)										
LDPE bag ENS21-SUB03	E114	27-Jul-2021	----	----	----		31-Jul-2021	365 days	4 days	✓
Saturated Paste Extractables : pH by Meter (Saturated Paste)										
LDPE bag ENS21-SUB05	E114	27-Jul-2021	----	----	----		31-Jul-2021	365 days	4 days	✓
Saturated Paste Extractables : pH by Meter (Saturated Paste)										
LDPE bag ENS21-SUB07	E114	27-Jul-2021	----	----	----		31-Jul-2021	365 days	4 days	✓
Saturated Paste Extractables : Saturation Percentage										
LDPE bag ENS21-SUB03	E141	27-Jul-2021	----	----	----		31-Jul-2021	28 days	4 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Saturated Paste Extractables : Saturation Percentage										
LDPE bag ENS21-SUB05	E141	27-Jul-2021	----	----	----		31-Jul-2021	28 days	4 days	✓
Saturated Paste Extractables : Saturation Percentage										
LDPE bag ENS21-SUB07	E141	27-Jul-2021	----	----	----		31-Jul-2021	28 days	4 days	✓
Saturated Paste Extractables : Sulfate by IC (Saturated Paste)										
LDPE bag ENS21-SUB03	E239.SO4	27-Jul-2021	----	----	----		31-Jul-2021	365 days	4 days	✓
Saturated Paste Extractables : Sulfate by IC (Saturated Paste)										
LDPE bag ENS21-SUB05	E239.SO4	27-Jul-2021	----	----	----		31-Jul-2021	365 days	4 days	✓
Saturated Paste Extractables : Sulfate by IC (Saturated Paste)										
LDPE bag ENS21-SUB07	E239.SO4	27-Jul-2021	----	----	----		31-Jul-2021	365 days	4 days	✓

Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Acidity by titration (Shakeflask, 3:1 Ratio with Water)	E285	257206	1	3	33.3	5.0	✓
Alkalinity by titration (Shakeflask, 3:1 Ratio with Water)	E294	257203	1	3	33.3	5.0	✓
Alkalinity Species by Titration (Saturated Paste)	E293	255837	1	3	33.3	5.0	✓
Ammonium Acetate CEC in Soil by Colourimetry	E407	257267	1	3	33.3	5.0	✓
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.N+N	257075	1	20	5.0	5.0	✓
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2	257076	1	5	20.0	5.0	✓
Available Phosphorus by FIALab (Modified Kelowna)	E384	257052	1	20	5.0	5.0	✓
Available Potassium by flame photometry (Modified Kelowna)	E390	257051	1	20	5.0	5.0	✓
Available Sulfate by ICPOES (0.01M Calcium Chloride Ext.)	E497.SO4	257074	1	19	5.2	5.0	✓
Bromide by IC (Shakeflask, 3:1 Ratio with Water)	E243.Br	257212	1	3	33.3	5.0	✓
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442	255838	1	3	33.3	5.0	✓
Chloride by IC (Saturated Paste)	E239.Cl	255833	1	3	33.3	5.0	✓
Chloride by IC (Shakeflask, 3:1 Ratio with Water)	E243.Cl	257211	1	3	33.3	5.0	✓
Conductivity in Soil (Saturated Paste)	E102	255836	1	3	33.3	5.0	✓
CSSC Particle Size Classification (Mini Pipet Method)	E180A	257072	1	3	33.3	5.0	✓
Fluoride by IC (Shakeflask, 3:1 Ratio with Water)	E243.F	257210	1	3	33.3	5.0	✓
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446	257213	1	3	33.3	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	255826	1	7	14.2	5.0	✓
Moisture Content by Gravimetry	E144	257214	1	4	25.0	5.0	✓
Nitrate by IC (Saturated Paste)	E239.NO3	255832	1	3	33.3	5.0	✓
Nitrate by IC (Shakeflask, 3:1 Ratio with Water)	E243.NO3	257208	1	3	33.3	5.0	✓
Nitrite by IC (Shakeflask, 3:1 Ratio with Water)	E243.NO2	257209	1	3	33.3	5.0	✓
pH by Electrode (Shakeflask, 3:1 Ratio with Water)	E116	257205	1	3	33.3	5.0	✓
pH by Meter (Saturated Paste)	E114	255835	1	3	33.3	5.0	✓
Saturation Percentage	E141	255834	1	3	33.3	5.0	✓
Sulfate by IC (Saturated Paste)	E239.SO4	255831	1	3	33.3	5.0	✓
Sulfate by IC (Shakeflask, 3:1 Ratio with Water)	E243.SO4	257207	1	3	33.3	5.0	✓
Total Carbon by Combustion	E351	258043	1	6	16.6	5.0	✓
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	257128	1	6	16.6	5.0	✓
Laboratory Control Samples (LCS)							
Acidity by titration (Shakeflask, 3:1 Ratio with Water)	E285	257206	1	3	33.3	5.0	✓
Alkalinity by titration (Shakeflask, 3:1 Ratio with Water)	E294	257203	1	3	33.3	5.0	✓
Alkalinity Species by Titration (Saturated Paste)	E293	255837	1	3	33.3	5.0	✓
Ammonium Acetate CEC in Soil by Colourimetry	E407	257267	2	3	66.6	10.0	✓
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.N+N	257075	2	20	10.0	10.0	✓
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2	257076	2	5	40.0	10.0	✓
Available Phosphorus by FIALab (Modified Kelowna)	E384	257052	2	20	10.0	10.0	✓

Matrix: **Soil/Solid**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Available Potassium by flame photometry (Modified Kelowna)	E390	257051	2	20	10.0	10.0	✓
Available Sulfate by ICPOES (0.01M Calcium Chloride Ext.)	E497.SO4	257074	2	19	10.5	10.0	✓
Bromide by IC (Shakeflask, 3:1 Ratio with Water)	E243.Br	257212	1	3	33.3	5.0	✓
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442	255838	2	3	66.6	10.0	✓
Chloride by IC (Saturated Paste)	E239.Cl	255833	2	3	66.6	10.0	✓
Chloride by IC (Shakeflask, 3:1 Ratio with Water)	E243.Cl	257211	1	3	33.3	5.0	✓
Conductivity by Electrode (Shakeflask, 3:1 Ratio with Water)	E103	257204	1	3	33.3	5.0	✓
Conductivity in Soil (Saturated Paste)	E102	255836	2	3	66.6	10.0	✓
CSSC Particle Size Classification (Mini Pipet Method)	E180A	257072	1	3	33.3	5.0	✓
Fluoride by IC (Shakeflask, 3:1 Ratio with Water)	E243.F	257210	1	3	33.3	5.0	✓
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446	257213	1	3	33.3	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	255826	2	7	28.5	10.0	✓
Moisture Content by Gravimetry	E144	257214	1	4	25.0	5.0	✓
Nitrate by IC (Saturated Paste)	E239.NO3	255832	1	3	33.3	5.0	✓
Nitrate by IC (Shakeflask, 3:1 Ratio with Water)	E243.NO3	257208	1	3	33.3	5.0	✓
Nitrite by IC (Shakeflask, 3:1 Ratio with Water)	E243.NO2	257209	1	3	33.3	5.0	✓
pH by Electrode (Shakeflask, 3:1 Ratio with Water)	E116	257205	1	3	33.3	5.0	✓
pH by Meter (Saturated Paste)	E114	255835	2	3	66.6	10.0	✓
Saturation Percentage	E141	255834	2	3	66.6	10.0	✓
Sulfate by IC (Saturated Paste)	E239.SO4	255831	2	3	66.6	10.0	✓
Sulfate by IC (Shakeflask, 3:1 Ratio with Water)	E243.SO4	257207	1	3	33.3	5.0	✓
Total Carbon by Combustion	E351	258043	2	6	33.3	10.0	✓
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	257128	2	6	33.3	10.0	✓
Method Blanks (MB)							
Acidity by titration (Shakeflask, 3:1 Ratio with Water)	E285	257206	1	3	33.3	5.0	✓
Alkalinity by titration (Shakeflask, 3:1 Ratio with Water)	E294	257203	1	3	33.3	5.0	✓
Alkalinity Species by Titration (Saturated Paste)	E293	255837	1	3	33.3	5.0	✓
Ammonium Acetate CEC in Soil by Colourimetry	E407	257267	1	3	33.3	5.0	✓
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.N+N	257075	1	20	5.0	5.0	✓
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2	257076	1	5	20.0	5.0	✓
Available Phosphorus by FIALab (Modified Kelowna)	E384	257052	1	20	5.0	5.0	✓
Available Potassium by flame photometry (Modified Kelowna)	E390	257051	1	20	5.0	5.0	✓
Available Sulfate by ICPOES (0.01M Calcium Chloride Ext.)	E497.SO4	257074	1	19	5.2	5.0	✓
Bromide by IC (Shakeflask, 3:1 Ratio with Water)	E243.Br	257212	1	3	33.3	5.0	✓
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442	255838	1	3	33.3	5.0	✓
Chloride by IC (Saturated Paste)	E239.Cl	255833	1	3	33.3	5.0	✓
Chloride by IC (Shakeflask, 3:1 Ratio with Water)	E243.Cl	257211	1	3	33.3	5.0	✓
Conductivity by Electrode (Shakeflask, 3:1 Ratio with Water)	E103	257204	1	3	33.3	5.0	✓
Conductivity in Soil (Saturated Paste)	E102	255836	1	3	33.3	5.0	✓
Fluoride by IC (Shakeflask, 3:1 Ratio with Water)	E243.F	257210	1	3	33.3	5.0	✓
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446	257213	1	3	33.3	5.0	✓

Matrix: **Soil/Solid**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Metals in Soil/Solid by CRC ICPMS	E440	255826	1	7	14.2	5.0	✓
Moisture Content by Gravimetry	E144	257214	1	4	25.0	5.0	✓
Nitrate by IC (Saturated Paste)	E239.NO3	255832	1	3	33.3	5.0	✓
Nitrate by IC (Shakeflask, 3:1 Ratio with Water)	E243.NO3	257208	1	3	33.3	5.0	✓
Nitrite by IC (Shakeflask, 3:1 Ratio with Water)	E243.NO2	257209	1	3	33.3	5.0	✓
Saturation Percentage	E141	255834	1	3	33.3	5.0	✓
Sulfate by IC (Saturated Paste)	E239.SO4	255831	1	3	33.3	5.0	✓
Sulfate by IC (Shakeflask, 3:1 Ratio with Water)	E243.SO4	257207	1	3	33.3	5.0	✓
Total Carbon by Combustion	E351	258043	1	6	16.6	5.0	✓
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	257128	1	6	16.6	5.0	✓
Matrix Spikes (MS)							
Bromide by IC (Shakeflask, 3:1 Ratio with Water)	E243.Br	257212	1	3	33.3	5.0	✓
Chloride by IC (Shakeflask, 3:1 Ratio with Water)	E243.Cl	257211	1	3	33.3	5.0	✓
Fluoride by IC (Shakeflask, 3:1 Ratio with Water)	E243.F	257210	1	3	33.3	5.0	✓
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446	257213	1	3	33.3	5.0	✓
Nitrate by IC (Shakeflask, 3:1 Ratio with Water)	E243.NO3	257208	1	3	33.3	5.0	✓
Nitrite by IC (Shakeflask, 3:1 Ratio with Water)	E243.NO2	257209	1	3	33.3	5.0	✓
Sulfate by IC (Shakeflask, 3:1 Ratio with Water)	E243.SO4	257207	1	3	33.3	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Inorganic Carbon by Coulometer	C-GAS05 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals C-GAS05	Determine Total Inorganic Carbon (TIC) by using diluted perchloric acid to react with metal carbonate and yield carbon dioxide. Concentration of CO_2 is determined by coulometer.
Conductivity in Soil (Saturated Paste)	E102 Vancouver - Environmental	Soil/Solid	CSSS Ch. 15 (mod)/APHA 2510 (mod)/AER D50	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a filtered extract from a soil sample prepared using the saturated paste procedure. Conductivity measurements are temperature-compensated to 25°C.
Conductivity by Electrode (Shakeflask, 3:1 Ratio with Water)	E103 Vancouver - Environmental	Soil/Solid	MEND (mod)/APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into an extract from a soil sample that has been added in a 3:1 ratio of deionized water to soil, then leached and the extract filtered prior to analysis. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter (Saturated Paste)	E114 Vancouver - Environmental	Soil/Solid	Carter-CSSS / APHA 4500 H	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C) on a soil produced by the saturated paste extraction procedure.
pH by Electrode (Shakeflask, 3:1 Ratio with Water)	E116 Vancouver - Environmental	Soil/Solid	MEND (mod)/APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C) on an extract from a soil sample that has been added in a 3:1 ratio of deionized water to soil, then leached and the extract filtered prior to analysis. The pH is then measured by a standard pH probe. .
Saturation Percentage	E141 Vancouver - Environmental	Soil/Solid	CSSS Ch. 18 (mod)/AER D50	Saturation Percentage (SP) is determined as the total volume of water present in a saturated paste (in mL) divided by the dry weight of the sample (in grams), expressed as a percentage.
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
CSSC Particle Size Classification (Mini Pipet Method)	E180A Saskatoon - Environmental	Soil/Solid	CCME Vol 4 Analytical Methods	A soil sample is disaggregated to pass a 2mm sieve. The <2mm specimen is then further disaggregated using Calgon solution and suspended in solution. Two pipette aliquots are taken, dried, and measured gravimetrically at specific times to determine %clay and %silt+clay using the principles of Stokes' law. %silt and %sand are determined mathematically.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Chloride by IC (Saturated Paste)	E239.Cl Vancouver - Environmental	Soil/Solid	CSSS Ch. 15 (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining a soil extract produced by the saturated paste extraction procedure which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate by IC (Saturated Paste)	E239.NO3 Vancouver - Environmental	Soil/Solid	CSSS Ch. 15 (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining a soil extract produced by the saturated paste extraction procedure which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate by IC (Saturated Paste)	E239.SO4 Vancouver - Environmental	Soil/Solid	CSSS Ch. 15 (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining a soil extract produced by the saturated paste extraction procedure which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Bromide by IC (Shakeflask, 3:1 Ratio with Water)	E243.Br Vancouver - Environmental	Soil/Solid	MEND (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining an extract from a soil sample that has been added in a 3:1 ratio of deionized water to soil, then leached and the extract filtered prior to analysis, which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride by IC (Shakeflask, 3:1 Ratio with Water)	E243.Cl Vancouver - Environmental	Soil/Solid	MEND (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining an extract from a soil sample that has been added in a 3:1 ratio of deionized water to soil, then leached and the extract filtered prior to analysis, which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride by IC (Shakeflask, 3:1 Ratio with Water)	E243.F Vancouver - Environmental	Soil/Solid	MEND (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining an extract from a soil sample that has been added in a 3:1 ratio of deionized water to soil, then leached and the extract filtered prior to analysis, which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite by IC (Shakeflask, 3:1 Ratio with Water)	E243.NO2 Vancouver - Environmental	Soil/Solid	MEND (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining an extract from a soil sample that has been added in a 3:1 ratio of deionized water to soil, then leached and the extract filtered prior to analysis, which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate by IC (Shakeflask, 3:1 Ratio with Water)	E243.NO3 Vancouver - Environmental	Soil/Solid	MEND (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining an extract from a soil sample that has been added in a 3:1 ratio of deionized water to soil, then leached and the extract filtered prior to analysis, which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate by IC (Shakeflask, 3:1 Ratio with Water)	E243.SO4 Vancouver - Environmental	Soil/Solid	MEND (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining an extract from a soil sample that has been added in a 3:1 ratio of deionized water to soil, then leached and the extract filtered prior to analysis, which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Available Nitrate and Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.N+N Saskatoon - Environmental	Soil/Solid	Alberta Agriculture/APHA 4500-NO3 I (mod)	Plant available nitrate and nitrite are analyzed by colourimetry using a flow injection analyzer on a soil sample extract that has been extracted using 0.01M Calcium Chloride, then shaken well and filtered prior to analysis.
Available Nitrite by Colourimetry (0.01M Calcium Chloride Ext.)	E269.NO2 Saskatoon - Environmental	Soil/Solid	Alberta Agriculture/APHA 4500-NO3 I (mod)	Plant available nitrite is analyzed by colourimetry using a segmented flow analyzer on a soil sample extract that has been extracted using 0.01M Calcium Chloride, then shaken well and filtered prior to analysis.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Acidity by titration (Shakeflask, 3:1 Ratio with Water)	E285 Vancouver - Environmental	Soil/Solid	MEND (mod)/APHA 2310 B (mod)	Acidity is determined by obtaining an extract from a soil sample that has been added in a 3:1 ratio of deionized water to soil, then leached and the extract filtered prior to analysis, which is then analyzed by potentiometric titration to a specified endpoint.
Alkalinity Species by Titration (Saturated Paste)	E293 Vancouver - Environmental	Soil/Solid	CSSS Ch. 15/APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint on an extract produced by the saturated paste procedure. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Alkalinity by titration (Shakeflask, 3:1 Ratio with Water)	E294 Vancouver - Environmental	Soil/Solid	BC MINISTRY OF ENERGY AND MINES	A sample is extracted with water at a 3:1 liquid to solid ratio for 24 hours, then filtered through a 0.45 micron membrane filter. Analysis is by autotitration
Total Carbon by Combustion	E351 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 21.2 (mod)	Total Carbon is determined by the high temperature combustion method with measurement by an infrared detector.
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 20.2	Total Inorganic Carbon is determined by acetic acid pH standard curve, where a known quantity of acetic acid is consumed by reaction with carbonates in the soil. The pH of the resulting solution is measured and compared against a standard curve relating pH to weight of carbonate.
Available Phosphorus by FIALab (Modified Kelowna)	E384 Saskatoon - Environmental	Soil/Solid	Comm. Soil Sci. Plant Anal, 25 (5&6)	Plant available phosphorus is extracted from air dried soil using a fixed ratio Modified Kelowna extraction. Phosphorus is determined by colorimetry using an flow injection analyzer.
Available Potassium by flame photometry (Modified Kelowna)	E390 Saskatoon - Environmental	Soil/Solid	Comm. Soil Sci. Plant Anal, 25 (5&6)	Plant available potassium is extracted from soil using modified Kelowna solution. Potassium is determined by flame emission at 770 nm.
Ammonium Acetate CEC in Soil by Colourimetry	E407 Saskatoon - Environmental	Soil/Solid	CSSS(2008) 18.4	Cation Exchange Capacity (CEC) is determined by saturating soil exchange sites with ammonium acetate. The ammonium ions are then displaced using potassium chloride. CEC is determined by measuring the ammonium in the extract, which is determined colourimetrically.
Metals in Soil/Solid by CRC ICPMS	E440 Vancouver - Environmental	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. Elemental Sulfur may be poorly recovered by this method. Analysis is by Collision/Reaction Cell ICPMS.
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442 Vancouver - Environmental	Soil/Solid	CSSS CH15/EPA 6020B (mod)	A soil extract produced by the saturated paste extraction procedure is analyzed for Calcium, Magnesium, Potassium and Sodium by Collision/Reaction Cell ICPMS as per "Soil Sampling Methods of Analysis" By M Carter.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Metals by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E446 Vancouver - Environmental	Soil/Solid	BC MINISTRY OF ENERGY AND MINES/EPA 6020B (mod)	A sample is extracted with water at a 3:1 liquid to solid ratio for 24 hours, then filtered through a 0.45 micron membrane filter. Analysis is by Collision/Reaction Cell ICPMS. This extraction is an empirical procedure with pre-defined characteristics. Recovery of some elements (Ag, Bi, and Sn) by this method can be variable due to the neutral pH of the extraction fluid, and therefore the LCS DQOs has been established at 50-130% for these elements.
Available Sulfate by ICPOES (0.01M Calcium Chloride Ext.)	E497.SO4 Saskatoon - Environmental	Soil/Solid	Alberta Agriculture	Plant available sulfate is determined by ICPOES. Soil is extracted using a 0.01M calcium chloride solution. This extraction may also produce organic sulfur in the extracts when organic soils are analyzed.
Sodium Adsorption Ratio (SAR) Saturated Paste	EC102 Vancouver - Environmental	Soil/Solid	CCME Sodium Adsorption Ratio (SAR)	The Sodium Adsorption Ratio (SAR) for a sample is calculated from the Sodium, Calcium, and Magnesium concentrations from sediment paste extract.
Theoretical Gypsum Requirements (TGR) Saturated Paste	EC106 Vancouver - Environmental	Soil/Solid	J. Ashworth et al (1999)	Theoretical Gypsum Requirement is an estimate of the gypsum amendment required to remediate brine contaminated or sodic soils, and is provided in units of tonnes per hectare (t/ha) for a treatment depth of 15cm. TGR(brine), intended for brine-contaminated soils, is calculated using Method A from "A Comparison of Methods for Gypsum Requirement of Brine-Contaminated Soils", by J. Ashworth (Cdn J. of Soil Science, 1999), available at www.alsglobal.com. TGR(sodic), intended for naturally sodic soils, uses the Oster and Frenkel method (Method B) from the same paper. Reported TGR values are capped at 50 t/ha, considered the maximum practical gypsum amendment. To convert TGR from t/ha to tons/acre, multiply by 0.446. To determine a TGR value for an alternate treatment depth, multiply by [desired treatment depth (cm) / 15 cm].
Chloride by IC (Saturated Paste) (mg/kg)	EC239A.Cl Vancouver - Environmental	Soil/Solid	CSSS Ch. 15 (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining a soil extract produced by the saturated paste extraction procedure which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate by IC (Saturated Paste) (mg/kg)	EC239A.NO3 Vancouver - Environmental	Soil/Solid	Calculation	Results are reported in mg/kg wet weight
Sulfate by IC (Saturated Paste) (mg/kg)	EC239A.SO4 Vancouver - Environmental	Soil/Solid	CSSS Ch. 15 (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining a soil extract produced by the saturated paste extraction procedure which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Available Nitrate by Difference (0.01M Calcium Chloride Ext.)	EC269.NO3 Saskatoon - Environmental	Soil/Solid	Alberta Agriculture/APHA 4500-NO3 I (mod)	Available Nitrate is determined by difference between Nitrate+Nitrite-N and Nitrite-N. A soil sample extract that has been extracted using 0.01M Calcium Chloride, then shaken well and filtered prior to analysis.
Alkalinity Species by Titration (Saturated Paste) (mg/kg)	EC293 Vancouver - Environmental	Soil/Solid	CSSS Ch. 15/APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint on an extract produced by the saturated paste procedure. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Organic Carbon (Calculated) in soil	EC356 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 21.2	Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon (TIC).
Ca, K, Mg, Na by ICPMS (Saturated Paste, mg/kg)	EC442 Vancouver - Environmental	Soil/Solid	CSSS CH15/EPA 6020B (mod)	A soil extract produced by the saturated paste extraction procedure is analyzed for Calcium, Magnesium, Potassium, Sodium by ICPMS.
Saturated Paste pH	OA-ELE07 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals OA-ELE07	Sample mix with water in 1:1 ratio to make a paste, pH is then determined.
Acid Base Accounting (Modified Sobek)	OA-VOL08m ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals OA-VOL08m	Determine the acid generation power of a sample as tonne $CaCO_3$ per kilo-tonne using modified Sobek method
Sulfide S (as S) Calc. (Total-S - SO4-S)	S-CAL06a ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals:S-CAL06a	Sulfide Sulfur (as S) is calculated by subtracting the HCL Leachable Sulfate Sulfur (as S) from the Total Sulfur (as S) obtained from combustion.
Sulfates by HCl Leaching and Gravimetry	S-GRA06A ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals S-GRA06A	A prepared sample is heated with dilute HCl and then filtered. The sulfate in the filtrate is precipitated with $BaCl_2$ in a dilute HCl. The $BaSO_4$ precipitate is filtered, ignited, weighed and the Sulfate Sulfur is determined (as S).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Sulfur by Combustion and IR	S-IR08 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals S-IR08	A prepared sample is heated to approximately 1350°C in an induction furnace with oxygen stream. Sulfur dioxide released from the sample are measured by IR (Leco analyzer) and the Total Sulfur result is provided.
Received Sample Weight	WEI-21 ALS Minerals (Vancouver) - 2103 Dollarton Hwy North Vancouver British Columbia Canada V7H 0A7	Soil/Solid	ALS Minerals WEI-21	Weigh out sample received.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Fixed ratio 0.01M Calcium Chloride extraction for plant available nutrients	EP269 Saskatoon - Environmental	Soil/Solid	Alberta Agriculture	Plant available nutrients (N&S) extracted using 0.01M calcium chloride, then shaken well and filtered prior to analysis.
Modified Kelowna Extraction for soil	EP384 Saskatoon - Environmental	Soil/Solid	Comm. Soil Sci. Plant Anal, 25 (5&6)	Plant available phosphorus and potassium are extracted from the soil using fixed ratio Modified Kelowna solution.
Ammonium Acetate Extraction for CEC in Soil	EP407 Saskatoon - Environmental	Soil/Solid	CSSS(2008) 18.4	Soil exchange sites are saturated with ammonium acetate. The ammonium ions are then displaced with potassium chloride.
Digestion for Metals and Mercury	EP440 Vancouver - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO_3 and HCl. This method is intended to liberate metals that may be environmentally available.
Shakeflask Leachate Preparation (3:1 Ratio with Water)	EP446 Vancouver - Environmental	Soil/Solid	BC MINISTRY OF ENERGY AND MINES	A sample is extracted with water at a 3:1 liquid to solids ratio for 24 hours, then filtered through a 0.45 micron membrane filter.
Dry and Grind	EPP442 Saskatoon - Environmental	Soil/Solid	Soil Sampling and Methods of Analysis, Carter 2008	After removal of any coarse fragments and reservation of wet subsamples a portion of homogenized sample is set in a tray and dried at less than 60°C until dry. The sample is then particle size reduced with an automated crusher or mortar and pestle, typically to <2 mm. Further size reduction may be needed for particular tests.

QUALITY CONTROL REPORT

Work Order	: **WR2100901**	Page	: 1 of 19
Client	: Ensero Solutions	Laboratory	: Whitehorse - Environmental
Contact	: Rachel Martz	Account Manager	: Heather McKenzie
Address	: #3 Calcite Business Centre 151 Industrial Road Whitehorse YT Canada Y1A 2V3	Address	: #12 151 Industrial Road Whitehorse, Yukon Canada Y1A 2V3
Telephone	: 306 978 3111	Telephone	: +1 867 668 6689
Project	: ----	Date Samples Received	: 27-Jul-2021 15:51
PO	: 0000001061	Date Analysis Commenced	: 31-Jul-2021
C-O-C number	: ----	Issue Date	: 08-Oct-2021 13:43
Sampler	: ----		
Site	: ----		
Quote number	: VA2020-CAEG100-005		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
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Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
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Xihua Yao	Laboratory Analyst	Inorganics, Saskatoon, Saskatchewan

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percentage Difference
# = Indicates a QC result that did not meet the ALS DQO.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test specific).

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 257205)											
WR2100901-001	ENS21-SUB07	pH	----	E116	0.10	pH units	7.44	7.42	0.269%	5%	----
Physical Tests (QC Lot: 257214)											
VA21B5529-001	Anonymous	moisture	----	E144	0.25	%	27.5	27.7	0.845%	20%	----
Particle Size (QC Lot: 257072)											
WR2100901-001	ENS21-SUB07	clay (<0.002mm)	----	E180A	1.0	%	1.7	1.7	0.0%	20%	----
		sand (2.0mm - 0.05mm)	----	E180A	1.0	%	87.2	87.3	0.1%	20%	----
		silt (0.05mm - 0.002mm)	----	E180A	1.0	%	11.2	11.0	1.7%	20%	----
Organic / Inorganic Carbon (QC Lot: 257128)											
VA21B5690-001	Anonymous	carbon, inorganic [IC]	----	E354	0.050	%	0.080	0.080	0.0004	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 258043)											
VA21B5690-001	Anonymous	carbon, total [TC]	----	E351	0.050	%	0.252	0.228	0.024	Diff <2x LOR	----
Plant Available Nutrients (QC Lot: 257051)											
VA21B5540-001	Anonymous	potassium, available	7440-09-7	E390	397	mg/kg	8110	7300	10.5%	30%	----
Plant Available Nutrients (QC Lot: 257052)											
VA21B5540-001	Anonymous	phosphate, available (as P)	14265-44-2	E384	99.2	mg/kg	847	809	4.53%	30%	----
Plant Available Nutrients (QC Lot: 257074)											
WR2100901-002	ENS21-SUB03	sulfate, available (as S)	14808-79-8	E497.SO4	3.0	mg/kg	19.6	19.7	0.06	Diff <2x LOR	----
Plant Available Nutrients (QC Lot: 257075)											
WR2100901-002	ENS21-SUB03	nitrate + nitrite, available (as N)	----	E269.N+N	1.0	mg/kg	1.3	1.2	0.03	Diff <2x LOR	----
Plant Available Nutrients (QC Lot: 257076)											
WR2100901-002	ENS21-SUB03	nitrite, available (as N)	14797-65-0	E269.NO2	0.40	mg/kg	<0.40	<0.40	0	Diff <2x LOR	----
Plant Available Nutrients (QC Lot: 257267)											
WR2100901-002	ENS21-SUB03	cation exchange capacity	----	E407	0.80	meq/100g	1.34	1.47	0.12	Diff <2x LOR	----
Saturated Paste Extractables (QC Lot: 255831)											
WR2100901-001	ENS21-SUB07	sulfate, soluble ion content	14808-79-8	E239.SO4	50.0	mg/L	<50.0	<50.0	0	Diff <2x LOR	----
Saturated Paste Extractables (QC Lot: 255832)											
WR2100901-001	ENS21-SUB07	nitrate (as N), soluble ion content	14797-55-8	E239.NO3	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----
Saturated Paste Extractables (QC Lot: 255833)											
WR2100901-001	ENS21-SUB07	chloride, soluble ion content	16887-00-6	E239.Cl	20.0	mg/L	<20.0	<20.0	0	Diff <2x LOR	----
Saturated Paste Extractables (QC Lot: 255834)											
WR2100901-001	ENS21-SUB07	% saturation	----	E141	1.0	%	27.6	26.8	2.72%	20%	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Saturated Paste Extractables (QC Lot: 255835)											
WR2100901-001	ENS21-SUB07	pH, saturated paste	----	E114	0.10	pH units	8.03	8.25	2.70%	5%	----
Saturated Paste Extractables (QC Lot: 255836)											
WR2100901-001	ENS21-SUB07	conductivity, saturated paste	----	E102	0.030	µS/cm	0.108 dS/m	110	2	Diff <2x LOR	----
Saturated Paste Extractables (QC Lot: 255837)											
WR2100901-001	ENS21-SUB07	alkalinity, total (as CaCO3)	----	E293	50	mg/L	<50	<50	0	Diff <2x LOR	----
Saturated Paste Extractables (QC Lot: 255838)											
WR2100901-001	ENS21-SUB07	calcium, soluble ion content	7440-70-2	E442	0.60	mg/L	10.8	12.6	15.3%	30%	----
		magnesium, soluble ion content	7439-95-4	E442	1.0	mg/L	3.6	4.3	0.7	Diff <2x LOR	----
		potassium, soluble ion content	7440-09-7	E442	4.0	mg/L	<4.0	<4.0	0	Diff <2x LOR	----
		sodium, soluble ion content	17341-25-2	E442	2.0	mg/L	<2.0	<2.0	0	Diff <2x LOR	----
Metals (QC Lot: 255826)											
VA21B5548-008	Anonymous	aluminum	7429-90-5	E440	50	mg/kg	18800	26800	35.1%	40%	----
		antimony	7440-36-0	E440	0.10	mg/kg	0.23	0.41	0.18	Diff <2x LOR	----
		arsenic	7440-38-2	E440	0.10	mg/kg	2.59	3.44	28.3%	30%	----
		barium	7440-39-3	E440	0.50	mg/kg	59.7	85.0	35.0%	40%	----
		beryllium	7440-41-7	E440	0.10	mg/kg	0.20	0.28	0.08	Diff <2x LOR	----
		bismuth	7440-69-9	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		boron	7440-42-8	E440	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
		cadmium	7440-43-9	E440	0.020	mg/kg	0.084	# 0.172	0.088	Diff <2x LOR	DUP-H
		calcium	7440-70-2	E440	50	mg/kg	2610	3320	24.0%	30%	----
		chromium	7440-47-3	E440	0.50	mg/kg	9.76	14.5	39.4%	30%	DUP-H
		cobalt	7440-48-4	E440	0.10	mg/kg	5.46	6.46	16.8%	30%	----
		copper	7440-50-8	E440	0.50	mg/kg	15.4	22.8	38.9%	30%	DUP-H
		iron	7439-89-6	E440	50	mg/kg	15900	20600	26.0%	30%	----
		lead	7439-92-1	E440	0.50	mg/kg	9.36	10.9	15.5%	40%	----
		lithium	7439-93-2	E440	2.0	mg/kg	6.1	7.5	1.4	Diff <2x LOR	----
		magnesium	7439-95-4	E440	20	mg/kg	4850	6160	23.8%	30%	----
		manganese	7439-96-5	E440	1.0	mg/kg	288	363	23.1%	30%	----
		molybdenum	7439-98-7	E440	0.10	mg/kg	0.82	1.09	28.2%	40%	----
		nickel	7440-02-0	E440	0.50	mg/kg	6.92	8.72	23.1%	30%	----
		phosphorus	7723-14-0	E440	50	mg/kg	352	464	27.6%	30%	----
		potassium	7440-09-7	E440	100	mg/kg	880	1160	26.4%	40%	----
		selenium	7782-49-2	E440	0.20	mg/kg	0.26	0.38	0.12	Diff <2x LOR	----
		silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		sodium	7440-23-5	E440	50	mg/kg	215	252	37	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 255826) - continued											
VA21B5548-008	Anonymous	strontium	7440-24-6	E440	0.50	mg/kg	22.6	31.5	32.8%	40%	----
		sulfur	7704-34-9	E440	1000	mg/kg	<1000	<1000	0	Diff <2x LOR	----
		thallium	7440-28-0	E440	0.050	mg/kg	0.059	0.070	0.010	Diff <2x LOR	----
		tin	7440-31-5	E440	2.0	mg/kg	<2.0	<2.0	0	Diff <2x LOR	----
		titanium	7440-32-6	E440	1.0	mg/kg	818	1060	26.3%	40%	----
		tungsten	7440-33-7	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		uranium	7440-61-1	E440	0.050	mg/kg	0.343	0.489	34.9%	30%	DUP-H
		vanadium	7440-62-2	E440	0.20	mg/kg	45.2	59.4	27.1%	30%	----
		zinc	7440-66-6	E440	2.0	mg/kg	87.0	371	124%	30%	DUP-H
		zirconium	7440-67-7	E440	1.0	mg/kg	<1.0	1.1	0.10	Diff <2x LOR	----
Leachable Anions & Nutrients (QC Lot: 257203)											
WR2100901-001	ENS21-SUB07	alkalinity, total (as CaCO3), leachable	----	E294	1.0	mg/L	14.8	13.9	6.27%	25%	----
Leachable Anions & Nutrients (QC Lot: 257206)											
WR2100901-001	ENS21-SUB07	acidity, leachable (as CaCO3)	----	E285	4.0	mg/L	<4.0	<4.0	0	Diff <2x LOR	----
Leachable Anions & Nutrients (QC Lot: 257207)											
WR2100901-001	ENS21-SUB07	sulfate, leachable	14808-79-8	E243.SO4	0.50	mg/L	1.64	1.59	0.05	Diff <2x LOR	----
Leachable Anions & Nutrients (QC Lot: 257208)											
WR2100901-001	ENS21-SUB07	nitrate (as N), leachable	14797-55-8	E243.NO3	0.0050	mg/L	0.103	0.103	0.498%	30%	----
Leachable Anions & Nutrients (QC Lot: 257209)											
WR2100901-001	ENS21-SUB07	nitrite (as N), leachable	14797-65-0	E243.NO2	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Leachable Anions & Nutrients (QC Lot: 257210)											
WR2100901-001	ENS21-SUB07	fluoride, leachable	16984-48-8	E243.F	0.020	mg/L	0.118	0.120	0.002	Diff <2x LOR	----
Leachable Anions & Nutrients (QC Lot: 257211)											
WR2100901-001	ENS21-SUB07	chloride, leachable	16887-00-6	E243.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Leachable Anions & Nutrients (QC Lot: 257212)											
WR2100901-001	ENS21-SUB07	bromide, leachable	24959-67-9	E243.Br	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Leachable Metals (QC Lot: 257213)											
WR2100901-001	ENS21-SUB07	aluminum, leachable	7429-90-5	E446	0.0050	mg/L	0.312	0.313	0.394%	30%	----
		antimony, leachable	7440-36-0	E446	0.00010	mg/L	0.00225	0.00242	6.96%	30%	----
		arsenic, leachable	7440-38-2	E446	0.0010	mg/L	0.0044	0.0042	0.0002	Diff <2x LOR	----
		barium, leachable	7440-39-3	E446	0.0010	mg/L	0.0169	0.0178	5.20%	30%	----
		beryllium, leachable	7440-41-7	E446	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		bismuth, leachable	7440-69-9	E446	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		boron, leachable	7440-42-8	E446	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, leachable	7440-43-9	E446	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Leachable Metals (QC Lot: 257213) - continued											
WR2100901-001	ENS21-SUB07	calcium, leachable	7440-70-2	E446	0.10	mg/L	4.08	3.87	5.29%	30%	----
		chromium, leachable	7440-47-3	E446	0.00050	mg/L	0.00059	0.00065	0.00006	Diff <2x LOR	----
		cobalt, leachable	7440-48-4	E446	0.00010	mg/L	0.00030	0.00034	0.00003	Diff <2x LOR	----
		copper, leachable	7440-50-8	E446	0.0010	mg/L	0.0013	0.0014	0.00007	Diff <2x LOR	----
		iron, leachable	7439-89-6	E446	0.030	mg/L	0.676	0.707	4.58%	40%	----
		lead, leachable	7439-92-1	E446	0.00010	mg/L	0.00082	0.00087	5.61%	30%	----
		lithium, leachable	7439-93-2	E446	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		magnesium, leachable	7439-95-4	E446	0.050	mg/L	1.18	1.17	0.501%	30%	----
		manganese, leachable	7439-96-5	E446	0.00050	mg/L	0.0148	0.0155	4.59%	30%	----
		molybdenum, leachable	7439-98-7	E446	0.00010	mg/L	0.00094	0.00096	1.57%	30%	----
		nickel, leachable	7440-02-0	E446	0.00050	mg/L	0.00096	0.00095	0.000009	Diff <2x LOR	----
		phosphorus, leachable	7723-14-0	E446	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	----
		potassium, leachable	7440-09-7	E446	0.050	mg/L	0.832	0.845	1.53%	30%	----
		selenium, leachable	7782-49-2	E446	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		silicon, leachable	7440-21-3	E446	0.050	mg/L	1.61	1.65	2.50%	40%	----
		silver, leachable	7440-22-4	E446	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		sodium, leachable	7440-23-5	E446	0.050	mg/L	0.257	0.254	0.002	Diff <2x LOR	----
		strontium, leachable	7440-24-6	E446	0.00050	mg/L	0.0240	0.0218	9.59%	30%	----
		sulfur, leachable	7704-34-9	E446	0.50	mg/L	0.59	0.66	0.07	Diff <2x LOR	----
		thallium, leachable	7440-28-0	E446	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, leachable	7440-31-5	E446	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		titanium, leachable	7440-32-6	E446	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		uranium, leachable	7440-61-1	E446	0.000010	mg/L	0.000029	0.000029	0.0000008	Diff <2x LOR	----
		vanadium, leachable	7440-62-2	E446	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		zinc, leachable	7440-66-6	E446	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----

Qualifiers

Qualifier	*Description*
DUP-H	*Duplicate results outside ALS DQO, due to sample heterogeneity.*

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 257204)						
conductivity, leachable	----	E103	2	µS/cm	<2.0	----
Physical Tests (QCLot: 257214)						
moisture	----	E144	0.25	%	<0.25	----
Organic / Inorganic Carbon (QCLot: 257128)						
carbon, inorganic [IC]	----	E354	0.05	%	<0.050	----
Organic / Inorganic Carbon (QCLot: 258043)						
carbon, total [TC]	----	E351	0.05	%	<0.050	----
Plant Available Nutrients (QCLot: 257051)						
potassium, available	7440-09-7	E390	20	mg/kg	<20	----
Plant Available Nutrients (QCLot: 257052)						
phosphate, available (as P)	14265-44-2	E384	2	mg/kg	<2.0	----
Plant Available Nutrients (QCLot: 257074)						
sulfate, available (as S)	14808-79-8	E497.SO4	3	mg/kg	<3.0	----
Plant Available Nutrients (QCLot: 257075)						
nitrate + nitrite, available (as N)	----	E269.N+N	1	mg/kg	<1.0	----
Plant Available Nutrients (QCLot: 257076)						
nitrite, available (as N)	14797-65-0	E269.NO2	0.4	mg/kg	<0.40	----
Plant Available Nutrients (QCLot: 257267)						
cation exchange capacity	----	E407	0.8	meq/100g	<0.80	----
Saturated Paste Extractables (QCLot: 255831)						
sulfate, soluble ion content	14808-79-8	E239.SO4	5	mg/L	<5.0	----
Saturated Paste Extractables (QCLot: 255832)						
nitrate (as N), soluble ion content	14797-55-8	E239.NO3	0.5	mg/L	<0.5	----
Saturated Paste Extractables (QCLot: 255833)						
chloride, soluble ion content	16887-00-6	E239.Cl	2	mg/L	<2.0	----
Saturated Paste Extractables (QCLot: 255834)						
% saturation	----	E141	1	%	50.0	----
Saturated Paste Extractables (QCLot: 255836)						
conductivity, saturated paste	----	E102	10	µS/cm	<10	----
Saturated Paste Extractables (QCLot: 255837)						
alkalinity, total (as CaCO3)	----	E293	10	mg/L	<12	----
Saturated Paste Extractables (QCLot: 255838)						
calcium, soluble ion content	7440-70-2	E442	0.6	mg/L	<0.60	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Saturated Paste Extractables (QCLot: 255838) - continued						
magnesium, soluble ion content	7439-95-4	E442	1	mg/L	<1.0	----
potassium, soluble ion content	7440-09-7	E442	4	mg/L	<4.0	----
sodium, soluble ion content	17341-25-2	E442	2	mg/L	<2.0	----
Metals (QCLot: 255826)						
aluminum	7429-90-5	E440	50	mg/kg	<50	----
antimony	7440-36-0	E440	0.1	mg/kg	<0.10	----
arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	----
barium	7440-39-3	E440	0.5	mg/kg	<0.50	----
beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	----
bismuth	7440-69-9	E440	0.2	mg/kg	<0.20	----
boron	7440-42-8	E440	5	mg/kg	<5.0	----
cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	----
calcium	7440-70-2	E440	50	mg/kg	<50	----
chromium	7440-47-3	E440	0.5	mg/kg	<0.50	----
cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	----
copper	7440-50-8	E440	0.5	mg/kg	<0.50	----
iron	7439-89-6	E440	50	mg/kg	<50	----
lead	7439-92-1	E440	0.5	mg/kg	<0.50	----
lithium	7439-93-2	E440	2	mg/kg	<2.0	----
magnesium	7439-95-4	E440	20	mg/kg	<20	----
manganese	7439-96-5	E440	1	mg/kg	<1.0	----
molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	----
nickel	7440-02-0	E440	0.5	mg/kg	<0.50	----
phosphorus	7723-14-0	E440	50	mg/kg	<50	----
potassium	7440-09-7	E440	100	mg/kg	<100	----
selenium	7782-49-2	E440	0.2	mg/kg	<0.20	----
silver	7440-22-4	E440	0.1	mg/kg	<0.10	----
sodium	7440-23-5	E440	50	mg/kg	<50	----
strontium	7440-24-6	E440	0.5	mg/kg	<0.50	----
sulfur	7704-34-9	E440	1000	mg/kg	<1000	----
thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----
tin	7440-31-5	E440	2	mg/kg	<2.0	----
titanium	7440-32-6	E440	1	mg/kg	<1.0	----
tungsten	7440-33-7	E440	0.5	mg/kg	<0.50	----
uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----
vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 255826) - continued						
zinc	7440-66-6	E440	2	mg/kg	<2.0	----
zirconium	7440-67-7	E440	1	mg/kg	<1.0	----
Leachable Anions & Nutrients (QCLot: 257203)						
alkalinity, total (as CaCO3), leachable	----	E294	1	mg/L	<1.0	----
Leachable Anions & Nutrients (QCLot: 257206)						
acidity, leachable (as CaCO3)	----	E285	4	mg/L	<4.0	----
Leachable Anions & Nutrients (QCLot: 257207)						
sulfate, leachable	14808-79-8	E243.SO4	0.5	mg/L	<0.50	----
Leachable Anions & Nutrients (QCLot: 257208)						
nitrate (as N), leachable	14797-55-8	E243.NO3	0.005	mg/L	<0.0050	----
Leachable Anions & Nutrients (QCLot: 257209)						
nitrite (as N), leachable	14797-65-0	E243.NO2	0.001	mg/L	<0.0010	----
Leachable Anions & Nutrients (QCLot: 257210)						
fluoride, leachable	16984-48-8	E243.F	0.02	mg/L	<0.020	----
Leachable Anions & Nutrients (QCLot: 257211)						
chloride, leachable	16887-00-6	E243.Cl	0.5	mg/L	<0.50	----
Leachable Anions & Nutrients (QCLot: 257212)						
bromide, leachable	24959-67-9	E243.Br	0.05	mg/L	<0.050	----
Leachable Metals (QCLot: 257213)						
aluminum, leachable	7429-90-5	E446	0.005	mg/L	<0.0050	----
antimony, leachable	7440-36-0	E446	0.0001	mg/L	<0.00010	----
arsenic, leachable	7440-38-2	E446	0.001	mg/L	<0.0010	----
barium, leachable	7440-39-3	E446	0.001	mg/L	<0.0010	----
beryllium, leachable	7440-41-7	E446	0.0005	mg/L	<0.00050	----
bismuth, leachable	7440-69-9	E446	0.0005	mg/L	<0.00050	----
boron, leachable	7440-42-8	E446	0.01	mg/L	<0.010	----
cadmium, leachable	7440-43-9	E446	0.00005	mg/L	<0.000050	----
calcium, leachable	7440-70-2	E446	0.1	mg/L	<0.10	----
chromium, leachable	7440-47-3	E446	0.0005	mg/L	<0.00050	----
cobalt, leachable	7440-48-4	E446	0.0001	mg/L	<0.00010	----
copper, leachable	7440-50-8	E446	0.001	mg/L	<0.0010	----
iron, leachable	7439-89-6	E446	0.03	mg/L	<0.030	----
lead, leachable	7439-92-1	E446	0.0001	mg/L	<0.00010	----
lithium, leachable	7439-93-2	E446	0.005	mg/L	<0.0050	----
magnesium, leachable	7439-95-4	E446	0.05	mg/L	<0.050	----
manganese, leachable	7439-96-5	E446	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Leachable Metals (QCLot: 257213) - continued						
molybdenum, leachable	7439-98-7	E446	0.0001	mg/L	<0.00010	----
nickel, leachable	7440-02-0	E446	0.0005	mg/L	<0.00050	----
phosphorus, leachable	7723-14-0	E446	0.3	mg/L	<0.30	----
potassium, leachable	7440-09-7	E446	0.05	mg/L	<0.050	----
selenium, leachable	7782-49-2	E446	0.0005	mg/L	<0.00050	----
silicon, leachable	7440-21-3	E446	0.05	mg/L	<0.050	----
silver, leachable	7440-22-4	E446	0.00005	mg/L	<0.000050	----
sodium, leachable	7440-23-5	E446	0.05	mg/L	<0.050	----
strontium, leachable	7440-24-6	E446	0.0005	mg/L	<0.00050	----
sulfur, leachable	7704-34-9	E446	0.5	mg/L	<0.50	----
thallium, leachable	7440-28-0	E446	0.0001	mg/L	<0.00010	----
tin, leachable	7440-31-5	E446	0.0005	mg/L	<0.00050	----
titanium, leachable	7440-32-6	E446	0.01	mg/L	<0.010	----
uranium, leachable	7440-61-1	E446	0.00001	mg/L	<0.000010	----
vanadium, leachable	7440-62-2	E446	0.001	mg/L	<0.0010	----
zinc, leachable	7440-66-6	E446	0.01	mg/L	<0.010	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 257204)									
conductivity, leachable	----	E103	2	µS/cm	146.9 µS/cm	99.9	90.0	110	----
Physical Tests (QCLot: 257205)									
pH	----	E116	----	pH units	7.04 pH units	99.1	95.0	105	----
Physical Tests (QCLot: 257214)									
moisture	----	E144	0.25	%	50 %	100.0	90.0	110	----
Organic / Inorganic Carbon (QCLot: 257128)									
carbon, inorganic [IC]	----	E354	0.05	%	0.5 %	95.1	90.0	110	----
Organic / Inorganic Carbon (QCLot: 258043)									
carbon, total [TC]	----	E351	0.05	%	48 %	103	90.0	110	----
Plant Available Nutrients (QCLot: 257051)									
potassium, available	7440-09-7	E390	20	mg/kg	125 mg/kg	92.2	70.0	130	----
Plant Available Nutrients (QCLot: 257052)									
phosphate, available (as P)	14265-44-2	E384	2	mg/kg	12.5 mg/kg	91.6	80.0	120	----
Plant Available Nutrients (QCLot: 257074)									
sulfate, available (as S)	14808-79-8	E497.SO4	3	mg/kg	200 mg/kg	101	70.0	130	----
Plant Available Nutrients (QCLot: 257075)									
nitrate + nitrite, available (as N)	----	E269.N+N	1	mg/kg	40 mg/kg	103	70.0	130	----
Plant Available Nutrients (QCLot: 257076)									
nitrite, available (as N)	14797-65-0	E269.NO2	0.4	mg/kg	20 mg/kg	99.9	70.0	130	----
Plant Available Nutrients (QCLot: 257267)									
cation exchange capacity	----	E407	0.8	meq/100g	17.9 meq/100g	95.8	80.0	120	----
Saturated Paste Extractables (QCLot: 255831)									
sulfate, soluble ion content	14808-79-8	E239.SO4	5	mg/L	100 mg/L	102	80.0	120	----
Saturated Paste Extractables (QCLot: 255832)									
nitrate (as N), soluble ion content	14797-55-8	E239.NO3	0.5	mg/L	2.5 mg/L	100	80.0	120	----
Saturated Paste Extractables (QCLot: 255833)									
chloride, soluble ion content	16887-00-6	E239.Cl	2	mg/L	100 mg/L	101	80.0	120	----
Saturated Paste Extractables (QCLot: 255834)									
% saturation	----	E141	1	%	100 %	97.5	80.0	120	----
Saturated Paste Extractables (QCLot: 255835)									
pH, saturated paste	----	E114	----	pH units	6 pH units	99.8	95.0	105	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Saturated Paste Extractables (QCLot: 255836)									
conductivity, saturated paste	----	E102	10	µS/cm	146.9 µS/cm	102	80.0	120	----
Saturated Paste Extractables (QCLot: 255837)									
alkalinity, total (as CaCO3)	----	E293	10	mg/L	500 mg/L	101	85.0	115	----
Saturated Paste Extractables (QCLot: 255838)									
calcium, soluble ion content	7440-70-2	E442	0.6	mg/L	50 mg/L	108	80.0	120	----
magnesium, soluble ion content	7439-95-4	E442	1	mg/L	50 mg/L	104	80.0	120	----
potassium, soluble ion content	7440-09-7	E442	4	mg/L	50 mg/L	106	80.0	120	----
sodium, soluble ion content	17341-25-2	E442	2	mg/L	50 mg/L	112	80.0	120	----
Metals (QCLot: 255826)									
aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	105	80.0	120	----
antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	102	80.0	120	----
arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	104	80.0	120	----
barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	107	80.0	120	----
beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	98.3	80.0	120	----
bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	95.6	80.0	120	----
boron	7440-42-8	E440	5	mg/kg	100 mg/kg	97.4	80.0	120	----
cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	102	80.0	120	----
calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	101	80.0	120	----
chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	103	80.0	120	----
cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	102	80.0	120	----
copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	99.6	80.0	120	----
iron	7439-89-6	E440	50	mg/kg	100 mg/kg	100	80.0	120	----
lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	98.3	80.0	120	----
lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	99.5	80.0	120	----
magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	105	80.0	120	----
manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	102	80.0	120	----
molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	107	80.0	120	----
nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	98.2	80.0	120	----
phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	97.8	80.0	120	----
potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	103	80.0	120	----
selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	99.1	80.0	120	----
silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	106	80.0	120	----
sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	104	80.0	120	----
strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	111	80.0	120	----
sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	107	80.0	120	----
thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	91.9	80.0	120	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 255826) - continued									
tin	7440-31-5	E440	2	mg/kg	50 mg/kg	104	80.0	120	----
titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	101	80.0	120	----
tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	96.0	80.0	120	----
uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	108	80.0	120	----
vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	105	80.0	120	----
zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	98.2	80.0	120	----
zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	106	80.0	120	----
Leachable Anions & Nutrients (QCLot: 257203)									
alkalinity, total (as CaCO3), leachable	----	E294	1	mg/L	500 mg/L	102	85.0	115	----
Leachable Anions & Nutrients (QCLot: 257206)									
acidity, leachable (as CaCO3)	----	E285	4	mg/L	50 mg/L	106	85.0	115	----
Leachable Anions & Nutrients (QCLot: 257207)									
sulfate, leachable	14808-79-8	E243.SO4	0.5	mg/L	25 mg/L	104	70.0	130	----
Leachable Anions & Nutrients (QCLot: 257208)									
nitrate (as N), leachable	14797-55-8	E243.NO3	0.005	mg/L	0.625 mg/L	102	70.0	130	----
Leachable Anions & Nutrients (QCLot: 257209)									
nitrite (as N), leachable	14797-65-0	E243.NO2	0.001	mg/L	0.125 mg/L	101	70.0	130	----
Leachable Anions & Nutrients (QCLot: 257210)									
fluoride, leachable	16984-48-8	E243.F	0.02	mg/L	0.25 mg/L	100	70.0	130	----
Leachable Anions & Nutrients (QCLot: 257211)									
chloride, leachable	16887-00-6	E243.Cl	0.5	mg/L	25 mg/L	102	70.0	130	----
Leachable Anions & Nutrients (QCLot: 257212)									
bromide, leachable	24959-67-9	E243.Br	0.05	mg/L	0.125 mg/L	97.2	70.0	130	----
Leachable Metals (QCLot: 257213)									
aluminum, leachable	7429-90-5	E446	0.005	mg/L	0.2 mg/L	103	70.0	130	----
antimony, leachable	7440-36-0	E446	0.0001	mg/L	0.1 mg/L	111	70.0	130	----
arsenic, leachable	7440-38-2	E446	0.001	mg/L	0.1 mg/L	102	70.0	130	----
barium, leachable	7440-39-3	E446	0.001	mg/L	0.025 mg/L	107	70.0	130	----
beryllium, leachable	7440-41-7	E446	0.0005	mg/L	0.01 mg/L	93.7	70.0	130	----
bismuth, leachable	7440-69-9	E446	0.0005	mg/L	0.1 mg/L	90.8	70.0	130	----
boron, leachable	7440-42-8	E446	0.01	mg/L	0.1 mg/L	95.9	70.0	130	----
cadmium, leachable	7440-43-9	E446	0.00005	mg/L	0.01 mg/L	103	70.0	130	----
calcium, leachable	7440-70-2	E446	0.1	mg/L	5 mg/L	97.8	70.0	130	----
chromium, leachable	7440-47-3	E446	0.0005	mg/L	0.025 mg/L	100	70.0	130	----
cobalt, leachable	7440-48-4	E446	0.0001	mg/L	0.025 mg/L	102	70.0	130	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Leachable Metals (QCLot: 257213) - continued									
copper, leachable	7440-50-8	E446	0.001	mg/L	0.025 mg/L	100	70.0	130	----
iron, leachable	7439-89-6	E446	0.03	mg/L	0.1 mg/L	95.1	70.0	130	----
lead, leachable	7439-92-1	E446	0.0001	mg/L	0.05 mg/L	95.1	70.0	130	----
lithium, leachable	7439-93-2	E446	0.005	mg/L	0.025 mg/L	100	70.0	130	----
magnesium, leachable	7439-95-4	E446	0.05	mg/L	5 mg/L	102	70.0	130	----
manganese, leachable	7439-96-5	E446	0.0005	mg/L	0.025 mg/L	97.8	70.0	130	----
molybdenum, leachable	7439-98-7	E446	0.0001	mg/L	0.025 mg/L	107	70.0	130	----
nickel, leachable	7440-02-0	E446	0.0005	mg/L	0.05 mg/L	99.0	70.0	130	----
phosphorus, leachable	7723-14-0	E446	0.3	mg/L	1 mg/L	110	70.0	130	----
potassium, leachable	7440-09-7	E446	0.05	mg/L	5 mg/L	102	70.0	130	----
selenium, leachable	7782-49-2	E446	0.0005	mg/L	0.1 mg/L	104	70.0	130	----
silicon, leachable	7440-21-3	E446	0.05	mg/L	1 mg/L	100	70.0	130	----
silver, leachable	7440-22-4	E446	0.00005	mg/L	0.01 mg/L	103	70.0	130	----
sodium, leachable	7440-23-5	E446	0.05	mg/L	5 mg/L	98.6	70.0	130	----
strontium, leachable	7440-24-6	E446	0.0005	mg/L	0.025 mg/L	108	70.0	130	----
sulfur, leachable	7704-34-9	E446	0.5	mg/L	5 mg/L	104	70.0	130	----
thallium, leachable	7440-28-0	E446	0.0001	mg/L	0.11 mg/L	89.9	70.0	130	----
tin, leachable	7440-31-5	E446	0.0005	mg/L	0.05 mg/L	102	70.0	130	----
titanium, leachable	7440-32-6	E446	0.01	mg/L	0.025 mg/L	98.0	70.0	130	----
uranium, leachable	7440-61-1	E446	0.00001	mg/L	0.0005 mg/L	97.7	70.0	130	----
vanadium, leachable	7440-62-2	E446	0.001	mg/L	0.05 mg/L	102	70.0	130	----
zinc, leachable	7440-66-6	E446	0.01	mg/L	0.05 mg/L	104	70.0	130	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Leachable Anions & Nutrients (QCLot: 257207)										
WR2100901-002	ENS21-SUB03	sulfate, leachable	14808-79-8	E243.SO4	106 mg/L	100 mg/L	106	60.0	140	----
Leachable Anions & Nutrients (QCLot: 257208)										
WR2100901-002	ENS21-SUB03	nitrate (as N), leachable	14797-55-8	E243.NO3	2.61 mg/L	2.5 mg/L	104	60.0	140	----
Leachable Anions & Nutrients (QCLot: 257209)										
WR2100901-002	ENS21-SUB03	nitrite (as N), leachable	14797-65-0	E243.NO2	0.527 mg/L	0.5 mg/L	105	60.0	140	----
Leachable Anions & Nutrients (QCLot: 257210)										
WR2100901-002	ENS21-SUB03	fluoride, leachable	16984-48-8	E243.F	1.07 mg/L	1 mg/L	107	60.0	140	----
Leachable Anions & Nutrients (QCLot: 257211)										
WR2100901-002	ENS21-SUB03	chloride, leachable	16887-00-6	E243.Cl	105 mg/L	100 mg/L	105	60.0	140	----
Leachable Anions & Nutrients (QCLot: 257212)										
WR2100901-002	ENS21-SUB03	bromide, leachable	24959-67-9	E243.Br	0.501 mg/L	0.5 mg/L	100	60.0	140	----
Leachable Metals (QCLot: 257213)										
WR2100901-002	ENS21-SUB03	aluminum, leachable	7429-90-5	E446	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, leachable	7440-36-0	E446	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		arsenic, leachable	7440-38-2	E446	ND mg/L	0.02 mg/L	ND	70.0	130	----
		barium, leachable	7440-39-3	E446	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		beryllium, leachable	7440-41-7	E446	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		bismuth, leachable	7440-69-9	E446	0.00984 mg/L	0.01 mg/L	98.4	70.0	130	----
		boron, leachable	7440-42-8	E446	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		cadmium, leachable	7440-43-9	E446	0.00397 mg/L	0.004 mg/L	99.2	70.0	130	----
		calcium, leachable	7440-70-2	E446	ND mg/L	4 mg/L	ND	70.0	130	----
		chromium, leachable	7440-47-3	E446	0.0397 mg/L	0.04 mg/L	99.2	70.0	130	----
		cobalt, leachable	7440-48-4	E446	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		copper, leachable	7440-50-8	E446	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		iron, leachable	7439-89-6	E446	1.91 mg/L	2 mg/L	95.4	70.0	130	----
		lead, leachable	7439-92-1	E446	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		lithium, leachable	7439-93-2	E446	0.0995 mg/L	0.1 mg/L	99.5	70.0	130	----
		magnesium, leachable	7439-95-4	E446	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, leachable	7439-96-5	E446	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, leachable	7439-98-7	E446	0.0194 mg/L	0.02 mg/L	97.3	70.0	130	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Leachable Metals (QCLot: 257213) - continued										
WR2100901-002	ENS21-SUB03	nickel, leachable	7440-02-0	E446	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		phosphorus, leachable	7723-14-0	E446	10.2 mg/L	10 mg/L	102	70.0	130	----
		potassium, leachable	7440-09-7	E446	4.36 mg/L	4 mg/L	109	70.0	130	----
		selenium, leachable	7782-49-2	E446	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		silicon, leachable	7440-21-3	E446	9.63 mg/L	10 mg/L	96.3	70.0	130	----
		silver, leachable	7440-22-4	E446	0.00380 mg/L	0.004 mg/L	94.9	70.0	130	----
		sodium, leachable	7440-23-5	E446	1.93 mg/L	2 mg/L	96.3	70.0	130	----
		strontium, leachable	7440-24-6	E446	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, leachable	7704-34-9	E446	19.3 mg/L	20 mg/L	96.6	70.0	130	----
		thallium, leachable	7440-28-0	E446	0.00386 mg/L	0.004 mg/L	96.4	70.0	130	----
		tin, leachable	7440-31-5	E446	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		titanium, leachable	7440-32-6	E446	0.040 mg/L	0.04 mg/L	101	70.0	130	----
		uranium, leachable	7440-61-1	E446	0.00372 mg/L	0.004 mg/L	92.9	70.0	130	----
		vanadium, leachable	7440-62-2	E446	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, leachable	7440-66-6	E446	0.418 mg/L	0.4 mg/L	104	70.0	130	----

Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix: **Soil/Solid**

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Particle Size (QCLot: 257072)									
QC-257072-001	RM	clay (<0.002mm)	----	E180A	19.34 %	102	74.0	126	----
QC-257072-001	RM	sand (2.0mm - 0.05mm)	----	E180A	50.71 %	98.3	90.0	110	----
QC-257072-001	RM	silt (0.05mm - 0.002mm)	----	E180A	29.96 %	102	85.0	115	----
Organic / Inorganic Carbon (QCLot: 257128)									
QC-257128-003	RM	carbon, inorganic [IC]	----	E354	0.383 %	101	80.0	120	----
Organic / Inorganic Carbon (QCLot: 258043)									
QC-258043-003	RM	carbon, total [TC]	----	E351	1.4 %	106	80.0	120	----
Plant Available Nutrients (QCLot: 257051)									
QC-257051-003	RM	potassium, available	7440-09-7	E390	154 mg/kg	98.2	70.0	130	----
Plant Available Nutrients (QCLot: 257052)									
QC-257052-003	RM	phosphate, available (as P)	14265-44-2	E384	10.47 mg/kg	96.0	80.0	120	----
Plant Available Nutrients (QCLot: 257074)									
QC-257074-003	RM	sulfate, available (as S)	14808-79-8	E497.SO4	497 mg/kg	102	70.0	130	----
Plant Available Nutrients (QCLot: 257075)									
QC-257075-003	RM	nitrate + nitrite, available (as N)	----	E269.N+N	18.9 mg/kg	95.8	70.0	130	----
Plant Available Nutrients (QCLot: 257076)									
QC-257076-003	RM	nitrite, available (as N)	14797-65-0	E269.NO2	0.17 mg/kg	36.3	----	----	----
Plant Available Nutrients (QCLot: 257267)									
QC-257267-003	RM	cation exchange capacity	----	E407	17.2 meq/100g	84.4	70.0	130	----
Saturated Paste Extractables (QCLot: 255831)									
QC-255831-003	RM	sulfate, soluble ion content	14808-79-8	E239.SO4	2600 mg/L	90.2	70.0	130	----
Saturated Paste Extractables (QCLot: 255833)									
QC-255833-003	RM	chloride, soluble ion content	16887-00-6	E239.Cl	994 mg/L	97.9	70.0	130	----
Saturated Paste Extractables (QCLot: 255834)									
QC-255834-003	RM	% saturation	----	E141	50.2 %	95.2	70.0	130	----
Saturated Paste Extractables (QCLot: 255835)									
QC-255835-002	RM	pH, saturated paste	----	E114	7.31 pH units	100	95.0	105	----
Saturated Paste Extractables (QCLot: 255836)									
QC-255836-003	RM	conductivity, saturated paste	----	E102	6560 µS/cm	101	70.0	130	----
Saturated Paste Extractables (QCLot: 255838)									

Sub-Matrix: **Soil/Solid**

Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Reference Material (RM) Report: RM Target Concentration	Recovery (%): RM	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Saturated Paste Extractables (QCLot: 255838) - continued									
QC-255838-003	RM	calcium, soluble ion content	7440-70-2	E442	640 mg/L	93.3	70.0	130	----
QC-255838-003	RM	magnesium, soluble ion content	7439-95-4	E442	318 mg/L	91.9	70.0	130	----
QC-255838-003	RM	potassium, soluble ion content	7440-09-7	E442	71.4 mg/L	91.8	70.0	130	----
QC-255838-003	RM	sodium, soluble ion content	17341-25-2	E442	610 mg/L	92.6	70.0	130	----
Metals (QCLot: 255826)									
QC-255826-003	SCP SS-2	aluminum	7429-90-5	E440	9817 mg/kg	112	70.0	130	----
QC-255826-003	SCP SS-2	antimony	7440-36-0	E440	3.99 mg/kg	111	70.0	130	----
QC-255826-003	SCP SS-2	arsenic	7440-38-2	E440	3.73 mg/kg	117	70.0	130	----
QC-255826-003	SCP SS-2	barium	7440-39-3	E440	105 mg/kg	107	70.0	130	----
QC-255826-003	SCP SS-2	beryllium	7440-41-7	E440	0.349 mg/kg	107	70.0	130	----
QC-255826-003	SCP SS-2	boron	7440-42-8	E440	8.5 mg/kg	122	40.0	160	----
QC-255826-003	SCP SS-2	cadmium	7440-43-9	E440	0.91 mg/kg	101	70.0	130	----
QC-255826-003	SCP SS-2	calcium	7440-70-2	E440	31082 mg/kg	100.0	70.0	130	----
QC-255826-003	SCP SS-2	chromium	7440-47-3	E440	101 mg/kg	119	70.0	130	----
QC-255826-003	SCP SS-2	cobalt	7440-48-4	E440	6.9 mg/kg	105	70.0	130	----
QC-255826-003	SCP SS-2	copper	7440-50-8	E440	123 mg/kg	105	70.0	130	----
QC-255826-003	SCP SS-2	iron	7439-89-6	E440	23558 mg/kg	106	70.0	130	----
QC-255826-003	SCP SS-2	lead	7439-92-1	E440	267 mg/kg	93.0	70.0	130	----
QC-255826-003	SCP SS-2	lithium	7439-93-2	E440	9.5 mg/kg	98.0	70.0	130	----
QC-255826-003	SCP SS-2	magnesium	7439-95-4	E440	5509 mg/kg	110	70.0	130	----
QC-255826-003	SCP SS-2	manganese	7439-96-5	E440	269 mg/kg	114	70.0	130	----
QC-255826-003	SCP SS-2	molybdenum	7439-98-7	E440	1.03 mg/kg	104	70.0	130	----
QC-255826-003	SCP SS-2	nickel	7440-02-0	E440	26.7 mg/kg	102	70.0	130	----
QC-255826-003	SCP SS-2	phosphorus	7723-14-0	E440	752 mg/kg	94.8	70.0	130	----
QC-255826-003	SCP SS-2	potassium	7440-09-7	E440	1587 mg/kg	123	70.0	130	----
QC-255826-003	SCP SS-2	sodium	7440-23-5	E440	797 mg/kg	110	70.0	130	----
QC-255826-003	SCP SS-2	strontium	7440-24-6	E440	86.1 mg/kg	105	70.0	130	----
QC-255826-003	SCP SS-2	thallium	7440-28-0	E440	0.0786 mg/kg	102	40.0	160	----
QC-255826-003	SCP SS-2	tin	7440-31-5	E440	10.6 mg/kg	102	70.0	130	----
QC-255826-003	SCP SS-2	titanium	7440-32-6	E440	839 mg/kg	123	70.0	130	----
QC-255826-003	SCP SS-2	uranium	7440-61-1	E440	0.52 mg/kg	110	70.0	130	----
QC-255826-003	SCP SS-2	vanadium	7440-62-2	E440	32.7 mg/kg	114	70.0	130	----

Sub-Matrix: **Soil/Solid**

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 255826) - continued									
QC-255826-003	SCP SS-2	zinc	7440-66-6	E440	297 mg/kg	97.2	70.0	130	----
QC-255826-003	SCP SS-2	zirconium	7440-67-7	E440	5.73 mg/kg	116	70.0	130	----

ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: +1 604 984 0221 Fax: +1 604 984 0218
www.alsglobal.com/geochemistry

To: ALS ENVIRONMENTAL
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 28-SEP-2021
Account: APN

CERTIFICATE VA21198390

Project: WR2100901

This report is for 3 samples of Rock submitted to our lab in Vancouver, BC, Canada on 30-JUL-2021.

The following have access to data associated with this certificate:

ALSE VANCOUVER WEBTRIEVE SOFTWARE DEVELOPMENT GROUP	ALSEV DATASUBLET	HEATHER MCKENZIE

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
DISP-01	Disposal of all sample fractions
LOG-21	Sample logging - ClientBarCode
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize up to 250g 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
S-CAL06a	Sulfide Sulfur (calculated*)	
S-GRA06a	Sulfate Sulfur (HCl leachable)	WST-SEQ
C-GAS05	Inorganic Carbon (CO2)	
S-GRA06	Sulfate Sulfur-carbonate leach	WST-SEQ
C-IR06	Non-Carbonate C by HCl Leach, IR Spec	LECO
OA-VOL08m	Modified NP	
S-IR08	Total Sulphur (IR Spectroscopy)	LECO
OA-ELE07	Paste pH	

This is the Final Report and supersedes any preliminary report with this certificate number.Results apply to samples as submitted.All pages of this report have been checked and approved for release.
***** See Appendix Page for comments regarding this certificate *****

Signature:

Saa Traxler, General Manager, North Vancouver

ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 28-SEP-2021
Account: APN

Project: WR2100901

CERTIFICATE OF ANALYSIS VA21198390

Sample Description	Method Analyte Units LOD	WEI-21 Recvd Wt. kg 0.02	OA-VOL08m FIZZ RAT Unity 1	OA-VOL08m MPA tCaCO3/1Kt 0.3	OA-VOL08m NNP tCaCO3/1Kt 1	OA-VOL08m NP tCaCO3/1Kt 1	OA-VOL08m Ratio (N Unity 0.01	OA-ELE07 pH Unity 0.1	S-IR08 S % 0.01	S-CAL06a S % 0.01	C-GAS05 C % 0.05	C-GAS05 CO2 % 0.2	S-GRA06a S % 0.01	S-GRA06 S % 0.01	C-IR06 C organi % 0.01
WR2100901-001		3.12	1	1.3	4	5	4.00	8.4	0.04	0.04	<0.05	<0.2	<0.01	0.02	0.05
WR2100901-002		3.32	1	0.9	5	6	6.40	8.3	0.03	0.03	<0.05	<0.2	<0.01	0.01	0.07
WR2100901-003		2.96	1	2.8	6	9	3.20	8.7	0.09	0.09	0.06	0.2	<0.01	0.01	0.01

***** See Appendix Page for comments regarding this certificate *****

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To: **ALS ENVIRONMENTAL**
100 - 8081 LOUGHEED HWY.
BURNABY BC V5A 1W9

Finalized Date: 28-SEP-2021
Account: APN

Project: WR2100901

CERTIFICATE OF ANALYSIS VA21198390

CERTIFICATE COMMENTS

LABORATORY ADDRESSES

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

Applies to Method:			
C-GAS05	C-IR06	CRU-31	DISP-01
LOG-21	OA-ELE07	OA-VOL08m	PUL-31
S-CAL06a	S-GRA06	S-GRA06a	S-IR08
SPL-21	WEI-21		

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number:

Affix ALS barcode label here
(lab use only)

Environmental Division
Whitehorse
Work Order Reference
WR2100901

Telephone : +1 867 668 6689

Report To	Contact and company name below will appear on the final report
Company:	Ensero Solutions
Contact:	Rachel Martz
Phone:	867-668-6463
	Company address below will appear on the final report
Street:	104-411 Downey Rd
City/Province:	Saskatoon, SK
Postal Code:	S7N 4L8
Invoice To	Same as Report To
	Copy of Invoice with Report
Company:	
Contact:	

Report Format / Distribution	
Select Report Format:	
Quality Control (QC) Report with Report	
Select Distribution:	
Email 1 or Fax	rkleinberger@ensero.com
Email 2	rmartz@ensero.com
Email 3	celemine@ensero.com
Invoice Distribution	
Select Invoice Distribution:	
Email 1 or Fax	ap@ensero.com
Email 2	

Select Service Level Below - Please confirm all E&P TATs with yo

Regular [R]

PRIORITY (Business Days): 4 day [P4] | 3 day [P3] | 2 day [P2]

EMERGENCY: 1 E | S | S

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service lev

Analysis Re

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	VA21-CAEG100-05	AFE/Cost Center:	PO#
Job #:		Major/Minor Code:	Routing Code:
PO / AFE:	0000001061	Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact: Can Dang	Sampler:

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	E446 Metals + Hardness by CRC ICPMS (Shakeflask, 3:1 Ratio with Water)	E103 Conductivity by Electrode (Shakeflask, 3:1 Ratio with Water)	E118 pH by electrode (Shakeflask, 3:1 Ratio with Water)	E285 Acidity by titration (Shakeflask, 3:1 Ratio with Water)	E294 Alkalinity by titration (Shakeflask, 3:1 Ratio with Water)	S243 Anions by IC (Shakeflask, 3:1 Ratio with Water)	E440 Metals in Soil/Solid by CRC ICPMS	E407 Ammonium Acetate CEC in Soil by colorimetry	CA13 Full Salinity (Ca,Mg,Na,K,SO4, Cl,NO3,pH,EC,Alk.,SAR,TGR,% Sat.)	E180A CSSC Particle Size Classification (Mini	CA17 Available N,P,K,S + Dry and Grind in Soil	S1L-ABA PKG04(M) ALS Minerals: ABA PKG04(M) - Modified Sobek Method	S351 TC, TIC, TOC in Soil	Number of Containers
					R	R	R	R	R	R	R	R	R	R	R	R	R	
	ENS21-SUB07	25-07-21	15:00	Soil	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3
	ENS21-SUB03	25-07-21	12:00	↓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3
	ENS21-SUB05	25-07-21	13:00	↓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System?	
Are samples for human drinking water use?	Please perform dissolved metals analysis on E446 and Modified Sobek Method on S1L-ABA PKG04(M). Prep methods are not listed but assumed to be included (EPP442 and EP446)

SAMPLE CONDITION AS RECE

Frozen ☐ SIF Observati

Ice Packs ☐ Ice Cubes ☐ Custody seal i

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C

18

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT REC	
Released by:	Date:	Time:	Received by:	Date: July 27	Time: 348	Received by:	Da

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **SK2205230**	Page	: 1 of 6
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon SK Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 21-Sep-2022 13:40
PO	: 1518	Date Analysis Commenced	: 21-Sep-2022
C-O-C number	: ----	Issue Date	: 29-Sep-2022 15:56
Sampler	: Client		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Colby Bingham	Quality Systems Coordinator	Inorganics, Saskatoon, Saskatchewan
Colby Bingham	Quality Systems Coordinator	Metals, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Justin Jackson		Metals, Saskatoon, Saskatchewan
Sara Niroomand		Inorganics, Calgary, Alberta

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: Influent Trial V1	----	----	----	----
					Client sampling date / time: 21-Sep-2022 10:11	----	----	----	----
					SK2205230-001	--------	--------	--------	--------
					Result	----	----	----	----
Physical Tests									
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	414	----	----	----	----
conductivity	----	E100	2.0	µS/cm	1060	----	----	----	----
pH	----	E108	0.10	pH units	8.12	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	139	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	114	----	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L	770	----	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	1.20	----	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L	14.7	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.496	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	20.3	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	1.99	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	354	----	----	----	----
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L	22.3	----	----	----	----
Ion Balance									
anion sum	----	EC101	0.10	meq/L	11.7	----	----	----	----
cation sum	----	EC101	0.10	meq/L	10.9	----	----	----	----
ion balance (APHA)	----	EC101	0.010	%	3.54	----	----	----	----
ion balance (cations/anions)	----	EC101	0.010	%	93.2	----	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0186	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.0613	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.199	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0636	----	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.080	----	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000234	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Influent Trial V1	----	----	----	----
					Client sampling date / time	21-Sep-2022 10:11	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		SK2205230-001	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
calcium, total	7440-70-2	E420	0.050	mg/L		132	----	----	----	----
cesium, total	7440-46-2	E420	0.000010	mg/L		0.000037	----	----	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		0.00056	----	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00024	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.323	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.026	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.000421	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0116	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L		24.0	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.151	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.0232	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00554	----	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.299	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L		34.0	----	----	----	----
rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00267	----	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.0319	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		4.49	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	----	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		40.0	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.564	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		123	----	----	----	----
tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000320	----	----	----	----
thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00060 DLM	----	----	----	----
tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.0744	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00244	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0288	----	----	----	----
zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	----	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent Trial V1	----	----	----	----
					Client sampling date / time	21-Sep-2022 10:11	----	----	----	----
						SK2205230-001	--------	--------	--------	--------
						Result	----	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0108	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.0592	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.187	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0646	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.075	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000276	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		128	----	----	----	----
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000033	----	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00022	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.279	----	----	----	----
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.030	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000088	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0119	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		22.9	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.153	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0229	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00524	----	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.304	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L		33.3	----	----	----	----
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00242	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.0308	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.43	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	----	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		37.8	----	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.553	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		120	----	----	----	----
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		0.000291	----	----	----	----

Analytical Results

Sub-Matrix: **Water** (Matrix: **Water**)					Client sample ID	**Influent Trial V1**	**----**	**----**	**----**	**----**
					Client sampling date / time	21-Sep-2022 10:11	----	----	----	----
Analyte	*CAS Number*	*Method*	*LOR*	*Unit*	**SK2205230-001**	--------	--------	--------	--------	
					Result	----	----	----	----	
Dissolved Metals										
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	----	----	----	----	
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	----	----	----	----	
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	----	----	----	----	
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0659	----	----	----	----	
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00229	----	----	----	----	
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0279	----	----	----	----	
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	----	----	----	----	
dissolved metals filtration location	----	EP421	-	-	Field	----	----	----	----	

Please refer to the General Comments section for an explanation of any qualifiers detected.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **SK2205230**	Page	: 1 of 8
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon, Saskatchewan Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 21-Sep-2022 13:40
PO	: 1518	Issue Date	: 29-Sep-2022 15:56
C-O-C number	: ----		
Sampler	: Client		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Influent Trial V1	E298	21-Sep-2022	23-Sep-2022	----	----		23-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
Influent Trial V1	E235.Cl	21-Sep-2022	22-Sep-2022	----	----		22-Sep-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Influent Trial V1	E235.F	21-Sep-2022	22-Sep-2022	----	----		22-Sep-2022	28 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
Influent Trial V1	E235.NO3	21-Sep-2022	22-Sep-2022	----	----		22-Sep-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE										
Influent Trial V1	E235.NO2	21-Sep-2022	22-Sep-2022	----	----		22-Sep-2022	3 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Influent Trial V1	E235.SO4	21-Sep-2022	22-Sep-2022	----	----		22-Sep-2022	28 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
Influent Trial V1	E421	21-Sep-2022	26-Sep-2022	----	----		26-Sep-2022	180 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE										
Influent Trial V1	E290	21-Sep-2022	22-Sep-2022	----	----		22-Sep-2022	14 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
Influent Trial V1	E100	21-Sep-2022	22-Sep-2022	----	----		22-Sep-2022	28 days	1 days	✓
Physical Tests : pH by Meter										
HDPE										
Influent Trial V1	E108	21-Sep-2022	22-Sep-2022	----	----		22-Sep-2022	0.25 hrs	0.26 hrs	× EHTR-FM
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
Influent Trial V1	E420	21-Sep-2022	26-Sep-2022	----	----		26-Sep-2022	180 days	5 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	659762	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	662749	1	19	5.2	5.0	✓
Chloride in Water by IC	E235.Cl	660940	1	20	5.0	5.0	✓
Conductivity in Water	E100	659761	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	660754	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	660937	1	12	8.3	5.0	✓
Nitrate in Water by IC	E235.NO3	660938	1	20	5.0	5.0	✓
Nitrite in Water by IC	E235.NO2	660941	1	20	5.0	5.0	✓
pH by Meter	E108	659760	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	660939	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	660772	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	659762	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	662749	1	19	5.2	5.0	✓
Chloride in Water by IC	E235.Cl	660940	1	20	5.0	5.0	✓
Conductivity in Water	E100	659761	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	660754	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	660937	1	12	8.3	5.0	✓
Nitrate in Water by IC	E235.NO3	660938	1	20	5.0	5.0	✓
Nitrite in Water by IC	E235.NO2	660941	1	20	5.0	5.0	✓
pH by Meter	E108	659760	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	660939	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	660772	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	659762	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	662749	1	19	5.2	5.0	✓
Chloride in Water by IC	E235.Cl	660940	1	20	5.0	5.0	✓
Conductivity in Water	E100	659761	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	660754	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	660937	1	12	8.3	5.0	✓
Nitrate in Water by IC	E235.NO3	660938	1	20	5.0	5.0	✓
Nitrite in Water by IC	E235.NO2	660941	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	660939	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	660772	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	662749	1	19	5.2	5.0	✓
Chloride in Water by IC	E235.Cl	660940	1	20	5.0	5.0	✓

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Dissolved Metals in Water by CRC ICPMS	E421	660754	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	660937	1	12	8.3	5.0	✓
Nitrate in Water by IC	E235.NO3	660938	1	20	5.0	5.0	✓
Nitrite in Water by IC	E235.NO2	660941	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	660939	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	660772	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Saskatoon - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Saskatoon - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Chloride in Water by IC	E235.Cl Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 Saskatoon - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Metals in Water by CRC ICPMS	E420 Saskatoon - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals in Water by CRC ICPMS	E421 Saskatoon - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Saskatoon - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Saskatoon - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
TDS in Water (Calculation)	EC103 Saskatoon - Environmental	Water	APHA 1030E (mod)	Total Dissolved Solids is calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N Saskatoon - Environmental	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Environmental Division Saskatoon
Work Order Reference
SK2205230

Telephone : +1 306 668 8370

Report To	Contact and company name below will appear on the final report
Company:	Ensero Solutions Canada Inc.
Contact:	Rachel Martz
Phone:	306-978-3111
	Company address below will appear on the final report
Street:	104-411 Downey Rd
City/Province:	Saskatoon, SK
Postal Code:	S7N 4L8
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Ensero Solutions Canada Inc. 410-885 Dunsmuir St, Vancouver,
Contact:	BC V6C1N5 Contact: Rachel Martz

Reports / Recipients	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	rmartz@ensero.com
Email 2	rkleinberger@ensero.com
Email 3	kpiecowye@ensero.com

Invoice Recipients	
Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	ap@ensero.com
Email 2	rmartz@ensero.com

Turnaround Time (TAT) Requested
☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minim
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minir
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge min
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge mi
☐ Same day [E2] if received by 10am M-S - 200% rush surch
Additional fees may apply to rush requests on w
Date and Time Required for all E&P TATs:
For all tests with rush TATs requester
Anal

Project Information	
ALS Account # / Quote #:	
Job #:	ECA22YT00211
PO / AFE:	1518
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only):	ALS Contact:	Sampler:

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Total Metals (low level)	Dissolved Metals (low level)	Routine	Ammonia											SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
						Indicate Filtered (F), Preserved (P) or Filtered and ...																
						P	F/P		P													
	Influent Trial V1	21-Sep-22	11:11	Water	4	R	R	R	R											0	0	0

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	
Are samples for human consumption/ use? ☐ YES ☑ NO	Please send Ensero format EDD Routine (anions, cations, alkalinity, pH, Conductivity, TDS, ion balance,hardness as CaCO3)

SAMPLE RECEIPT DETAILS (ALS use only)								
Cooling Method:	☐ NONE	☐ ICE	☐ ICE PACKS	☐ FROZEN	☐ COOLING INITIATED			
Submission Comments identified on Sample Receipt Notification:	☐ YES	☐ NO						
Cooler Custody Seals Intact:	☐ YES	☐ N/A	Sample Custody Seals Intact:	☐ YES	☐ N/A			
INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C				
13								

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
				21/9/22	2:40			2:40

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FE9 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **SK2205267**	Page	: 1 of 5
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon SK Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 22-Sep-2022 15:18
PO	: 1518	Date Analysis Commenced	: 27-Sep-2022
C-O-C number	: ----	Issue Date	: 29-Sep-2022 15:08
Sampler	: Client		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Colby Bingham	Quality Systems Coordinator	Metals, Saskatoon, Saskatchewan
Ruth Islas	Laboratory Assistant	Metals, Saskatoon, Saskatchewan

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
mg/L	milligrams per litre

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	Series 1 Channel 1	Series 4 Channel 1	----	----
					Client sampling date / time	22-Sep-2022 12:30	22-Sep-2022 12:30	22-Sep-2022 12:30	----	----
						SK2205267-001	SK2205267-002	SK2205267-003	--------	--------
						Result	Result	Result	----	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0388	0.0410	0.332	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.00024	0.00023	0.00040	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00055	0.00268	0.0118	----	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0599	0.0655	0.0648	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	0.000076	----	----
boron, total	7440-42-8	E420	0.010	mg/L		0.033	0.031	0.030	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000151	0.0000117	0.0000243	----	----
calcium, total	7440-70-2	E420	0.050	mg/L		69.6	71.5	66.1	----	----
cesium, total	7440-46-2	E420	0.000010	mg/L		0.000011	0.000093	0.000179	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	0.00066	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00014	0.00016	0.00040	----	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.138	0.0856	0.133	----	----
iron, total	7439-89-6	E420	0.010	mg/L		0.054	0.048	0.773	----	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.00102	0.000218	0.00138	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0112	0.0116	0.0121	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L		20.0	21.5	19.9	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.00381	0.00344	0.0135	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.00177	0.00239	0.00209	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00156	0.00165	0.00239	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.339	0.228	0.298	----	----
potassium, total	7440-09-7	E420	0.050	mg/L		3.38	3.61	3.53	----	----
rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00136	0.00153	0.00173	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000916	0.000968	0.000888	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		1.02	1.06	1.50	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	0.000012	0.000042	----	----
sodium, total	7440-23-5	E420	0.050	mg/L		34.4	38.7	35.5	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.276	0.291	0.272	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		34.0	39.1	34.8	----	----
tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Influent	Series 1 Channel 1	Series 4 Channel 1	----	----
					Client sampling date / time	22-Sep-2022 12:30	22-Sep-2022 12:30	22-Sep-2022 12:30	----	----
Analyte	CAS Number	Method	LOR	Unit		SK2205267-001	SK2205267-002	SK2205267-003	--------	--------
						Result	Result	Result	----	----
Total Metals										
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	0.000014	----	----
thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	0.00016	0.00031	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00076	0.00078	0.0104	----	----
tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	0.00017	0.00103	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00105	0.00112	0.00106	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	0.00109	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0265	0.0072	0.0166	----	----
zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0223	0.0166	0.0148	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00020	0.00020	0.00021	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00028	0.00178	0.00129	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0594	0.0698	0.0643	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.027	0.028	0.027	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000075	0.0000086	0.0000110	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		65.9	67.9	66.9	----	----
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000010	0.000080	0.000044	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00012	0.00013	0.00017	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.107	0.0783	0.0796	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.010	<0.010	<0.010	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000110	0.000057	<0.000050	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0125	0.0123	0.0122	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		19.4	20.3	20.1	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00070	0.00277	0.00425	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00176	0.00213	0.00202	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00158	0.00152	0.00170	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.282	0.197	0.234	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Influent	Series 1 Channel 1	Series 4 Channel 1	----	----
					Client sampling date / time	22-Sep-2022 12:30	22-Sep-2022 12:30	22-Sep-2022 12:30	----	----
Analyte	CAS Number	Method	LOR	Unit		SK2205267-001	SK2205267-002	SK2205267-003	--------	--------
						Result	Result	Result	----	----
Dissolved Metals										
potassium, dissolved	7440-09-7	E421	0.050	mg/L		3.45	3.67	3.68	----	----
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00125	0.00158	0.00138	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000839	0.000933	0.000844	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		0.777	0.929	1.03	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	0.000010	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		34.3	37.2	35.4	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.268	0.284	0.270	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		32.8	36.2	33.4	----	----
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	0.00014	0.00020	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	----	----
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00101	0.00110	0.000987	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0110	0.0088	0.0146	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **SK2205267**	Page	: 1 of 5
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon, Saskatchewan Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 22-Sep-2022 15:18
PO	: 1518	Issue Date	: 29-Sep-2022 15:10
C-O-C number	: ----		
Sampler	: Client		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
Influent	E421	22-Sep-2022	27-Sep-2022	----	----		27-Sep-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
Series 1 Channel 1	E421	22-Sep-2022	27-Sep-2022	----	----		27-Sep-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
Series 4 Channel 1	E421	22-Sep-2022	27-Sep-2022	----	----		27-Sep-2022	180 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
Influent	E420	22-Sep-2022	27-Sep-2022	----	----		27-Sep-2022	180 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
Series 1 Channel 1	E420	22-Sep-2022	27-Sep-2022	----	----		27-Sep-2022	180 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
Series 4 Channel 1	E420	22-Sep-2022	27-Sep-2022	----	----		27-Sep-2022	180 days	5 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Dissolved Metals in Water by CRC ICPMS	E421	665529	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	662209	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Dissolved Metals in Water by CRC ICPMS	E421	665529	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	662209	1	20	5.0	5.0	✓
Method Blanks (MB)							
Dissolved Metals in Water by CRC ICPMS	E421	665529	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	662209	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Dissolved Metals in Water by CRC ICPMS	E421	665529	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	662209	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Metals in Water by CRC ICPMS	E420 Saskatoon - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Metals in Water by CRC ICPMS	E421 Saskatoon - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 Saskatoon - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Environmental Division Saskatoon

Work Order Reference SK2205267

Telephone : +1 306 668 8370

Report To	Contact and company name below will appear on the final report
Company:	Ensero Solutions Canada Inc.
Contact:	Rachel Martz
Phone:	306-978-3111
	Company address below will appear on the final report
Street:	104-411 Downey Rd
City/Province:	Saskatoon, SK
Postal Code:	S7N 4L8
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Ensero Solutions Canada Inc. 410-885 Dunsmuir St, Vancouver,
Contact:	BC V6C1N5 Contact: Rachel Martz

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☑ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: rmartz@ensero.com

Email 2: rkleinberger@ensero.com

Email 3: kpiecowye@ensero.com

Invoice Recipients

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: ap@ensero.com

Email 2: rmartz@ensero.com

Turnaround Time (TAT) Requ

☑ Routine [R] if received by 3pm M-F - no surcharge

☐ 4 day [P4] if received by 3pm M-F - 20% rush surc

☐ 3 day [P3] if received by 3pm M-F - 25% rush su

☐ 2 day [P2] if received by 3pm M-F - 50% rush su

☐ 1 day [E] if received by 3pm M-F - 100% rush su

☐ Same day [E2] if received by 10am M-S - 200%

Additional fees may apply to rush requ

Date and Time Required for all E&P TATs:

For all tests with rush TATs r

Project Information

ALS Account # / Quote #:	
Job #:	ECA22YT00211
PO / AFE:	1518
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only): | **ALS Contact:** | **Sampler:**

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Indicate Filtered (F), Preserve: Total Metals (low level)	Dissolved Metals (low level)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	Influent	22-Sep-22	13:30	Water	2	R	R	0	0	0
	Series 1 Channel 1	22-Sep-22	13:30	Water	2	R	R			
	Series 4 Cascade 1	22-Sep-22	13:30	Water	2	R	R			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?

☐ YES ☑ NO

Are samples for human consumption/ use?

☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Please send Ensero format EDD

~~Routine (anions, cations, alkalinity, pH, Conductivity, TDS, ion balance,hardness as CaCO3)~~

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
18.8°C					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date:	Time:	Received by: LWH	Date: 22/09/22	Time: 4:18	Received by: LWH	Date 22/09/22	Time: 4:18

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

ALS Canada Ltd.

CERTIFICATE OF ANALYSIS

Work Order	: **SK2205804**	Page	: 1 of 8
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon SK Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 13-Oct-2022 15:30
PO	: 1518	Date Analysis Commenced	: 18-Oct-2022
C-O-C number	: ----	Issue Date	: 20-Oct-2022 13:30
Sampler	: Client		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 7		
No. of samples analysed	: 7		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Colby Bingham	Quality Systems Coordinator	Metals, Saskatoon, Saskatchewan
Justin Jackson		Metals, Saskatoon, Saskatchewan
Jwan Abdalla	Laboratory Analyst	Metals, Saskatoon, Saskatchewan

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
mg/L	milligrams per litre

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	Series 1 Channel 1	Series 1 Casacade 1	1B-O	2B-O
					Client sampling date / time	13-Oct-2022 13:45	13-Oct-2022 13:45	13-Oct-2022 13:45	13-Oct-2022 13:45	13-Oct-2022 13:45
						SK2205804-001	SK2205804-002	SK2205804-003	SK2205804-004	SK2205804-005
						Result	Result	Result	Result	Result
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0215	0.0157	0.0148	0.0807	0.0332
antimony, total	7440-36-0	E420	0.00010	mg/L		0.00019	0.00019	0.00019	0.00044	0.00029
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.00041	0.00041	0.00084	0.0132	0.00179
barium, total	7440-39-3	E420	0.00010	mg/L		0.0637	0.0650	0.0656	0.0743	0.0784
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		0.030	0.029	0.028	0.030	0.029
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000127	0.0000111	0.0000095	0.0000171	0.0000126
calcium, total	7440-70-2	E420	0.050	mg/L		69.6	70.9	70.5	75.5	75.0
cesium, total	7440-46-2	E420	0.000010	mg/L		<0.000010	0.000012	0.000030	0.000032	0.000015
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00012	0.00014	0.00015	0.00015	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		0.127	0.0993	0.104	0.0790	0.0657
iron, total	7439-89-6	E420	0.010	mg/L		<0.010	<0.010	<0.010	0.136	0.054
lead, total	7439-92-1	E420	0.000050	mg/L		0.000442	0.000324	0.000224	0.00123	0.000166
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0126	0.0122	0.0122	0.0131	0.0128
magnesium, total	7439-95-4	E420	0.0050	mg/L		20.4	20.9	20.5	22.0	21.5
manganese, total	7439-96-5	E420	0.00010	mg/L		0.00074	0.00059	0.00125	0.00500	0.00326
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.00171	0.00162	0.00157	0.00185	0.00161
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00161	0.00156	0.00152	0.00145	0.00133
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.325	0.277	0.267	0.255	0.247
potassium, total	7440-09-7	E420	0.050	mg/L		3.53	3.49	3.50	3.97	3.77
rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00124	0.00142	0.00140	0.00212	0.00146
selenium, total	7782-49-2	E420	0.000050	mg/L		0.000403	0.000338	0.000350	0.000391	0.000384
silicon, total	7440-21-3	E420	0.10	mg/L		0.90	0.80	0.94	0.45	0.61
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	0.000020	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		26.3	26.1	26.4	27.1	26.2
strontium, total	7440-24-6	E420	0.00020	mg/L		0.286	0.282	0.284	0.306	0.299
sulfur, total	7704-34-9	E420	0.50	mg/L		32.8	31.5	32.8	34.9	35.3

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Influent	Series 1 Channel 1	Series 1 Casacade 1	1B-O	2B-O
					Client sampling date / time	13-Oct-2022 13:45	13-Oct-2022 13:45	13-Oct-2022 13:45	13-Oct-2022 13:45	13-Oct-2022 13:45
Analyte	CAS Number	Method	LOR	Unit		SK2205804-001	SK2205804-002	SK2205804-003	SK2205804-004	SK2205804-005
						Result	Result	Result	Result	Result
Total Metals										
tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	0.00081	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	<0.00030	0.00369	0.00068
tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	0.00014	<0.00010
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00104	0.00106	0.00103	0.00144	0.00109
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0133	0.0107	0.0092	0.0103	0.0088
zirconium, total	7440-67-7	E420	0.00020	mg/L		0.00030	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0166	0.0138	0.0125	0.0127	0.0105
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00015	0.00015	0.00016	0.00033	0.00024
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.00037	0.00038	0.00079	0.0102	0.00168
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0637	0.0629	0.0627	0.0708	0.0787
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.028	0.029	0.030	0.031	0.030
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000109	0.0000133	0.0000112	0.0000124	0.0000100
calcium, dissolved	7440-70-2	E421	0.050	mg/L		69.3	69.7	70.8	74.5	75.4
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		<0.000010	0.000011	0.000032	<0.000010	<0.000010
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00013	0.00013	0.00013	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.121	0.0917	0.0955	0.0550	0.0529
iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000290	0.000197	0.000121	<0.000050	0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0123	0.0123	0.0124	0.0131	0.0132
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		20.3	20.5	20.4	21.9	21.5
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00036	0.00034	0.00108	0.00139	0.00084
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00168	0.00164	0.00184	0.00186	0.00164

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	Series 1 Channel 1	Series 1 Casacade 1	1B-O	2B-O
					Client sampling date / time	13-Oct-2022 13:45	13-Oct-2022 13:45	13-Oct-2022 13:45	13-Oct-2022 13:45	13-Oct-2022 13:45
						SK2205804-001	SK2205804-002	SK2205804-003	SK2205804-004	SK2205804-005
						Result	Result	Result	Result	Result
Dissolved Metals										
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00153	0.00155	0.00150	0.00128	0.00119
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.331	0.292	0.309	0.265	0.231
potassium, dissolved	7440-09-7	E421	0.050	mg/L		3.52	3.50	3.47	3.93	3.77
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00117	0.00134	0.00133	0.00176	0.00132
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000412	0.000356	0.000356	0.000356	0.000365
silicon, dissolved	7440-21-3	E421	0.050	mg/L		0.755	0.779	0.976	0.327	0.550
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		26.2	26.3	25.8	27.0	27.5
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.288	0.269	0.292	0.301	0.295
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		33.6	33.8	35.6	37.9	36.7
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00108	0.00102	0.00102	0.00147	0.00111
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0116	0.0122	0.0113	0.0052	0.0061
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	3B-O	4B-O	----	----	----
				Client sampling date / time	13-Oct-2022 13:45	13-Oct-2022 13:45	----	----	----
Analyte	CAS Number	Method	LOR	Unit	SK2205804-006	SK2205804-007	--------	--------	--------
					Result	Result	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0090	0.0560	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00332	0.00036	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.0258	0.00259	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0631	0.0844	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.026	0.028	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000517	0.0000110	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	76.2	72.3	----	----	----
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000032	0.000040	----	----	----
chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	0.00013	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.0131	0.0596	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	0.112	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000073	0.000237	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0126	0.0129	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	22.3	21.6	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00071	0.00863	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00140	0.00150	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00176	0.00130	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L	0.066	0.163	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	3.35	3.88	----	----	----
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00274	0.00159	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000425	0.000434	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	0.56	0.57	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	0.000011	0.000014	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L	27.1	27.9	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.297	0.295	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	35.3	35.3	----	----	----
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	3B-O	4B-O	----	----	----
					Client sampling date / time	13-Oct-2022 13:45	13-Oct-2022 13:45	----	----	----
Analyte	CAS Number	Method	LOR	Unit		SK2205804-006	SK2205804-007	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000082	<0.000010	----	----	----
thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	0.00012	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00582	0.00095	----	----	----
tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	0.00011	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.00113	0.00112	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0046	0.0053	----	----	----
zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0048	0.0103	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.00345	0.00027	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0255	0.00217	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0514	0.0820	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.028	0.031	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000412	0.0000080	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		76.5	70.7	----	----	----
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000036	0.000025	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.0114	0.0406	----	----	----
iron, dissolved	7439-89-6	E421	0.010	mg/L		<0.010	<0.010	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0133	0.0135	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		22.2	22.6	----	----	----
manganese, dissolved	7439-96-5	E421	0.00010	mg/L		0.00032	0.00282	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.00147	0.00155	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00168	0.00111	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	3B-O	4B-O	----	----	----
					Client sampling date / time	13-Oct-2022 13:45	13-Oct-2022 13:45	----	----	----
Analyte	CAS Number	Method	LOR	Unit		SK2205804-006	SK2205804-007	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.053	0.099	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L		3.40	3.94	----	----	----
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00277	0.00143	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.000427	0.000372	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		0.552	0.473	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		27.4	28.4	----	----	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.309	0.280	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		37.8	37.8	----	----	----
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		0.000082	<0.000010	----	----	----
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	0.00011	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.00111	0.00106	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		<0.00050	<0.00050	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0045	0.0032	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **SK2205804**	Page	: 1 of 6
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon, Saskatchewan Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 13-Oct-2022 15:30
PO	: 1518	Issue Date	: 20-Oct-2022 13:30
C-O-C number	: ----		
Sampler	: Client		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 7		
No. of samples analysed	: 7		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 1B-O	E421	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 2B-O	E421	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 3B-O	E421	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 4B-O	E421	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Influent	E421	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Series 1 Casacade 1	E421	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Series 1 Channel 1	E421	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	180 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 1B-O	E420	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 2B-O	E420	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 3B-O	E420	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 4B-O	E420	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) Influent	E420	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) Series 1 Casacade 1	E420	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) Series 1 Channel 1	E420	13-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	180 days	5 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Dissolved Metals in Water by CRC ICPMS	E421	697049	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	696892	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Dissolved Metals in Water by CRC ICPMS	E421	697049	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	696892	1	20	5.0	5.0	✓
Method Blanks (MB)							
Dissolved Metals in Water by CRC ICPMS	E421	697049	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	696892	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Dissolved Metals in Water by CRC ICPMS	E421	697049	1	20	5.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	696892	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total metals in Water by CRC ICPMS	E420 Saskatoon - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Metals in Water by CRC ICPMS	E421 Saskatoon - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 Saskatoon - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 1

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Environmental Division Saskatoon
Work Order Reference
SK2205804

Telephone : +1 306 668 8370

Report To	Contact and company name below will appear on the final report
Company:	Ensero Solutions Canada Inc.
Contact:	Rachel Martz
Phone:	306-978-3111
	Company address below will appear on the final report
Street:	104-411 Downey Rd
City/Province:	Saskatoon, SK
Postal Code:	S7N 4L8
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Ensero Solutions Canada Inc. 410-885 Dunsmuir St, Vancouver,
Contact:	BC V6C1N5 Contact: Rachel Martz

Project Information

ALS Account # / Quote #:	
Job #:	ECA22YT00211
PO / AFE:	1518
LSD:	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A
☑ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL MAIL ☐ FAX

Email 1 or Fax	rmartz@ensero.com
Email 2	rkleinberger@ensero.com
Email 3	kpiecowye@ensero.com

Invoice Recipients

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax	ap@ensero.com
Email 2	rmartz@ensero.com

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

Turnaround Time (TAT) Requested

- ☑ Routine [R] if received by 3pm M-F - no surcharges apply
- ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
- ☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
- ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
- ☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
- ☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weeken

Date and Time Required for all E&P TATs:

For all tests with rush TATs requested, please

ALS Lab Work Order # (ALS use only):	ALS Contact:	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Total Metals (P)	Dissolved Metals (F/P)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	Influent	13-Oct-22	14:45	Water	2	R	R	0	0	0
	Series 1 Channel 1	13-Oct-22	14:45	Water	2	R	R			
	Series 4 Cascade 1	13-Oct-22	14:45	Water	2	R	R			
	1B-O	13-Oct-22	14:45	Water	2	R	R			
	2B-O	13-Oct-22	14:45	Water	2	R	R			
	3B-O	13-Oct-22	14:45	Water	2	R	R			
	4B-O	13-Oct-22	14:45	Water	2	R	R			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ YES ☑ NO

Are samples for human consumption/ use?
☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Please send Ensero format EDD
Routine (anions, cations, alkalinity, pH, Conductivity, TDS, ion balance,hardness as CaCO3)

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
13°C							

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
NKh	13/10/22	4:30

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
NKh		4:30

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **SK2205832**	Page	: 1 of 6
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon SK Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 14-Oct-2022 15:00
PO	: 1518	Date Analysis Commenced	: 14-Oct-2022
C-O-C number	: ----	Issue Date	: 21-Oct-2022 16:01
Sampler	: ----		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Colby Bingham	Quality Systems Coordinator	Inorganics, Saskatoon, Saskatchewan
Colby Bingham	Quality Systems Coordinator	Metals, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Justin Jackson		Metals, Saskatoon, Saskatchewan
Jwan Abdalla	Laboratory Analyst	Metals, Saskatoon, Saskatchewan
Kimberly Hanson	Laboratory Analyst	Metals, Saskatoon, Saskatchewan
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	No Unit
%	percent
µS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: Influent Trial V2	----	----	----	----
					Client sampling date / time: 14-Oct-2022 12:40	----	----	----	----
					SK2205832-001	--------	--------	--------	--------
					Result	----	----	----	----
Physical Tests									
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	407	----	----	----	----
conductivity	----	E100	2.0	µS/cm	1130	----	----	----	----
pH	----	E108	0.10	pH units	8.01	----	----	----	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	155	----	----	----	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	----	----	----	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	----	----	----	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	127	----	----	----	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L	807	----	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	4.18	----	----	----	----
chloride	16887-00-6	E235.Cl	0.50	mg/L	15.8	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.592	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	22.6	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	0.486	----	----	----	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	374	----	----	----	----
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L	23.1	----	----	----	----
Ion Balance									
anion sum	----	EC101	0.10	meq/L	12.4	----	----	----	----
cation sum	----	EC101	0.10	meq/L	11.0	----	----	----	----
ion balance (APHA)	----	EC101	0.010	%	5.98	----	----	----	----
ion balance (cations/anions)	----	EC101	0.010	%	88.7	----	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0297	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.0527	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.160	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0661	----	----	----	----
beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.079	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Influent Trial V2	----	----	----	----
					Client sampling date / time	14-Oct-2022 12:40	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	SK2205832-001	--------	--------	--------	--------	
					Result	----	----	----	----	
Total Metals										
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000622	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	141	----	----	----	----	
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000032	----	----	----	----	
chromium, total	7440-47-3	E420	0.00050	mg/L	0.0281	----	----	----	----	
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00111	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.149	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	0.128	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000761	----	----	----	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0112	----	----	----	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	23.3	----	----	----	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.161	----	----	----	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0176	----	----	----	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	0.0118	----	----	----	----	
phosphorus, total	7723-14-0	E420	0.050	mg/L	0.254	----	----	----	----	
potassium, total	7440-09-7	E420	0.050	mg/L	35.7	----	----	----	----	
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00252	----	----	----	----	
selenium, total	7782-49-2	E420	0.000050	mg/L	0.0294	----	----	----	----	
silicon, total	7440-21-3	E420	0.10	mg/L	4.62	----	----	----	----	
silver, total	7440-22-4	E420	0.000010	mg/L	0.000013	----	----	----	----	
sodium, total	7440-23-5	E420	0.050	mg/L	40.3	----	----	----	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.604	----	----	----	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	132	----	----	----	----	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	----	----	----	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	0.000293	----	----	----	----	
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	----	----	----	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	----	----	----	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00090 DLM	----	----	----	----	
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	----	----	----	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.0531	----	----	----	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00244	----	----	----	----	

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Influent Trial V2	----	----	----	----
					Client sampling date / time	14-Oct-2022 12:40	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		SK2205832-001	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0144	----	----	----	----
zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	----	----	----	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0116	----	----	----	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.0528	----	----	----	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.139	----	----	----	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0690	----	----	----	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	----	----	----	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	----	----	----	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.072	----	----	----	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000528	----	----	----	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		124	----	----	----	----
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000028	----	----	----	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	----	----	----	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00087	----	----	----	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.120	----	----	----	----
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.030	----	----	----	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	----	----	----	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0104	----	----	----	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		23.6	----	----	----	----
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.153	----	----	----	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0163	----	----	----	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00496	----	----	----	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.238	----	----	----	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L		35.2	----	----	----	----
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00252	----	----	----	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.0277	----	----	----	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.13	----	----	----	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		0.000010	----	----	----	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		38.8	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Influent Trial V2	----	----	----	----
					Client sampling date / time	14-Oct-2022 12:40	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		SK2205832-001	--------	--------	--------	--------
						Result	----	----	----	----
Dissolved Metals										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.605	----	----	----	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		122	----	----	----	----
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	----	----	----	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		0.000271	----	----	----	----
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	----	----	----	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	----	----	----	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	----	----	----	----
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	----	----	----	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.0480	----	----	----	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00175	----	----	----	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0156	----	----	----	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	----	----	----	----
dissolved metals filtration location	----	EP421	-	-		Field	----	----	----	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **SK2205832**	Page	: 1 of 8
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon, Saskatchewan Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 14-Oct-2022 15:00
PO	: 1518	Issue Date	: 21-Oct-2022 16:01
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Influent Trial V2	E298	14-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
Influent Trial V2	E235.Cl	14-Oct-2022	14-Oct-2022	----	----		14-Oct-2022	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Influent Trial V2	E235.F	14-Oct-2022	14-Oct-2022	----	----		14-Oct-2022	28 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
Influent Trial V2	E235.NO3	14-Oct-2022	14-Oct-2022	----	----		14-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE										
Influent Trial V2	E235.NO2	14-Oct-2022	14-Oct-2022	----	----		14-Oct-2022	3 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Influent Trial V2	E235.SO4	14-Oct-2022	14-Oct-2022	----	----		14-Oct-2022	28 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
Influent Trial V2	E421	14-Oct-2022	18-Oct-2022	----	----		18-Oct-2022	180 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE										
Influent Trial V2	E290	14-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	14 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE										
Influent Trial V2	E100	14-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	28 days	3 days	✓
Physical Tests : pH by Meter										
HDPE										
Influent Trial V2	E108	14-Oct-2022	17-Oct-2022	----	----		17-Oct-2022	0.25 hrs	0.26 hrs	× EHTR-FM
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
Influent Trial V2	E420	14-Oct-2022	19-Oct-2022	----	----		19-Oct-2022	180 days	5 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	697247	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	699250	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	697263	1	20	5.0	5.0	✓
Conductivity in Water	E100	697246	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	700012	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	697267	1	6	16.6	5.0	✓
Nitrate in Water by IC	E235.NO3	697265	1	6	16.6	5.0	✓
Nitrite in Water by IC	E235.NO2	697266	1	6	16.6	5.0	✓
pH by Meter	E108	697245	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	697264	1	19	5.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	700027	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	697247	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	699250	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	697263	1	20	5.0	5.0	✓
Conductivity in Water	E100	697246	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	700012	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	697267	1	6	16.6	5.0	✓
Nitrate in Water by IC	E235.NO3	697265	1	6	16.6	5.0	✓
Nitrite in Water by IC	E235.NO2	697266	1	6	16.6	5.0	✓
pH by Meter	E108	697245	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	697264	1	19	5.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	700027	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	697247	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	699250	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	697263	1	20	5.0	5.0	✓
Conductivity in Water	E100	697246	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	700012	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	697267	1	6	16.6	5.0	✓
Nitrate in Water by IC	E235.NO3	697265	1	6	16.6	5.0	✓
Nitrite in Water by IC	E235.NO2	697266	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	697264	1	19	5.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	700027	1	20	5.0	5.0	✓
Matrix Spikes (MS)							

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Ammonia by Fluorescence	E298	699250	1	7	14.2	5.0	✓
Chloride in Water by IC	E235.Cl	697263	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	700012	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	697267	1	6	16.6	5.0	✓
Nitrate in Water by IC	E235.NO3	697265	1	6	16.6	5.0	✓
Nitrite in Water by IC	E235.NO2	697266	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	697264	1	19	5.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	700027	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Saskatoon - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Saskatoon - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Chloride in Water by IC	E235.Cl Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 Saskatoon - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total metals in Water by CRC ICPMS	E420 Saskatoon - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals in Water by CRC ICPMS	E421 Saskatoon - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Saskatoon - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Saskatoon - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
TDS in Water (Calculation)	EC103 Saskatoon - Environmental	Water	APHA 1030E (mod)	Total Dissolved Solids is calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N Saskatoon - Environmental	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Dissolved Metals Water Filtration	EP421 Saskatoon - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 22 -

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Ensero Solutions Canada Inc.
Contact:	Rachel Martz
Phone:	306-978-3111
	Company address below will appear on the final report
Street:	104-411 Downey Rd
City/Province:	Saskatoon, SK
Postal Code:	S7N 4L8
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Ensero Solutions Canada Inc. 410-885 Dunsmuir St, Vancouver,
Contact:	BC V6C1N5 Contact: Rachel Martz

Project Information	
ALS Account # / Quote #:	
Job #:	ECA22YT00211
PO / AFE:	1518
LSD:	
ALS Lab Work Order # (ALS use only):	

Reports / Recipients	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	rmartz@ensero.com
Email 2	rkleinberger@ensero.com
Email 3	kpiecowye@ensero.com

Invoice Recipients	
Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	ap@ensero.com
Email 2	rmartz@ensero.com

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact:	Sampler:

Turnaround Time (TAT) Requested

- ☑ Routine [R] if received by 3pm M-F - no surcharges apply
- ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minim
- ☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minim
- ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minim
- ☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minim
- ☐ Same day [E2] if received by 10am M-S - 200% rush surcharge

Additional fees may apply to rush requests on weeken

Date and Time Required for all E&P TATs:

For all tests with rush TATs requested, please

Analysis Re

Indicate Filtered (F), Preserved (P) or Filtered ar

Environmental Division Saskatoon

Work Order Reference

SK2205832

Tel phone : +1 306 668 8370

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Total Metals	Dissolved Metals	Routine	Ammonia												SAMPLES ON HOLD	EXTENDED STORAGE REQ	SUSPECTED HAZARD (see
						P	F/P		P														
	Influent Trial V2	14-Oct-22	12:40	Water	4	R	R	R	R												0	0	0

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
samples taken from a Regulated DW System? ☐ YES ☑ NO	
samples for human consumption/ use? ☐ YES ☑ NO	Please send Ensero format EDD Routine (anions, cations, alkalinity, pH, Conductivity, TDS, ion balance,hardness as CaCO3)

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification. ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
12.1							

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date:	Time:	Received by: Jenny	Date: 22/10/14	Time: 3:00	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

[1] If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

ALS Canada Ltd.

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CERTIFICATE OF ANALYSIS

Work Order	: **SK2206861**	Page	: 1 of 10
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon SK Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 24-Nov-2022 15:30
PO	: 1518	Date Analysis Commenced	: 24-Nov-2022
C-O-C number	: ----	Issue Date	: 30-Nov-2022 10:44
Sampler	: Client		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Colby Bingham	Quality Systems Coordinator	Inorganics, Saskatoon, Saskatchewan
Colby Bingham	Quality Systems Coordinator	Metals, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Jwan Abdalla	Laboratory Analyst	Inorganics, Saskatoon, Saskatchewan
Jwan Abdalla	Laboratory Analyst	Metals, Saskatoon, Saskatchewan
Ruth Islas	Laboratory Assistant	Metals, Saskatoon, Saskatchewan

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
%	percent
µS/cm	microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	24-Nov-2022 13:22	24-Nov-2022 13:02	24-Nov-2022 12:40	24-Nov-2022 13:40	24-Nov-2022 12:49
						SK2206861-001	SK2206861-002	SK2206861-003	SK2206861-004	SK2206861-005
						Result	Result	Result	Result	Result
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		432	454	450	456	448
conductivity	----	E100	2.0	µS/cm		1100	1110	1120	1110	1120
pH	----	E108	0.10	pH units		7.94	8.17	8.20	8.26	8.28
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		138	142	144	144	149
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		113	116	118	118	122
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		844	833	852	847	854
Anions and Nutrients										
chloride	16887-00-6	E235.Cl	0.50	mg/L		22.4	16.9	17.8	17.7	18.2
fluoride	16984-48-8	E235.F	0.020	mg/L		0.667	0.663	0.680	0.663	0.662
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		22.0	24.7	26.2	24.8	25.4
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		4.68	0.557	<0.050 DLDS	0.693	<0.050 DLDS
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		378	379	392	390	396
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		26.7	25.2	26.2	25.5	25.4
Ion Balance										
anion sum	----	EC101	0.10	meq/L		12.7	12.5	12.9	12.8	13.0
cation sum	----	EC101	0.10	meq/L		12.0	11.9	11.8	11.9	11.8
ion balance (APHA)	----	EC101	0.01	%		-2.83	-2.46	-4.45	-3.64	-4.84
ion balance (cations/anions)	----	EC101	0.010	%		94.5	95.2	91.5	93.0	90.8
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0244	0.0113	0.0090	0.0095	0.0059
antimony, total	7440-36-0	E420	0.00010	mg/L		0.0654	0.0649	0.0629	0.0643	0.0620
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.181	0.159	0.152	0.153	0.136
barium, total	7440-39-3	E420	0.00010	mg/L		0.0555	0.0640	0.0780	0.0675	0.0860
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		0.089	0.086	0.090	0.088	0.090
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000595	0.0000444	0.0000402	0.0000320	0.0000274

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	24-Nov-2022 13:22	24-Nov-2022 13:02	24-Nov-2022 12:40	24-Nov-2022 13:40	24-Nov-2022 12:49
						SK2206861-001	SK2206861-002	SK2206861-003	SK2206861-004	SK2206861-005
						Result	Result	Result	Result	Result
Total Metals										
calcium, total	7440-70-2	E420	0.050	mg/L		138	142	141	141	143
cesium, total	7440-46-2	E420	0.000010	mg/L		0.000034	0.000030	0.000025	0.000029	0.000025
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00100	0.00044	0.00028	0.00039	0.00011
copper, total	7440-50-8	E420	0.00050	mg/L		0.161	0.0965	0.0677	0.0698	0.0429
iron, total	7439-89-6	E420	0.010	mg/L		0.040	<0.010	0.010	<0.010	<0.010
lead, total	7439-92-1	E420	0.000050	mg/L		0.000606	0.000083	0.000064	0.000087	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0130	0.0134	0.0140	0.0133	0.0140
magnesium, total	7439-95-4	E420	0.0050	mg/L		25.5	25.6	26.4	26.8	27.6
manganese, total	7439-96-5	E420	0.00010	mg/L		0.167	0.0781	0.0501	0.0709	0.0154
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.0178	0.0179	0.0178	0.0177	0.0174
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00505	0.00390	0.00404	0.00375	0.00315
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.289	0.278	0.261	0.222	0.168
potassium, total	7440-09-7	E420	0.050	mg/L		36.4	36.6	36.9	36.5	37.0
rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00238	0.00225	0.00208	0.00244	0.00230
selenium, total	7782-49-2	E420	0.000050	mg/L		0.0257	0.0264	0.0260	0.0260	0.0266
silicon, total	7440-21-3	E420	0.10	mg/L		4.68	4.37	4.18	4.52	4.41
silver, total	7440-22-4	E420	0.000010	mg/L		0.000014	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		55.9	41.7	43.0	42.3	43.7
strontium, total	7440-24-6	E420	0.00020	mg/L		0.638	0.666	0.672	0.667	0.684
sulfur, total	7704-34-9	E420	0.50	mg/L		126	130	130	130	132
tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000280	0.000228	0.000190	0.000238	0.000194
thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	0.00026	<0.00010	0.00047	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00041	<0.00030	<0.00030	<0.00030	<0.00030
tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
uranium, total	7440-61-1	E420	0.000010	mg/L		0.0774	0.0788	0.0746	0.0780	0.0750
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00322	0.00292	0.00253	0.00287	0.00222
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0217	0.0114	0.0117	0.0107	0.0084

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	24-Nov-2022 13:22	24-Nov-2022 13:02	24-Nov-2022 12:40	24-Nov-2022 13:40	24-Nov-2022 12:49
						SK2206861-001	SK2206861-002	SK2206861-003	SK2206861-004	SK2206861-005
						Result	Result	Result	Result	Result
Total Metals										
zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0115	0.0079	0.0048	0.0083	0.0043
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.0607	0.0621	0.0581	0.0621	0.0592
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.160	0.157	0.154	0.153	0.139
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0575	0.0648	0.0773	0.0701	0.0867
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.084	0.085	0.082	0.083	0.084
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000573	0.0000378	0.0000340	0.0000344	0.0000242
calcium, dissolved	7440-70-2	E421	0.050	mg/L		132	139	136	139	135
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000033	0.000026	0.000022	0.000027	0.000023
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00096	0.00044	0.00019	0.00040	0.00011
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.135	0.0887	0.0578	0.0668	0.0402
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.030	<0.030	<0.030	<0.030	<0.030
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	0.000063	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0126	0.0133	0.0130	0.0129	0.0131
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		25.0	26.0	26.8	26.5	26.9
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.162	0.0740	0.0341	0.0706	0.0146
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0171	0.0175	0.0165	0.0172	0.0167
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00494	0.00378	0.00391	0.00364	0.00310
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.260	0.249	0.251	0.195	0.185
potassium, dissolved	7440-09-7	E421	0.050	mg/L		36.8	36.8	37.4	36.7	36.9
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00242	0.00217	0.00199	0.00240	0.00231
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.0262	0.0269	0.0279	0.0277	0.0280
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.70	4.27	4.04	4.37	4.27
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		56.0	42.3	43.2	41.4	43.3
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.625	0.658	0.635	0.655	0.653

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	24-Nov-2022 13:22	24-Nov-2022 13:02	24-Nov-2022 12:40	24-Nov-2022 13:40	24-Nov-2022 12:49
Analyte	CAS Number	Method	LOR	Unit		SK2206861-001	SK2206861-002	SK2206861-003	SK2206861-004	SK2206861-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		128	130	129	130	132
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		0.000264	0.000226	0.000186	0.000225	0.000194
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	0.00022	<0.00010	0.00043	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.0718	0.0742	0.0696	0.0750	0.0724
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00304	0.00276	0.00242	0.00265	0.00208
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0179	0.0100	0.0099	0.0110	0.0074
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	24-Nov-2022 13:35	24-Nov-2022 12:53	24-Nov-2022 13:30	24-Nov-2022 12:58	----
						SK2206861-006	SK2206861-007	SK2206861-008	SK2206861-009	--------
						Result	Result	Result	Result	----
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		451	458	450	451	----
conductivity	----	E100	2.0	µS/cm		1120	1120	1110	1120	----
pH	----	E108	0.10	pH units		7.96	7.98	8.04	8.16	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		141	142	145	145	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		116	116	119	119	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		853	842	830	858	----
Anions and Nutrients										
chloride	16887-00-6	E235.Cl	0.50	mg/L		17.7	17.1	17.1	18.0	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.727	0.638	0.636	0.682	----
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		26.5	25.4	24.6	25.7	----
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		0.099	<0.050 DLDS	0.204	<0.050 DLDS	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		393	385	377	399	----
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		26.6	25.4	24.8	25.7	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		12.9	12.7	12.5	13.1	----
cation sum	----	EC101	0.10	meq/L		11.8	12.0	11.8	11.8	----
ion balance (APHA)	----	EC101	0.01	%		-4.45	-2.83	-2.88	-5.22	----
ion balance (cations/anions)	----	EC101	0.010	%		91.5	94.5	94.4	90.1	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0056	0.0040	0.0077	0.0056	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.0605	0.0543	0.0616	0.0587	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.126	0.0938	0.153	0.142	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0636	0.0734	0.0716	0.0830	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
boron, total	7440-42-8	E420	0.010	mg/L		0.089	0.087	0.089	0.092	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000690	0.0000582	0.0000411	0.0000269	----
calcium, total	7440-70-2	E420	0.050	mg/L		139	142	137	143	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	24-Nov-2022 13:35	24-Nov-2022 12:53	24-Nov-2022 13:30	24-Nov-2022 12:58	----
						SK2206861-006	SK2206861-007	SK2206861-008	SK2206861-009	--------
						Result	Result	Result	Result	----
Total Metals										
cesium, total	7440-46-2	E420	0.000010	mg/L		0.000047	0.000041	0.000034	0.000044	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	0.00038	0.00012	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.0367	0.0153	0.0762	0.0377	----
iron, total	7439-89-6	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.000068	<0.000050	0.000056	<0.000050	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0132	0.0133	0.0130	0.0138	----
magnesium, total	7439-95-4	E420	0.0050	mg/L		26.7	27.4	26.1	27.6	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0130	0.00086	0.0929	0.0222	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.0172	0.0165	0.0169	0.0156	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00343	0.00255	0.00434	0.00338	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.178	0.111	0.233	0.160	----
potassium, total	7440-09-7	E420	0.050	mg/L		37.1	37.0	37.4	36.9	----
rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00268	0.00259	0.00231	0.00244	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.0262	0.0266	0.0264	0.0258	----
silicon, total	7440-21-3	E420	0.10	mg/L		4.33	4.14	4.76	4.54	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, total	7440-23-5	E420	0.050	mg/L		42.2	43.8	42.0	43.0	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.673	0.678	0.665	0.660	----
sulfur, total	7704-34-9	E420	0.50	mg/L		129	133	132	130	----
tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000208	0.000163	0.000248	0.000212	----
thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
tin, total	7440-31-5	E420	0.00010	mg/L		0.00070	<0.00010	<0.00010	<0.00010	----
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.0730	0.0664	0.0820	0.0760	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00141	0.00060	0.00279	0.00230	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0103	0.0058	0.0127	0.0086	----
zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	24-Nov-2022 13:35	24-Nov-2022 12:53	24-Nov-2022 13:30	24-Nov-2022 12:58	----
						SK2206861-006	SK2206861-007	SK2206861-008	SK2206861-009	--------
						Result	Result	Result	Result	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0034	0.0023	0.0070	0.0031	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.0588	0.0531	0.0600	0.0621	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.128	0.0971	0.155	0.142	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0645	0.0765	0.0691	0.0824	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.082	0.082	0.083	0.084	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000708	0.0000575	0.0000380	0.0000244	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		137	139	137	137	----
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000044	0.000041	0.000032	0.000044	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	0.00039	0.00011	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.0343	0.0146	0.0719	0.0349	----
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.030	<0.030	<0.030	<0.030	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0126	0.0130	0.0126	0.0128	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		26.4	27.0	26.2	26.5	----
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.0114	<0.00500	0.0928	0.0216	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0169	0.0162	0.0163	0.0155	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00343	0.00252	0.00415	0.00326	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.186	0.124	0.213	0.182	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L		37.4	37.3	36.9	36.9	----
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00262	0.00269	0.00232	0.00241	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.0280	0.0277	0.0267	0.0279	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.26	4.04	4.53	4.57	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		41.7	42.9	41.7	42.4	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.659	0.665	0.629	0.660	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		130	134	127	132	----
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	24-Nov-2022 13:35	24-Nov-2022 12:53	24-Nov-2022 13:30	24-Nov-2022 12:58	----
Analyte	CAS Number	Method	LOR	Unit		SK2206861-006	SK2206861-007	SK2206861-008	SK2206861-009	--------
						Result	Result	Result	Result	----
Dissolved Metals										
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		0.000204	0.000161	0.000232	0.000206	----
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00063	<0.00010	<0.00010	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.0688	0.0637	0.0769	0.0746	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00133	<0.00050	0.00267	0.00205	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0093	0.0055	0.0109	0.0069	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **SK2206861**	Page	: 1 of 17
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon, Saskatchewan Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 24-Nov-2022 15:30
PO	: 1518	Issue Date	: 30-Nov-2022 10:44
C-O-C number	: ----		
Sampler	: Client		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE										
1A-O	E235.Cl	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
1B-O	E235.Cl	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
2A-O	E235.Cl	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
2B-O	E235.Cl	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
3A-O	E235.Cl	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
3B-O	E235.Cl	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
4A-O	E235.Cl	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE										
4B-O	E235.Cl	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
Influent	E235.Cl	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
1A-O	E235.F	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
1B-O	E235.F	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
2A-O	E235.F	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
2B-O	E235.F	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
3A-O	E235.F	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
3B-O	E235.F	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
4A-O	E235.F	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
4B-O	E235.F	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Influent	E235.F	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
1A-O	E235.NO3	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
1B-O	E235.NO3	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
2A-O	E235.NO3	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
2B-O	E235.NO3	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
3A-O	E235.NO3	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
3B-O	E235.NO3	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
4A-O	E235.NO3	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE 4B-O	E235.NO3	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE Influent	E235.NO3	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 1A-O	E235.NO2	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 1B-O	E235.NO2	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 2A-O	E235.NO2	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 2B-O	E235.NO2	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 3A-O	E235.NO2	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 3B-O	E235.NO2	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 4A-O	E235.NO2	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE										
4B-O	E235.NO2	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE										
Influent	E235.NO2	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	3 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
1A-O	E235.SO4	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
1B-O	E235.SO4	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
2A-O	E235.SO4	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
2B-O	E235.SO4	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
3A-O	E235.SO4	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
3B-O	E235.SO4	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
4A-O	E235.SO4	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
4B-O	E235.SO4	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Influent	E235.SO4	24-Nov-2022	24-Nov-2022	----	----		24-Nov-2022	28 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
1A-O	E421	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
1B-O	E421	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
2A-O	E421	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
2B-O	E421	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
3A-O	E421	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
3B-O	E421	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
4A-O	E421	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	180 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 4B-O	E421	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Influent	E421	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	180 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 1A-O	E290	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 1B-O	E290	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 2A-O	E290	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 2B-O	E290	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 3A-O	E290	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 3B-O	E290	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 4A-O	E290	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	14 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE										
4B-O	E290	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
Influent	E290	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	14 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
1A-O	E100	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
1B-O	E100	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
2A-O	E100	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
2B-O	E100	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
3A-O	E100	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
3B-O	E100	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
4A-O	E100	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	28 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE 4B-O	E100	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE Influent	E100	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	28 days	1 days	✓
Physical Tests : pH by Meter										
HDPE 1A-O	E108	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 1B-O	E108	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 2A-O	E108	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 2B-O	E108	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 3A-O	E108	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 3B-O	E108	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 4A-O	E108	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	0.25 hrs	0.25 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE 4B-O	E108	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	0.25 hrs	0.25 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE Influent	E108	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	0.25 hrs	0.25 hrs	✖ EHTR-FM
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 1A-O	E420	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	180 days	1 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 1B-O	E420	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	180 days	1 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 2A-O	E420	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	180 days	1 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 2B-O	E420	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	180 days	1 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 3A-O	E420	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	180 days	1 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 3B-O	E420	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	180 days	1 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 4A-O	E420	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	180 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
4B-O	E420	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	180 days	1 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
Influent	E420	24-Nov-2022	25-Nov-2022	----	----		25-Nov-2022	180 days	1 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	757352	1	15	6.6	5.0	✓
Chloride in Water by IC	E235.Cl	756664	1	18	5.5	5.0	✓
Conductivity in Water	E100	757351	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	757363	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	756661	1	16	6.2	5.0	✓
Nitrate in Water by IC	E235.NO3	756662	1	19	5.2	5.0	✓
Nitrite in Water by IC	E235.NO2	756665	1	19	5.2	5.0	✓
pH by Meter	E108	757350	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	756663	1	16	6.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	757364	1	10	10.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	757352	1	15	6.6	5.0	✓
Chloride in Water by IC	E235.Cl	756664	1	18	5.5	5.0	✓
Conductivity in Water	E100	757351	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	757363	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	756661	1	16	6.2	5.0	✓
Nitrate in Water by IC	E235.NO3	756662	1	19	5.2	5.0	✓
Nitrite in Water by IC	E235.NO2	756665	1	19	5.2	5.0	✓
pH by Meter	E108	757350	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	756663	1	16	6.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	757364	1	10	10.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	757352	1	15	6.6	5.0	✓
Chloride in Water by IC	E235.Cl	756664	1	18	5.5	5.0	✓
Conductivity in Water	E100	757351	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	757363	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	756661	1	16	6.2	5.0	✓
Nitrate in Water by IC	E235.NO3	756662	1	19	5.2	5.0	✓
Nitrite in Water by IC	E235.NO2	756665	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	756663	1	16	6.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	757364	1	10	10.0	5.0	✓
Matrix Spikes (MS)							
Chloride in Water by IC	E235.Cl	756664	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	757363	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	756661	1	16	6.2	5.0	✓

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Nitrate in Water by IC	E235.NO3	756662	1	19	5.2	5.0	✓
Nitrite in Water by IC	E235.NO2	756665	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	756663	1	16	6.2	5.0	✓
Total metals in Water by CRC ICPMS	E420	757364	1	10	10.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Saskatoon - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Saskatoon - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Chloride in Water by IC	E235.Cl Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 Saskatoon - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Total metals in Water by CRC ICPMS	E420 Saskatoon - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals in Water by CRC ICPMS	E421 Saskatoon - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Saskatoon - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Saskatoon - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
TDS in Water (Calculation)	EC103 Saskatoon - Environmental	Water	APHA 1030E (mod)	Total Dissolved Solids is calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N Saskatoon - Environmental	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 Saskatoon - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **SK2206861**	Page	: 1 of 14
Client	: Ensero Solutions Canada	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon, Saskatchewan Canada S7K 6X5
Telephone	:	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 24-Nov-2022 15:30
PO	: 1518	Date Analysis Commenced	: 24-Nov-2022
C-O-C number	: ----	Issue Date	: 30-Nov-2022 10:44
Sampler	: Client 306 978 3111		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Colby Bingham	Quality Systems Coordinator	Saskatoon Inorganics, Saskatoon, Saskatchewan
Colby Bingham	Quality Systems Coordinator	Saskatoon Metals, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Saskatoon Inorganics, Saskatoon, Saskatchewan
Jwan Abdalla	Laboratory Analyst	Saskatoon Inorganics, Saskatoon, Saskatchewan
Jwan Abdalla	Laboratory Analyst	Saskatoon Metals, Saskatoon, Saskatchewan
Ruth Islas	Laboratory Assistant	Saskatoon Metals, Saskatoon, Saskatchewan

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 757350)											
RG2201748-001	Anonymous	pH	----	E108	0.10	pH units	7.52	7.48	0.518%	3%	----
Physical Tests (QC Lot: 757351)											
RG2201748-001	Anonymous	conductivity	----	E100	2.0	µS/cm	2620	2650	1.14%	10%	----
Physical Tests (QC Lot: 757352)											
RG2201748-001	Anonymous	alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	74.4	72.6	2.60%	20%	----
Anions and Nutrients (QC Lot: 756661)											
RG2201748-001	Anonymous	fluoride	16984-48-8	E235.F	0.400	mg/L	0.486	0.402	0.084	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 756662)											
RG2201748-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3	0.400	mg/L	<0.400	<0.400	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 756663)											
RG2201748-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	6.00	mg/L	1360	1340	0.804%	20%	----
Anions and Nutrients (QC Lot: 756664)											
RG2201748-001	Anonymous	chloride	16887-00-6	E235.Cl	10.0	mg/L	109	107	1.54%	20%	----
Anions and Nutrients (QC Lot: 756665)											
RG2201748-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2	0.200	mg/L	<0.200	<0.200	0	Diff <2x LOR	----
Total Metals (QC Lot: 757364)											
SK2206857-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00013	0.00013	0.000002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.0259	0.0265	2.49%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0240	0.0245	2.03%	20%	----
		beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.230	0.235	2.53%	20%	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000076	0.0000069	0.0000008	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	158	163	3.12%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00072	0.00073	0.000008	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00635	0.00587	7.82%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	6.03	5.96	1.17%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 757364) - continued											
SK2206857-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.00306	0.00312	1.74%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0740	0.0795	7.13%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	73.8	75.0	1.66%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.394	0.402	2.12%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0126	0.0124	1.46%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00194	0.00191	0.00003	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	0.056	0.006	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	7.88	7.85	0.372%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00071	0.00078	0.00007	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000104	0.000117	0.000013	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	12.3	12.1	1.20%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.050	mg/L	64.4	66.3	2.84%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.717	0.713	0.536%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	153	149	2.29%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00267	0.00275	3.01%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0076	0.0074	0.0003	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 757363)											
SK2206817-016	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.162	0.144	11.9%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00016	0.00015	0.00001	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00018	0.00017	0.00001	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.173	0.176	1.54%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.014	0.014	0.00006	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000415	0.0000479	0.0000064	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 757363) - continued											
SK2206817-016	Anonymous	calcium, dissolved	7440-70-2	E421	0.050	mg/L	127	126	0.594%	20%	----
		cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000016	0.000017	0.000001	Diff <2x LOR	----
		chromium, dissolved	7440-47-3	E421	0.00050	mg/L	0.00118	0.00124	0.00006	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00074	0.00077	0.00003	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00362	0.00363	0.129%	20%	----
		iron, dissolved	7439-89-6	E421	0.030	mg/L	0.132	0.122	0.010	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000073	0.000068	0.000005	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0174	0.0166	5.15%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	45.8	45.9	0.179%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00500	mg/L	0.166	0.168	0.696%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00888	0.00869	2.15%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00335	0.00338	0.00004	Diff <2x LOR	----
		phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	8.19	8.09	1.24%	20%	----
		rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00140	0.00132	0.00008	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000259	0.000219	0.000040	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	9.02	8.98	0.527%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000053	0.000054	0.0000002	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	16.3	16.6	1.87%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.166	0.162	2.56%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	3.04	2.93	0.11	Diff <2x LOR	----
		tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00120	0.00119	1.30%	20%	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00888	0.00778	13.2%	20%	----
		tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000913	0.000886	2.97%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00056	0.00066	0.00010	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0042	0.0044	0.0002	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 757351)						
conductivity	----	E100	1	µS/cm	1.6	----
Physical Tests (QCLot: 757352)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Anions and Nutrients (QCLot: 756661)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 756662)						
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 756663)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 756664)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 756665)						
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Total Metals (QCLot: 757364)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 757364) - continued						
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 757363)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 757363) - continued						
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 757350)									
pH	----	E108	----	pH units	7 pH units	100	98.6	101	----
Physical Tests (QCLot: 757351)									
conductivity	----	E100	1	µS/cm	1000 µS/cm	100	90.0	110	----
Physical Tests (QCLot: 757352)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	98.6	85.0	115	----
Anions and Nutrients (QCLot: 756661)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	107	90.0	110	----
Anions and Nutrients (QCLot: 756662)									
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	106	90.0	110	----
Anions and Nutrients (QCLot: 756663)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	108	90.0	110	----
Anions and Nutrients (QCLot: 756664)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	108	90.0	110	----
Anions and Nutrients (QCLot: 756665)									
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	107	90.0	110	----
Total Metals (QCLot: 757364)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.8	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.8	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	96.1	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.3	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	95.9	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	91.5	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	96.0	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.6	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	99.6	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	96.2	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	97.9	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.1	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.5	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 757364) - continued									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.8	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	93.5	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.4	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	100	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	96.9	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	92.9	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	98.7	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	98.0	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	91.6	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	97.4	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	90.4	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	95.3	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	96.9	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	105	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	93.3	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	95.6	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	94.4	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	97.6	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	87.6	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	94.4	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	98.0	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	98.1	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	94.3	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	93.9	80.0	120	----
Dissolved Metals (QCLot: 757363)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.0	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.3	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.8	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	105	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 757363) - continued									
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	102	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	117	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	105	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	105	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	106	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.8	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	98.8	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.9	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	105	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	95.8	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	98.9	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.8	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.2	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	101	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	100	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	97.2	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 756661)										
RG2201749-001	Anonymous	fluoride	16984-48-8	E235.F	0.907 mg/L	1 mg/L	90.7	75.0	125	----
Anions and Nutrients (QCLot: 756662)										
RG2201749-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3	2.48 mg/L	2.5 mg/L	99.3	75.0	125	----
Anions and Nutrients (QCLot: 756663)										
RG2201749-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 756664)										
RG2201749-001	Anonymous	chloride	16887-00-6	E235.Cl	ND mg/L	100 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 756665)										
RG2201749-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2	0.458 mg/L	0.5 mg/L	91.6	75.0	125	----
Total Metals (QCLot: 757364)										
SK2206861-001	Influent	aluminum, total	7429-90-5	E420	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, total	7440-36-0	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		arsenic, total	7440-38-2	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00890 mg/L	0.01 mg/L	89.0	70.0	130	----
		boron, total	7440-42-8	E420	0.082 mg/L	0.1 mg/L	82.2	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00395 mg/L	0.004 mg/L	98.8	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, total	7440-46-2	E420	0.0103 mg/L	0.01 mg/L	103	70.0	130	----
		chromium, total	7440-47-3	E420	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	1.95 mg/L	2 mg/L	97.4	70.0	130	----
		lead, total	7439-92-1	E420	0.0192 mg/L	0.02 mg/L	96.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, total	7440-02-0	E420	0.0389 mg/L	0.04 mg/L	97.3	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 757364) - continued										
SK2206861-001	Influent	phosphorus, total	7723-14-0	E420	10.3 mg/L	10 mg/L	103	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		selenium, total	7782-49-2	E420	0.0386 mg/L	0.04 mg/L	96.6	70.0	130	----
		silicon, total	7440-21-3	E420	9.52 mg/L	10 mg/L	95.2	70.0	130	----
		silver, total	7440-22-4	E420	0.00392 mg/L	0.004 mg/L	98.1	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		thallium, total	7440-28-0	E420	0.00370 mg/L	0.004 mg/L	92.4	70.0	130	----
		thorium, total	7440-29-1	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		tin, total	7440-31-5	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0383 mg/L	0.04 mg/L	95.7	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, total	7440-66-6	E420	0.375 mg/L	0.4 mg/L	93.7	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0418 mg/L	0.04 mg/L	104	70.0	130	----
Dissolved Metals (QCLot: 757363)										
SK2206836-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.197 mg/L	0.2 mg/L	98.5	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0216 mg/L	0.02 mg/L	108	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00952 mg/L	0.01 mg/L	95.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.095 mg/L	0.1 mg/L	95.4	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00407 mg/L	0.004 mg/L	102	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, dissolved	7440-46-2	E421	0.0104 mg/L	0.01 mg/L	104	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0398 mg/L	0.04 mg/L	99.4	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0192 mg/L	0.02 mg/L	95.9	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.95 mg/L	2 mg/L	97.7	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 757363) - continued										
SK2206836-001	Anonymous	lithium, dissolved	7439-93-2	E421	0.0948 mg/L	0.1 mg/L	94.8	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0384 mg/L	0.04 mg/L	96.0	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	10.9 mg/L	10 mg/L	109	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0452 mg/L	0.04 mg/L	113	70.0	130	----
		silicon, dissolved	7440-21-3	E421	8.81 mg/L	10 mg/L	88.1	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00394 mg/L	0.004 mg/L	98.4	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----
		tungsten, dissolved	7440-33-7	E421	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.382 mg/L	0.4 mg/L	95.6	70.0	130	----
		zirconium, dissolved	7440-67-7	E421	0.0397 mg/L	0.04 mg/L	99.2	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 22 -

Page 1 of 1

Environmental Division Saskatoon

Work Order Reference SK2206861

Telephone : +1 306 668 8370

Report To	Contact and company name below will appear on the final report
Company:	Ensero Solutions Canada Inc.
Contact:	Rachel Martz
Phone:	306-978-3111
	Company address below will appear on the final report
Street:	104-411 Downey Rd
City/Province:	Saskatoon, SK
Postal Code:	S7N 4L8
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Ensero Solutions Canada Inc. 410-885 Dunsmuir St, Vancouver,
Contact:	BC V6C1N5 Contact: Rachel Martz

Project Information	
ALS Account # / Quote #:	
Job #:	ECA22YT00211
PO / AFE:	1518
LSD:	

Reports / Recipients	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	rmartz@ensero.com
Email 2	snenson@ensero.com
Email 3	kpiecowye@ensero.com

Invoice Recipients	
Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	ap@ensero.com
Email 2	rmartz@ensero.com

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only): | **ALS Contact:** | **Sampler:**

Turnaround Time (TAT) Requested

- ☑ Routine [R] if received by 3pm M-F - no surcharges apply
- ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
- ☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
- ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
- ☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
- ☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: 6-17-22 5:00 PM

For all tests with rush TATs requested, please contact your AM to confirm availability.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	P	F/P			SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
						Total Metals	Dissolved Metals	Routine				
	Influent	24-Nov-22	13:22	Water	3	R	R	R		0	0	0
	1A-O	24-Nov-22	13:02	Water	3	R	R	R				
	1B-O	24-Nov-22	12:40	Water	3	R	R	R				
	2A-O	24-Nov-22	13:40	Water	3	R	R	R				
	2B-O	24-Nov-22	12:49	Water	3	R	R	R				
	3A-O	24-Nov-22	13:35	Water	3	R	R	R				
	3B-O	24-Nov-22	12:53	Water	3	R	R	R				
	4A-O	24-Nov-22	13:30	Water	3	R	R	R				
	4B-O	24-Nov-22	12:58	Water	3	R	R	R				

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	Please send Ensero format EDD
Are samples for human consumption/ use? ☐ YES ☑ NO	Routine (anions, cations, alkalinity, pH, Conductivity, TDS, ion balance,hardness as CaCO3)

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
17.2°C					

SHIPMENT RELEASE (client use)		
Released by:	Date:	Time:

INITIAL SHIPMENT RECEPTION (ALS use only)		
Received by: F.W	Date: 24/11/22.	Time: 3:30

FINAL SHIPMENT RECEPTION (ALS use only)		
Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

FE92022 FRONT

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **SK2206992**	Page	: 1 of 10
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon SK Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 02-Dec-2022 12:00
PO	: 1518	Date Analysis Commenced	: 02-Dec-2022
C-O-C number	: ----	Issue Date	: 08-Dec-2022 08:39
Sampler	: Client		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Anthony Calero	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Colby Bingham	Quality Systems Coordinator	Inorganics, Saskatoon, Saskatchewan
Colby Bingham	Quality Systems Coordinator	Metals, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Justin Jackson		Metals, Saskatoon, Saskatchewan

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
%	percent
µS/cm	microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	02-Dec-2022 10:02	02-Dec-2022 09:32	02-Dec-2022 09:00	02-Dec-2022 09:51	02-Dec-2022 09:15
						SK2206992-001	SK2206992-002	SK2206992-003	SK2206992-004	SK2206992-005
						Result	Result	Result	Result	Result
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		420	432	429	436	433
conductivity	----	E100	2.0	µS/cm		1120	1100	1100	1100	1110
pH	----	E108	0.10	pH units		7.71	7.90	7.91	7.93	7.94
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		132	137	142	140	148
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		108	112	116	115	122
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		796	812	796	818	810
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.139	----	<0.0050	----	<0.0050
chloride	16887-00-6	E235.Cl	0.50	mg/L		15.2	15.2	14.8	15.3	15.4
fluoride	16984-48-8	E235.F	0.020	mg/L		0.508	0.522	0.507	0.524	0.525
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		22.8	25.4	24.8	25.2	24.8
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		4.27	0.576	0.082	0.383	0.078
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		358	369	356	373	364
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		27.1	26.0	24.9	25.6	24.9
Ion Balance										
anion sum	----	EC101	0.10	meq/L		12.0	12.2	12.0	12.3	12.2
cation sum	----	EC101	0.10	meq/L		11.0	11.3	11.3	11.4	11.4
ion balance (APHA)	----	EC101	0.01	%		-4.35	-3.83	-3.00	-3.80	-3.39
ion balance (cations/anions)	----	EC101	0.010	%		91.7	92.6	94.2	92.7	93.4
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0184	0.0099	0.0100	0.0092	0.0810
antimony, total	7440-36-0	E420	0.00010	mg/L		0.0640	0.0619	0.0608	0.0615	0.0616
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.185	0.159	0.147	0.154	0.140
barium, total	7440-39-3	E420	0.00010	mg/L		0.0526	0.0611	0.0685	0.0613	0.0746
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		0.072	0.070	0.073	0.072	0.079

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	02-Dec-2022 10:02	02-Dec-2022 09:32	02-Dec-2022 09:00	02-Dec-2022 09:51	02-Dec-2022 09:15
						SK2206992-001	SK2206992-002	SK2206992-003	SK2206992-004	SK2206992-005
						Result	Result	Result	Result	Result
Total Metals										
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000617	0.0000487	0.0000408	0.0000399	0.0000328
calcium, total	7440-70-2	E420	0.050	mg/L		139	138	138	143	144
cesium, total	7440-46-2	E420	0.000010	mg/L		0.000035	0.000029	0.000022	0.000030	0.000026
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00102	0.00046	0.00018	0.00037	0.00011
copper, total	7440-50-8	E420	0.00050	mg/L		0.125	0.0631	0.0517	0.0554	0.0416
iron, total	7439-89-6	E420	0.010	mg/L		0.035	<0.010	<0.010	<0.010	<0.010
lead, total	7439-92-1	E420	0.000050	mg/L		0.000551	0.000082	<0.000050	0.000104	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0112	0.0111	0.0114	0.0115	0.0122
magnesium, total	7439-95-4	E420	0.0050	mg/L		24.2	24.0	23.9	24.2	25.3
manganese, total	7439-96-5	E420	0.00010	mg/L		0.174	0.0830	0.0350	0.0712	0.0166
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.0173	0.0173	0.0165	0.0173	0.0167
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00512	0.00424	0.00395	0.00410	0.00357
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.346	0.282	0.266	0.255	0.246
potassium, total	7440-09-7	E420	0.050	mg/L		34.6	35.0	34.1	34.0	35.6
rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00258	0.00237	0.00218	0.00255	0.00244
selenium, total	7782-49-2	E420	0.000050	mg/L		0.0269	0.0268	0.0277	0.0269	0.0272
silicon, total	7440-21-3	E420	0.10	mg/L		5.12	4.63	4.44	4.62	4.32
silver, total	7440-22-4	E420	0.000010	mg/L		0.000012	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		42.1	41.2	40.8	41.1	42.4
strontium, total	7440-24-6	E420	0.00020	mg/L		0.604	0.601	0.598	0.618	0.610
sulfur, total	7704-34-9	E420	0.50	mg/L		125	126	129	128	127
tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000292	0.000250	0.000228	0.000258	0.000230
thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	0.00016	<0.00010	0.00019	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00060 DLM	<0.00030	<0.00030	<0.00030	<0.00030
tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
uranium, total	7440-61-1	E420	0.000010	mg/L		0.0728	0.0720	0.0706	0.0695	0.0685
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00305	0.00274	0.00238	0.00264	0.00225

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	02-Dec-2022 10:02	02-Dec-2022 09:32	02-Dec-2022 09:00	02-Dec-2022 09:51	02-Dec-2022 09:15
						SK2206992-001	SK2206992-002	SK2206992-003	SK2206992-004	SK2206992-005
						Result	Result	Result	Result	Result
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0160	0.0108	0.0097	0.0100	0.0082
zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0096	0.0066	0.0048	0.0059	0.0043
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.0601	0.0620	0.0601	0.0629	0.0613
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.165	0.163	0.159	0.157	0.146
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0512	0.0599	0.0688	0.0634	0.0760
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.069	0.073	0.076	0.072	0.077
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000580	0.0000466	0.0000376	0.0000401	0.0000281
calcium, dissolved	7440-70-2	E421	0.050	mg/L		130	134	132	135	133
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000033	0.000028	0.000022	0.000028	0.000025
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00093	0.00043	0.00018	0.00034	0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.0997	0.0563	0.0495	0.0497	0.0382
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.030	<0.030	<0.030	<0.030	<0.030
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000052	<0.000050	<0.000050	0.000058	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0105	0.0113	0.0114	0.0109	0.0112
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		23.2	23.6	24.1	24.0	24.6
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.159	0.0777	0.0338	0.0655	0.0146
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0165	0.0171	0.0164	0.0170	0.0166
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00499	0.00411	0.00406	0.00398	0.00341
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.303	0.282	0.235	0.237	0.170
potassium, dissolved	7440-09-7	E421	0.050	mg/L		34.8	34.8	34.9	34.8	35.5
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00243	0.00223	0.00214	0.00232	0.00236
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.0286	0.0303	0.0296	0.0301	0.0295
silicon, dissolved	7440-21-3	E421	0.050	mg/L		5.05	4.76	4.53	4.78	4.40
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		40.3	40.7	41.3	40.3	41.3

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	02-Dec-2022 10:02	02-Dec-2022 09:32	02-Dec-2022 09:00	02-Dec-2022 09:51	02-Dec-2022 09:15
Analyte	CAS Number	Method	LOR	Unit		SK2206992-001	SK2206992-002	SK2206992-003	SK2206992-004	SK2206992-005
						Result	Result	Result	Result	Result
Dissolved Metals										
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.592	0.614	0.605	0.618	0.632
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		126	133	132	133	132
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		0.000268	0.000234	0.000210	0.000245	0.000224
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	0.00024	<0.00010	0.00023	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.0720	0.0733	0.0685	0.0742	0.0713
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00270	0.00247	0.00219	0.00239	0.00213
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0155	0.0115	0.0104	0.0122	0.0101
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	3A-O	3B-O	4A-O	4B-O	----
				Client sampling date / time	02-Dec-2022 09:37	02-Dec-2022 09:05	02-Dec-2022 09:44	02-Dec-2022 09:10	----
Analyte	CAS Number	Method	LOR	Unit	SK2206992-006	SK2206992-007	SK2206992-008	SK2206992-009	--------
					Result	Result	Result	Result	----
Physical Tests									
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	437	442	450	455	----
conductivity	----	E100	2.0	µS/cm	1120	1140	1100	1110	----
pH	----	E108	0.10	pH units	7.82	7.84	7.82	7.90	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	142	150	144	146	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	116	123	118	120	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L	827	844	806	815	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	----	<0.0050	----	<0.0050	----
chloride	16887-00-6	E235.Cl	0.50	mg/L	15.8	16.2	14.8	15.4	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.563	0.556	0.530	0.513	----
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	25.8	26.2	23.9	24.0	----
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	0.141	<0.050 DLDS	0.122	0.072	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	380	389	358	364	----
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L	25.9	26.2	24.0	24.1	----
Ion Balance									
anion sum	----	EC101	0.10	meq/L	12.6	12.9	12.0	12.2	----
cation sum	----	EC101	0.10	meq/L	11.4	11.6	11.8	11.9	----
ion balance (APHA)	----	EC101	0.01	%	-5.00	-5.31	-0.84	-1.24	----
ion balance (cations/anions)	----	EC101	0.010	%	90.5	89.9	98.3	97.5	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0058	0.0040	0.0164	0.0046	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.0582	0.0574	0.0640	0.0632	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.120	0.0964	0.162	0.147	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0595	0.0712	0.0648	0.0769	----
beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----
boron, total	7440-42-8	E420	0.010	mg/L	0.074	0.073	0.075	0.078	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000764	0.0000641	0.0000451	0.0000305	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	02-Dec-2022 09:37	02-Dec-2022 09:05	02-Dec-2022 09:44	02-Dec-2022 09:10	----
Analyte	CAS Number	Method	LOR	Unit		SK2206992-006	SK2206992-007	SK2206992-008	SK2206992-009	--------
						Result	Result	Result	Result	----
Total Metals										
calcium, total	7440-70-2	E420	0.050	mg/L		143	140	135	137	----
cesium, total	7440-46-2	E420	0.000010	mg/L		0.000041	0.000042	0.000034	0.000047	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00013	<0.00010	0.00037	0.00011	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.0386	0.0142	0.0618	0.0393	----
iron, total	7439-89-6	E420	0.010	mg/L		<0.010	<0.010	0.023	<0.010	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.000797	<0.000050	0.000215	<0.000050	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0119	0.0120	0.0122	0.0119	----
magnesium, total	7439-95-4	E420	0.0050	mg/L		25.2	27.6	25.6	26.7	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0242	0.00038	0.0969	0.0185	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.0166	0.0162	0.0172	0.0168	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00360	0.00273	0.00453	0.00367	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.233	0.135	0.239	0.180	----
potassium, total	7440-09-7	E420	0.050	mg/L		35.3	37.6	37.8	38.1	----
rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00277	0.00289	0.00247	0.00243	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.0279	0.0292	0.0278	0.0294	----
silicon, total	7440-21-3	E420	0.10	mg/L		4.35	4.02	5.16	4.74	----
silver, total	7440-22-4	E420	0.000010	mg/L		0.000011	<0.000010	<0.000010	<0.000010	----
sodium, total	7440-23-5	E420	0.050	mg/L		42.6	43.2	41.2	43.4	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.611	0.700	0.667	0.683	----
sulfur, total	7704-34-9	E420	0.50	mg/L		129	131	124	126	----
tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000238	0.000186	0.000262	0.000242	----
thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
tin, total	7440-31-5	E420	0.00010	mg/L		0.00016	<0.00010	0.00018	<0.00010	----
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	0.00042	<0.00030	----
tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.0658	0.0644	0.0751	0.0713	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00146	0.00055	0.00270	0.00230	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0103	0.0048	0.0133	0.0076	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	02-Dec-2022 09:37	02-Dec-2022 09:05	02-Dec-2022 09:44	02-Dec-2022 09:10	----
						SK2206992-006	SK2206992-007	SK2206992-008	SK2206992-009	--------
						Result	Result	Result	Result	----
Total Metals										
zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0042	0.0015	0.0057	0.0028	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.0592	0.0539	0.0669	0.0618	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.124	0.0948	0.161	0.146	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0601	0.0728	0.0617	0.0756	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.075	0.076	0.075	0.080	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000706	0.0000632	0.0000450	0.0000246	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		135	135	137	139	----
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000038	0.000039	0.000038	0.000044	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	0.00036	<0.00010	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.0279	0.0131	0.0532	0.0350	----
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.030	<0.030	<0.030	<0.030	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000060	<0.000050	0.000062	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0114	0.0115	0.0125	0.0132	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		24.3	25.5	26.3	26.3	----
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.00794	<0.00500	0.0934	0.0174	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0160	0.0154	0.0173	0.0160	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00337	0.00270	0.00440	0.00343	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.197	0.103	0.229	0.157	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L		34.7	35.7	36.7	36.5	----
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00258	0.00275	0.00248	0.00249	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.0305	0.0309	0.0284	0.0278	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.46	3.99	5.16	4.53	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		40.4	41.9	41.8	42.4	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.602	0.653	0.667	0.655	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	02-Dec-2022 09:37	02-Dec-2022 09:05	02-Dec-2022 09:44	02-Dec-2022 09:10	----
Analyte	CAS Number	Method	LOR	Unit		SK2206992-006	SK2206992-007	SK2206992-008	SK2206992-009	--------
						Result	Result	Result	Result	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		133	137	124	122	----
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		0.000226	0.000176	0.000253	0.000237	----
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00018	<0.00010	0.00017	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.0689	0.0631	0.0692	0.0672	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00116	<0.00050	0.00250	0.00212	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0104	0.0075	0.0145	0.0098	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **SK2206992**	Page	: 1 of 18
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon, Saskatchewan Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 02-Dec-2022 12:00
PO	: 1518	Issue Date	: 08-Dec-2022 08:39
C-O-C number	: ----		
Sampler	: Client		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Method Blank (MB) Values								
Anions and Nutrients	QC-769407-001	----	ammonia, total (as N)	7664-41-7	E298	0.0080 B mg/L	0.005 mg/L	Blank result exceeds permitted value

Result Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 1B-O	E298	02-Dec-2022	06-Dec-2022	----	----		06-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 2B-O	E298	02-Dec-2022	06-Dec-2022	----	----		06-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 3B-O	E298	02-Dec-2022	06-Dec-2022	----	----		06-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 4B-O	E298	02-Dec-2022	06-Dec-2022	----	----		06-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Influent	E298	02-Dec-2022	06-Dec-2022	----	----		06-Dec-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 1A-O	E235.Cl	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 1B-O	E235.Cl	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE 2A-O	E235.Cl	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 2B-O	E235.Cl	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 3A-O	E235.Cl	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 3B-O	E235.Cl	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 4A-O	E235.Cl	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 4B-O	E235.Cl	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Influent	E235.Cl	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 1A-O	E235.F	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 1B-O	E235.F	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE 2A-O	E235.F	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 2B-O	E235.F	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 3A-O	E235.F	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 3B-O	E235.F	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 4A-O	E235.F	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 4B-O	E235.F	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Influent	E235.F	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 1A-O	E235.NO3	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 1B-O	E235.NO3	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	3 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE 2A-O	E235.NO3	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 2B-O	E235.NO3	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 3A-O	E235.NO3	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 3B-O	E235.NO3	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 4A-O	E235.NO3	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 4B-O	E235.NO3	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE Influent	E235.NO3	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 1A-O	E235.NO2	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 1B-O	E235.NO2	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	3 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE 2A-O	E235.NO2	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 2B-O	E235.NO2	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 3A-O	E235.NO2	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 3B-O	E235.NO2	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 4A-O	E235.NO2	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 4B-O	E235.NO2	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE Influent	E235.NO2	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	3 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 1A-O	E235.SO4	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 1B-O	E235.SO4	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
2A-O	E235.SO4	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
2B-O	E235.SO4	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
3A-O	E235.SO4	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
3B-O	E235.SO4	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
4A-O	E235.SO4	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
4B-O	E235.SO4	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Influent	E235.SO4	02-Dec-2022	02-Dec-2022	----	----		02-Dec-2022	28 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
1A-O	E421	02-Dec-2022	06-Dec-2022	----	----		06-Dec-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
1B-O	E421	02-Dec-2022	06-Dec-2022	----	----		06-Dec-2022	180 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 2A-O	E421	02-Dec-2022	06-Dec-2022	----	----		06-Dec-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 2B-O	E421	02-Dec-2022	06-Dec-2022	----	----		06-Dec-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 3A-O	E421	02-Dec-2022	06-Dec-2022	----	----		06-Dec-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 3B-O	E421	02-Dec-2022	06-Dec-2022	----	----		06-Dec-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Influent	E421	02-Dec-2022	06-Dec-2022	----	----		06-Dec-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 4A-O	E421	02-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 4B-O	E421	02-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	180 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 1A-O	E290	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 1B-O	E290	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE 2A-O	E290	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 2B-O	E290	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 3A-O	E290	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 3B-O	E290	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 4A-O	E290	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 4B-O	E290	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Influent	E290	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	14 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 1A-O	E100	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 1B-O	E100	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE 2A-O	E100	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 2B-O	E100	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 3A-O	E100	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 3B-O	E100	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 4A-O	E100	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE 4B-O	E100	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE Influent	E100	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	28 days	3 days	✓
Physical Tests : pH by Meter										
HDPE 1A-O	E108	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	0.25 hrs	0.27 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 1B-O	E108	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	0.25 hrs	0.27 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE 2A-O	E108	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	0.25 hrs	0.27 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 2B-O	E108	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	0.25 hrs	0.27 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 3A-O	E108	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	0.25 hrs	0.27 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 3B-O	E108	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	0.25 hrs	0.27 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 4A-O	E108	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	0.25 hrs	0.27 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 4B-O	E108	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	0.25 hrs	0.27 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Influent	E108	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	0.25 hrs	0.27 hrs	× EHTR-FM
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 1A-O	E420	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 1B-O	E420	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	180 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 2A-O	E420	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 2B-O	E420	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 3A-O	E420	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 3B-O	E420	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) Influent	E420	02-Dec-2022	05-Dec-2022	----	----		05-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 4A-O	E420	02-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 4B-O	E420	02-Dec-2022	07-Dec-2022	----	----		07-Dec-2022	180 days	5 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	765986	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	769407	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	765976	1	9	11.1	5.0	✓
Conductivity in Water	E100	765985	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	765984	2	36	5.5	5.0	✓
Fluoride in Water by IC	E235.F	765975	1	9	11.1	5.0	✓
Nitrate in Water by IC	E235.NO3	765972	1	9	11.1	5.0	✓
Nitrite in Water by IC	E235.NO2	765973	1	9	11.1	5.0	✓
pH by Meter	E108	765987	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	765974	1	9	11.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	765914	2	29	6.9	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	765986	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	769407	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	765976	1	9	11.1	5.0	✓
Conductivity in Water	E100	765985	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	765984	2	36	5.5	5.0	✓
Fluoride in Water by IC	E235.F	765975	1	9	11.1	5.0	✓
Nitrate in Water by IC	E235.NO3	765972	1	9	11.1	5.0	✓
Nitrite in Water by IC	E235.NO2	765973	1	9	11.1	5.0	✓
pH by Meter	E108	765987	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	765974	1	9	11.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	765914	2	29	6.9	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	765986	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	769407	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	765976	1	9	11.1	5.0	✓
Conductivity in Water	E100	765985	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	765984	2	36	5.5	5.0	✓
Fluoride in Water by IC	E235.F	765975	1	9	11.1	5.0	✓
Nitrate in Water by IC	E235.NO3	765972	1	9	11.1	5.0	✓
Nitrite in Water by IC	E235.NO2	765973	1	9	11.1	5.0	✓
Sulfate in Water by IC	E235.SO4	765974	1	9	11.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	765914	2	29	6.9	5.0	✓
Matrix Spikes (MS)							

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Ammonia by Fluorescence	E298	769407	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	765976	1	9	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	765984	2	36	5.5	5.0	✓
Fluoride in Water by IC	E235.F	765975	1	9	11.1	5.0	✓
Nitrate in Water by IC	E235.NO3	765972	1	9	11.1	5.0	✓
Nitrite in Water by IC	E235.NO2	765973	1	9	11.1	5.0	✓
Sulfate in Water by IC	E235.SO4	765974	1	9	11.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	765914	2	29	6.9	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Saskatoon - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Saskatoon - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Chloride in Water by IC	E235.Cl Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 Saskatoon - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total metals in Water by CRC ICPMS	E420 Saskatoon - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals in Water by CRC ICPMS	E421 Saskatoon - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Saskatoon - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Saskatoon - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
TDS in Water (Calculation)	EC103 Saskatoon - Environmental	Water	APHA 1030E (mod)	Total Dissolved Solids is calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N Saskatoon - Environmental	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Dissolved Metals Water Filtration	EP421 Saskatoon - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **SK2206992**	Page	: 1 of 26
Client	: Ensero Solutions Canada	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon, Saskatchewan Canada S7K 6X5
Telephone	:	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 02-Dec-2022 12:00
PO	: 1518	Date Analysis Commenced	: 02-Dec-2022
C-O-C number	: ----	Issue Date	: 08-Dec-2022 08:39
Sampler	: Client 306 978 3111		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Anthony Calero	Supervisor - Inorganic	Calgary Inorganics, Calgary, Alberta
Colby Bingham	Quality Systems Coordinator	Saskatoon Inorganics, Saskatoon, Saskatchewan
Colby Bingham	Quality Systems Coordinator	Saskatoon Metals, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Saskatoon Inorganics, Saskatoon, Saskatchewan
Justin Jackson		Saskatoon Metals, Saskatoon, Saskatchewan

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 765985)											
RG2201774-002	Anonymous	conductivity	----	E100	2.0	µS/cm	8.1	8.4	0.2	Diff <2x LOR	----
Physical Tests (QC Lot: 765986)											
RG2201774-002	Anonymous	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	4.1	4.3	0.1	Diff <2x LOR	----
Physical Tests (QC Lot: 765987)											
RG2201774-002	Anonymous	pH	----	E108	0.10	pH units	6.36	6.36	0.008	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 765972)											
SK2206992-001	Influent	nitrate (as N)	14797-55-8	E235.NO3	0.100	mg/L	22.8	21.7	5.06%	20%	----
Anions and Nutrients (QC Lot: 765973)											
SK2206992-001	Influent	nitrite (as N)	14797-65-0	E235.NO2	0.050	mg/L	4.27	4.20	1.81%	20%	----
Anions and Nutrients (QC Lot: 765974)											
SK2206992-001	Influent	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	358	350	2.14%	20%	----
Anions and Nutrients (QC Lot: 765975)											
SK2206992-001	Influent	fluoride	16984-48-8	E235.F	0.100	mg/L	0.508	0.491	0.016	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 765976)											
SK2206992-001	Influent	chloride	16887-00-6	E235.Cl	2.50	mg/L	15.2	14.5	0.69	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 769407)											
CG2216804-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.125	mg/L	2.06	1.90	8.12%	20%	----
Total Metals (QC Lot: 765914)											
RG2201773-001	Anonymous	aluminum, total	7429-90-5	E420	0.0060	mg/L	0.0167	0.0162	0.0005	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00020	mg/L	0.00027	0.00023	0.00004	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00292	0.00289	1.04%	20%	----
		barium, total	7440-39-3	E420	0.00020	mg/L	0.100	0.103	2.62%	20%	----
		beryllium, total	7440-41-7	E420	0.000040	mg/L	<0.000040	<0.000040	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.020	mg/L	0.929	1.00	7.58%	20%	----
		cadmium, total	7440-43-9	E420	0.0000100	mg/L	<0.0000100	0.0000102	0.0000002	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.100	mg/L	228	232	1.40%	20%	----
		cesium, total	7440-46-2	E420	0.000020	mg/L	0.000277	0.000286	3.32%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	0.00050	0.00057	0.00006	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 765914) - continued											
RG2201773-001	Anonymous	copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0020	mg/L	0.122	0.125	2.16%	20%	----
		magnesium, total	7439-95-4	E420	0.0100	mg/L	110	109	0.122%	20%	----
		manganese, total	7439-96-5	E420	0.00020	mg/L	1.74	1.73	0.509%	20%	----
		molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.0273	0.0271	0.495%	20%	----
		nickel, total	7440-02-0	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.100	mg/L	2.46	2.49	1.04%	20%	----
		potassium, total	7440-09-7	E420	0.100	mg/L	10.1	9.88	2.16%	20%	----
		rubidium, total	7440-17-7	E420	0.00040	mg/L	0.00216	0.00226	0.00010	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000100	mg/L	0.127	0.124	2.20%	20%	----
		silicon, total	7440-21-3	E420	0.20	mg/L	13.9	13.7	1.60%	20%	----
		silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.100	mg/L	223	222	0.532%	20%	----
		strontium, total	7440-24-6	E420	0.00040	mg/L	1.40	1.39	0.465%	20%	----
		sulfur, total	7704-34-9	E420	1.00	mg/L	488	474	2.88%	20%	----
		tellurium, total	13494-80-9	E420	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00020	mg/L	0.00062	0.00064	0.00002	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000020	mg/L	0.00101	0.000970	3.94%	20%	----
		vanadium, total	7440-62-2	E420	0.00100	mg/L	0.00153	0.00164	0.00012	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
Total Metals (QC Lot: 769284)											
SK2206992-008	4A-O	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0164	0.0169	0.0005	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.0640	0.0651	1.80%	20%	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.162	0.162	0.152%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0648	0.0636	1.87%	20%	----
		beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 769284) - continued											
SK2206992-008	4A-O	boron, total	7440-42-8	E420	0.010	mg/L	0.075	0.075	0.00003	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000451	0.0000496	0.0000046	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	135	138	2.48%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.000034	0.000037	0.000002	Diff <2x LOR	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00037	0.00040	0.00002	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.0618	0.0625	1.10%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.023	0.025	0.002	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000215	0.000209	0.000006	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0122	0.0118	3.87%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	25.6	26.2	2.24%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0969	0.0974	0.527%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0172	0.0176	2.50%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00453	0.00450	0.00003	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	0.239	0.281	0.042	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	37.8	38.3	1.29%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00247	0.00254	2.53%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.0278	0.0271	2.67%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	5.16	4.92	4.74%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.050	mg/L	41.2	42.2	2.36%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.667	0.673	0.888%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	124	120	3.60%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000262	0.000251	4.47%	20%	----
		thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	0.00018	0.00018	0.0000006	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00042	0.00042	0.000004	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.0751	0.0713	5.21%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00270	0.00270	0.000003	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0133	0.0139	0.0006	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 765984)											

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 765984) - continued											
SK2206986-008	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0020	mg/L	0.0028	0.0029	0.0001	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00020	mg/L	0.00026	0.00024	0.00002	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00020	mg/L	0.00069	0.00074	0.00004	Diff <2x LOR	----
		barium, dissolved	7440-39-3	E421	0.00020	mg/L	0.0601	0.0596	0.751%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000040	mg/L	<0.000040	<0.000040	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.020	mg/L	0.030	0.027	0.002	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000100	mg/L	<0.0000100	<0.0000100	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.100	mg/L	381	366	4.16%	20%	----
		cesium, dissolved	7440-46-2	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00020	mg/L	0.00030	0.00030	0.000004	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00040	mg/L	0.00216	0.00228	0.00012	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.020	mg/L	0.198	0.202	1.82%	20%	----
		lead, dissolved	7439-92-1	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0020	mg/L	0.0127	0.0110	0.0017	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	130	129	0.472%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00020	mg/L	0.110	0.111	1.70%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000100	mg/L	0.0305	0.0306	0.106%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00100	mg/L	0.00282	0.00285	0.00003	Diff <2x LOR	----
		phosphorus, dissolved	7723-14-0	E421	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	3.51	3.51	0.194%	20%	----
		rubidium, dissolved	7440-17-7	E421	0.00040	mg/L	0.00186	0.00180	0.00006	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000100	mg/L	0.0140	0.0147	4.59%	20%	----
		silicon, dissolved	7440-21-3	E421	0.100	mg/L	1.64	1.65	0.303%	20%	----
		silver, dissolved	7440-22-4	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.100	mg/L	28.8	29.6	2.55%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00040	mg/L	0.757	0.763	0.789%	20%	----
		sulfur, dissolved	7704-34-9	E421	1.00	mg/L	475	483	1.74%	20%	----
		tellurium, dissolved	13494-80-9	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		thorium, dissolved	7440-29-1	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00020	mg/L	0.00141	0.00140	0.00001	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 765984) - continued											
SK2206986-008	Anonymous	tungsten, dissolved	7440-33-7	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000020	mg/L	0.00295	0.00290	1.52%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 769286)											
SK2206992-008	4A-O	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0057	0.0064	0.0007	Diff <2x LOR	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.0669	0.0655	2.08%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.161	0.163	1.05%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0617	0.0647	4.72%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.075	0.074	0.0003	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000450	0.0000457	0.0000007	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	137	135	1.28%	20%	----
		cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000038	0.000036	0.000002	Diff <2x LOR	----
		chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00036	0.00036	0.000005	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.0532	0.0543	1.93%	20%	----
		iron, dissolved	7439-89-6	E421	0.030	mg/L	<0.030	<0.030	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000062	0.000064	0.000002	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0125	0.0122	2.40%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	26.3	26.7	1.58%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00500	mg/L	0.0934	0.0960	2.74%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0173	0.0174	0.140%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00440	0.00441	0.00001	Diff <2x LOR	----
		phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.229	0.221	0.008	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	36.7	37.2	1.47%	20%	----
		rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00248	0.00253	2.10%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.0284	0.0275	3.30%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.16	4.96	3.95%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	41.8	42.8	2.29%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.667	0.661	0.806%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 769286) - continued											
SK2206992-008	4A-O	sulfur, dissolved	7704-34-9	E421	0.50	mg/L	124	122	2.04%	20%	----
		tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000253	0.000262	3.44%	20%	----
		thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00017	0.00017	0.0000005	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0692	0.0715	3.26%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00250	0.00260	0.00009	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0145	0.0144	0.461%	20%	----
		zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 765985)						
conductivity	----	E100	1	µS/cm	1.6	----
Physical Tests (QCLot: 765986)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Anions and Nutrients (QCLot: 765972)						
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 765973)						
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 765974)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 765975)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 765976)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 769407)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	# 0.0080	B
Total Metals (QCLot: 765914)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 765914) - continued						
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 769284)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 769284) - continued						
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 765984)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 765984) - continued						
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 769286)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 769286) - continued						
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 769286) - continued						
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----

Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 765985)									
conductivity	----	E100	1	µS/cm	1000 µS/cm	98.1	90.0	110	----
Physical Tests (QCLot: 765986)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	98.4	85.0	115	----
Physical Tests (QCLot: 765987)									
pH	----	E108	----	pH units	7 pH units	100.0	98.6	101	----
Anions and Nutrients (QCLot: 765972)									
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	106	90.0	110	----
Anions and Nutrients (QCLot: 765973)									
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 765974)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 765975)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	105	90.0	110	----
Anions and Nutrients (QCLot: 765976)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 769407)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
Total Metals (QCLot: 765914)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.9	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	94.2	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	100	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	98.5	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	93.3	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	95.2	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	95.5	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	93.7	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	93.3	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	97.3	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 765914) - continued									
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.3	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	98.9	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	93.2	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	89.3	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.8	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.2	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	95.6	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.4	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	108	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	97.4	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	96.8	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	98.0	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	86.5	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	99.8	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	92.8	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	89.2	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	96.4	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	94.5	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	88.0	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	96.0	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	92.0	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	90.2	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	96.7	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.1	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	96.7	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	91.1	80.0	120	----
Total Metals (QCLot: 769284)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	108	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	97.5	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.5	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	96.8	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.5	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 769284) - continued									
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	98.6	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.4	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	102	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	97.8	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	106	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	96.3	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	105	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	91.3	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	98.8	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	108	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	91.0	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	94.7	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	99.0	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	98.3	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	102	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	98.5	80.0	120	----
Dissolved Metals (QCLot: 765984)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	100	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 765984) - continued									
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	98.6	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	106	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	93.4	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	107	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	97.7	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	109	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	119	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	107	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.3	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.2	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	115	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	96.1	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	94.3	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.5	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.1	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	97.9	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.9	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	99.6	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 769286)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	110	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	105	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	105	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.7	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	99.1	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	107	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	109	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	108	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	105	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	94.9	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	103	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.7	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.9	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	90.2	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	96.5	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	110	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	101	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.7	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 769286) - continued									
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	106	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	100	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 765972)										
SK2206992-002	1A-O	nitrate (as N)	14797-55-8	E235.NO3	ND mg/L	2.5 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 765973)										
SK2206992-002	1A-O	nitrite (as N)	14797-65-0	E235.NO2	ND mg/L	0.5 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 765974)										
SK2206992-002	1A-O	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 765975)										
SK2206992-002	1A-O	fluoride	16984-48-8	E235.F	0.905 mg/L	1 mg/L	90.5	75.0	125	----
Anions and Nutrients (QCLot: 765976)										
SK2206992-002	1A-O	chloride	16887-00-6	E235.Cl	97.2 mg/L	100 mg/L	97.2	75.0	125	----
Anions and Nutrients (QCLot: 769407)										
CG2216806-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
Total Metals (QCLot: 765914)										
RG2201773-002	Anonymous	aluminum, total	7429-90-5	E420	0.206 mg/L	0.2 mg/L	103	70.0	130	----
		antimony, total	7440-36-0	E420	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00911 mg/L	0.01 mg/L	91.1	70.0	130	----
		boron, total	7440-42-8	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00393 mg/L	0.004 mg/L	98.3	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, total	7440-46-2	E420	0.0100 mg/L	0.01 mg/L	100	70.0	130	----
		chromium, total	7440-47-3	E420	0.0426 mg/L	0.04 mg/L	106	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		copper, total	7440-50-8	E420	0.0199 mg/L	0.02 mg/L	99.3	70.0	130	----
		iron, total	7439-89-6	E420	2.05 mg/L	2 mg/L	103	70.0	130	----
		lead, total	7439-92-1	E420	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		lithium, total	7439-93-2	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 765914) - continued										
RG2201773-002	Anonymous	molybdenum, total	7439-98-7	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, total	7440-02-0	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		phosphorus, total	7723-14-0	E420	11.6 mg/L	10 mg/L	116	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		silver, total	7440-22-4	E420	0.00389 mg/L	0.004 mg/L	97.2	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		thallium, total	7440-28-0	E420	0.00377 mg/L	0.004 mg/L	94.3	70.0	130	----
		thorium, total	7440-29-1	E420	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		tin, total	7440-31-5	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		titanium, total	7440-32-6	E420	0.0425 mg/L	0.04 mg/L	106	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		uranium, total	7440-61-1	E420	0.00392 mg/L	0.004 mg/L	98.0	70.0	130	----
		vanadium, total	7440-62-2	E420	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		zinc, total	7440-66-6	E420	0.401 mg/L	0.4 mg/L	100	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----
Total Metals (QCLot: 769284)										
SK2206992-009	4B-O	aluminum, total	7429-90-5	E420	0.215 mg/L	0.2 mg/L	108	70.0	130	----
		antimony, total	7440-36-0	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		arsenic, total	7440-38-2	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0386 mg/L	0.04 mg/L	96.6	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00939 mg/L	0.01 mg/L	93.9	70.0	130	----
		boron, total	7440-42-8	E420	0.093 mg/L	0.1 mg/L	93.0	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00404 mg/L	0.004 mg/L	101	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, total	7440-46-2	E420	0.0104 mg/L	0.01 mg/L	104	70.0	130	----
		chromium, total	7440-47-3	E420	0.0414 mg/L	0.04 mg/L	104	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 769284) - continued										
SK2206992-009	4B-O	iron, total	7439-89-6	E420	2.02 mg/L	2 mg/L	101	70.0	130	----
		lead, total	7439-92-1	E420	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		lithium, total	7439-93-2	E420	0.0985 mg/L	0.1 mg/L	98.5	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0223 mg/L	0.02 mg/L	111	70.0	130	----
		nickel, total	7440-02-0	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.4 mg/L	10 mg/L	104	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0211 mg/L	0.02 mg/L	105	70.0	130	----
		selenium, total	7782-49-2	E420	0.0425 mg/L	0.04 mg/L	106	70.0	130	----
		silicon, total	7440-21-3	E420	9.59 mg/L	10 mg/L	95.9	70.0	130	----
		silver, total	7440-22-4	E420	0.00398 mg/L	0.004 mg/L	99.4	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		thallium, total	7440-28-0	E420	0.00378 mg/L	0.004 mg/L	94.5	70.0	130	----
		thorium, total	7440-29-1	E420	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		tin, total	7440-31-5	E420	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		titanium, total	7440-32-6	E420	0.0438 mg/L	0.04 mg/L	110	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		zinc, total	7440-66-6	E420	0.398 mg/L	0.4 mg/L	99.6	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0477 mg/L	0.04 mg/L	119	70.0	130	----
Dissolved Metals (QCLot: 765984)										
SK2206986-009	Anonymous	aluminum, dissolved	7429-90-5	E421	0.190 mg/L	0.2 mg/L	95.3	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0211 mg/L	0.02 mg/L	105	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00910 mg/L	0.01 mg/L	91.0	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00402 mg/L	0.004 mg/L	100	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 765984) - continued										
SK2206986-009	Anonymous	calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, dissolved	7440-46-2	E421	0.0102 mg/L	0.01 mg/L	102	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0400 mg/L	0.04 mg/L	99.9	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.04 mg/L	2 mg/L	102	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0967 mg/L	0.1 mg/L	96.7	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0394 mg/L	0.04 mg/L	98.4	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	10.4 mg/L	10 mg/L	104	70.0	130	----
		potassium, dissolved	7440-09-7	E421	3.94 mg/L	4 mg/L	98.6	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0457 mg/L	0.04 mg/L	114	70.0	130	----
		silicon, dissolved	7440-21-3	E421	10.9 mg/L	10 mg/L	109	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00392 mg/L	0.004 mg/L	98.1	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0434 mg/L	0.04 mg/L	108	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00380 mg/L	0.004 mg/L	94.9	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0193 mg/L	0.02 mg/L	96.3	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		tungsten, dissolved	7440-33-7	E421	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00390 mg/L	0.004 mg/L	97.6	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.386 mg/L	0.4 mg/L	96.6	70.0	130	----
		zirconium, dissolved	7440-67-7	E421	0.0432 mg/L	0.04 mg/L	108	70.0	130	----
Dissolved Metals (QCLot: 769286)										
SK2206992-009	4B-O	aluminum, dissolved	7429-90-5	E421	0.215 mg/L	0.2 mg/L	108	70.0	130	----
		antimony, dissolved	7440-36-0	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 769286) - continued										
SK2206992-009	4B-O	barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0381 mg/L	0.04 mg/L	95.2	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00842 mg/L	0.01 mg/L	84.2	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.083 mg/L	0.1 mg/L	82.8	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00398 mg/L	0.004 mg/L	99.5	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, dissolved	7440-46-2	E421	0.00967 mg/L	0.01 mg/L	96.7	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0424 mg/L	0.04 mg/L	106	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		copper, dissolved	7440-50-8	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, dissolved	7439-89-6	E421	1.96 mg/L	2 mg/L	98.1	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0173 mg/L	0.02 mg/L	86.6	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0953 mg/L	0.1 mg/L	95.3	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	10.5 mg/L	10 mg/L	105	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0418 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.63 mg/L	10 mg/L	96.3	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00368 mg/L	0.004 mg/L	91.9	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0383 mg/L	0.04 mg/L	95.7	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00336 mg/L	0.004 mg/L	84.1	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0436 mg/L	0.04 mg/L	109	70.0	130	----
		tungsten, dissolved	7440-33-7	E421	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.398 mg/L	0.4 mg/L	99.6	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 769286) - continued										
SK2206992-009	4B-O	zirconium, dissolved	7440-67-7	E421	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 22 -

Page 1 of 1

Environmental Division Saskatoon

Work Order Reference

SK2206992

Telephone : +1 306 668 8370

Report To	Contact and company name below will appear on the final report
Company:	Ensero Solutions Canada Inc.
Contact:	Rachel Martz
Phone:	306-978-3111
	Company address below will appear on the final report
Street:	104-411 Downey Rd
City/Province:	Saskatoon, SK
Postal Code:	S7N 4L8
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Ensero Solutions Canada Inc. 410-885 Dunsmuir St, Vancouver,
Contact:	BC V6C1N5 Contact: Rachel Martz

Project Information	
ALS Account # / Quote #:	
Job #:	ECA22YT00211
PO / AFE:	1518
LSD:	

Reports / Recipients	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	rmartz@ensero.com
Email 2	snenson@ensero.com
Email 3	kpiecowye@ensero.com

Invoice Recipients	
Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	ap@ensero.com
Email 2	rmartz@ensero.com

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

Turnaround Time (TAT) Requested
☑ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimu
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimi
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimi
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimi
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests.

Date and Time Required for all E&P TATs: 2-17-22 5:00 PM

For all tests with rush TATs requested, please contact your AM to confirm availability.

ALS Lab Work Order # (ALS use only):

ALS Contact:

Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	P	F/P												SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
						Total Metals	Dissolved Metals	Routine	Ammonia												
	Influent	2-Dec-22	12:02	Water	4	R	R	R	R										0	0	0
	1A-O	2-Dec-22	11:32	Water	3	R	R	R													
	1B-O	2-Dec-22	11:00	Water	4	R	R	R	R												
	2A-O	2-Dec-22	11:51	Water	3	R	R	R													
	2B-O	2-Dec-22	11:15	Water	4	R	R	R	R												
	3A-O	2-Dec-22	11:37	Water	3	R	R	R													
	3B-O	2-Dec-22	11:05	Water	4	R	R	R	R												
	4A-O	2-Dec-22	11:44	Water	3	R	R	R													
	4B-O	2-Dec-22	11:10	Water	4	R	R	R	R												

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Please send Ensero format EDD
Routine (anions, cations, alkalinity, pH, Conductivity, TDS, ion balance,hardness as CaCO3)

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☑ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
14.2							

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
NKh	2/2/22	8:00

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **SK2207072**	Page	: 1 of 10
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon SK Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 07-Dec-2022 17:00
PO	: 1518	Date Analysis Commenced	: 08-Dec-2022
C-O-C number	: ----	Issue Date	: 14-Dec-2022 08:51
Sampler	: Client		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Colby Bingham	Quality Systems Coordinator	Inorganics, Saskatoon, Saskatchewan
Colby Bingham	Quality Systems Coordinator	Metals, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Janiko Lindain	Laboratory Assistant	Metals, Saskatoon, Saskatchewan
Kimberly Hanson	Laboratory Analyst	Metals, Saskatoon, Saskatchewan

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
%	percent
µS/cm	microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43
						SK2207072-001	SK2207072-002	SK2207072-003	SK2207072-004	SK2207072-005
						Result	Result	Result	Result	Result
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		426	438	439	441	451
conductivity	----	E100	2.0	µS/cm		1040	1070	1080	1070	1100
pH	----	E108	0.10	pH units		7.89	7.94	7.99	8.06	8.01
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		99.4	104	113	110	119
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		81.5	85.2	92.7	90.0	97.8
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		758	783	798	785	813
Anions and Nutrients										
chloride	16887-00-6	E235.Cl	0.50	mg/L		13.5	13.8	15.0	14.5	15.2
fluoride	16984-48-8	E235.F	0.020	mg/L		0.576	0.600	0.616	0.600	0.602
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		21.2	25.4	25.8	25.1	25.8
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		4.02	0.292	<0.050 DLDS	0.145	<0.050 DLDS
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		358	369	376	367	381
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		25.2	25.7	25.8	25.2	25.8
Ion Balance										
anion sum	----	EC101	0.10	meq/L		11.3	11.6	12.0	11.7	12.2
cation sum	----	EC101	0.10	meq/L		10.8	11.1	11.1	11.2	11.4
ion balance (APHA)	----	EC101	0.01	%		-2.26	-2.20	-3.90	-2.18	-3.39
ion balance (cations/anions)	----	EC101	0.010	%		95.6	95.7	92.5	95.7	93.4
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0195	0.0103	0.0088	0.0098	0.0256
antimony, total	7440-36-0	E420	0.00010	mg/L		0.0664	0.0607	0.0638	0.0680	0.0668
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.167	0.160	0.154	0.157	0.150
barium, total	7440-39-3	E420	0.00010	mg/L		0.0497	0.0544	0.0647	0.0564	0.0690
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		0.079	0.072	0.077	0.078	0.075
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000634	0.0000425	0.0000356	0.0000335	0.0000302

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43
						SK2207072-001	SK2207072-002	SK2207072-003	SK2207072-004	SK2207072-005
						Result	Result	Result	Result	Result
Total Metals										
calcium, total	7440-70-2	E420	0.050	mg/L		133	127	134	136	142
cesium, total	7440-46-2	E420	0.000010	mg/L		0.000023	0.000019	0.000018	0.000020	0.000026
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	0.00052	<0.00050	<0.00050
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00096	0.00046	0.00019	0.00037	0.00022
copper, total	7440-50-8	E420	0.00050	mg/L		0.101	0.0610	0.0565	0.0543	0.0424
iron, total	7439-89-6	E420	0.010	mg/L		0.014	<0.010	0.034	<0.010	0.073
lead, total	7439-92-1	E420	0.000050	mg/L		0.000465	0.000072	<0.000050	0.000076	0.000177
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0111	0.0109	0.0119	0.0118	0.0123
magnesium, total	7439-95-4	E420	0.0050	mg/L		23.1	24.6	25.1	24.6	25.7
manganese, total	7439-96-5	E420	0.00010	mg/L		0.164	0.0795	0.0337	0.0652	0.0266
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.0173	0.0163	0.0176	0.0177	0.0177
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00496	0.00382	0.00422	0.00353	0.00317
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.325	0.271	0.256	0.291	0.270
potassium, total	7440-09-7	E420	0.050	mg/L		35.5	36.0	36.4	36.2	37.2
rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00240	0.00229	0.00209	0.00239	0.00249
selenium, total	7782-49-2	E420	0.000050	mg/L		0.0278	0.0285	0.0280	0.0286	0.0293
silicon, total	7440-21-3	E420	0.10	mg/L		2.78	2.74	2.94	2.76	3.04
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		32.4	33.5	34.6	34.6	35.4
strontium, total	7440-24-6	E420	0.00020	mg/L		0.628	0.603	0.645	0.641	0.667
sulfur, total	7704-34-9	E420	0.50	mg/L		134	136	136	136	141
tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000281	0.000220	0.000202	0.000236	0.000222
thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	0.00022	<0.00010	0.00014	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	0.00075
tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
uranium, total	7440-61-1	E420	0.000010	mg/L		0.0716	0.0712	0.0712	0.0753	0.0734
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00265	0.00245	0.00222	0.00235	0.00214
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0122	0.0085	0.0159	0.0074	0.0076

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43
						SK2207072-001	SK2207072-002	SK2207072-003	SK2207072-004	SK2207072-005
						Result	Result	Result	Result	Result
Total Metals										
zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0128	0.0080	0.0047	0.0069	0.0041
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.0626	0.0627	0.0621	0.0610	0.0634
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.161	0.159	0.157	0.157	0.150
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0507	0.0554	0.0637	0.0561	0.0713
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.073	0.073	0.074	0.074	0.074
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000585	0.0000444	0.0000325	0.0000330	0.0000244
calcium, dissolved	7440-70-2	E421	0.050	mg/L		132	136	136	137	140
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000023	0.000020	0.000017	0.000020	0.000021
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00096	0.00044	0.00019	0.00036	0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.0913	0.0574	0.0422	0.0499	0.0331
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.030	<0.030	<0.030	<0.030	<0.030
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000057	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0109	0.0114	0.0118	0.0115	0.0123
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		23.5	23.8	24.1	24.0	24.6
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.163	0.0781	0.0326	0.0620	0.0134
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0167	0.0172	0.0168	0.0162	0.0166
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00486	0.00367	0.00346	0.00341	0.00287
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.313	0.273	0.253	0.240	0.186
potassium, dissolved	7440-09-7	E421	0.050	mg/L		35.5	35.6	35.5	35.9	36.3
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00240	0.00230	0.00213	0.00238	0.00238
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.0262	0.0278	0.0277	0.0269	0.0275
silicon, dissolved	7440-21-3	E421	0.050	mg/L		2.60	2.55	2.76	2.56	2.77
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		31.4	32.9	33.4	33.3	34.9
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.628	0.626	0.628	0.615	0.641

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43
						SK2207072-001	SK2207072-002	SK2207072-003	SK2207072-004	SK2207072-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		124	132	132	130	132
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		0.000263	0.000222	0.000202	0.000230	0.000206
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	0.00020	<0.00010	0.00011	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.0683	0.0694	0.0698	0.0709	0.0692
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00242	0.00230	0.00208	0.00220	0.00200
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0130	0.0098	0.0084	0.0081	0.0080
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43	----
						SK2207072-006	SK2207072-007	SK2207072-008	SK2207072-009	--------
						Result	Result	Result	Result	----
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		455	466	438	450	----
conductivity	----	E100	2.0	µS/cm		1080	1120	1070	1100	----
pH	----	E108	0.10	pH units		7.87	7.90	7.86	7.97	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		112	127	110	123	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		91.5	104	90.2	100	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		801	838	790	820	----
Anions and Nutrients										
chloride	16887-00-6	E235.Cl	0.50	mg/L		14.6	15.2	14.1	14.9	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.587	0.603	0.597	0.607	----
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		25.7	26.3	24.6	24.6	----
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		0.134	0.052	0.204	<0.050 DLDS	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		374	391	374	390	----
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		25.8	26.4	24.8	24.6	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		11.9	12.6	11.8	12.3	----
cation sum	----	EC101	0.10	meq/L		11.5	11.9	11.1	11.5	----
ion balance (APHA)	----	EC101	0.01	%		-1.71	-2.86	-3.06	-3.36	----
ion balance (cations/anions)	----	EC101	0.010	%		96.6	94.4	94.1	93.5	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0060	0.0036	0.0099	0.0063	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.0639	0.0586	0.0640	0.0649	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.125	0.0927	0.154	0.146	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0543	0.0644	0.0576	0.0722	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
boron, total	7440-42-8	E420	0.010	mg/L		0.072	0.070	0.076	0.078	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000620	0.0000558	0.0000458	0.0000226	----
calcium, total	7440-70-2	E420	0.050	mg/L		138	143	137	140	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43	----
Analyte	CAS Number	Method	LOR	Unit		SK2207072-006	SK2207072-007	SK2207072-008	SK2207072-009	--------
						Result	Result	Result	Result	----
Total Metals										
cesium, total	7440-46-2	E420	0.000010	mg/L		0.000030	0.000031	0.000025	0.000038	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	0.00040	<0.00010	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.0269	0.0132	0.0570	0.0321	----
iron, total	7439-89-6	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.000109	<0.000050	0.000146	<0.000050	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0112	0.0122	0.0114	0.0126	----
magnesium, total	7439-95-4	E420	0.0050	mg/L		24.8	25.7	24.2	25.0	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0105	0.00059	0.0882	0.00970	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.0174	0.0168	0.0169	0.0154	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00309	0.00248	0.00388	0.00268	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.210	0.112	0.205	0.110	----
potassium, total	7440-09-7	E420	0.050	mg/L		35.5	36.2	36.4	37.1	----
rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00260	0.00267	0.00223	0.00246	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.0281	0.0296	0.0278	0.0285	----
silicon, total	7440-21-3	E420	0.10	mg/L		2.72	3.11	2.87	3.19	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, total	7440-23-5	E420	0.050	mg/L		34.0	37.6	33.0	35.5	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.663	0.689	0.639	0.666	----
sulfur, total	7704-34-9	E420	0.50	mg/L		132	143	132	135	----
tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000200	0.000172	0.000229	0.000213	----
thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
tin, total	7440-31-5	E420	0.00010	mg/L		0.00026	<0.00010	<0.00010	<0.00010	----
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.0656	0.0606	0.0709	0.0732	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00122	0.00054	0.00222	0.00186	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0089	0.0050	0.0129	0.0051	----
zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43	----
						SK2207072-006	SK2207072-007	SK2207072-008	SK2207072-009	--------
						Result	Result	Result	Result	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0035	0.0017	0.0115	0.0041	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.0572	0.0539	0.0618	0.0618	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.126	0.0940	0.157	0.146	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0546	0.0646	0.0594	0.0742	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.073	0.072	0.074	0.075	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000614	0.0000538	0.0000422	0.0000195	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		142	145	137	140	----
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000029	0.000031	0.000023	0.000033	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	0.00041	<0.00010	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.0253	0.0121	0.0527	0.0298	----
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.030	<0.030	<0.030	<0.030	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	0.000065	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0117	0.0123	0.0115	0.0119	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		24.4	25.3	23.3	24.5	----
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.00982	<0.00500	0.0881	0.00918	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0157	0.0154	0.0163	0.0155	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00311	0.00234	0.00394	0.00262	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.147	0.090	0.199	0.081	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L		35.8	36.6	36.2	37.0	----
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00263	0.00276	0.00239	0.00237	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.0276	0.0287	0.0271	0.0276	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		2.60	2.93	2.80	3.02	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		33.8	37.5	33.2	35.5	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.622	0.628	0.619	0.640	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		130	138	130	133	----
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43	07-Dec-2022 12:43	----
Analyte	CAS Number	Method	LOR	Unit		SK2207072-006	SK2207072-007	SK2207072-008	SK2207072-009	--------
						Result	Result	Result	Result	----
Dissolved Metals										
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		0.000200	0.000162	0.000226	0.000206	----
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00022	<0.00010	<0.00010	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.0621	0.0594	0.0728	0.0677	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00108	<0.00050	0.00213	0.00176	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0118	0.0058	0.0142	0.0074	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **SK2207072**	Page	: 1 of 17
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon, Saskatchewan Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 07-Dec-2022 17:00
PO	: 1518	Issue Date	: 14-Dec-2022 08:51
C-O-C number	: ----		
Sampler	: Client		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE 1A-O	E235.Cl	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 1B-O	E235.Cl	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 2A-O	E235.Cl	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 2B-O	E235.Cl	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 3A-O	E235.Cl	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 3B-O	E235.Cl	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 4A-O	E235.Cl	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE										
4B-O	E235.Cl	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
Influent	E235.Cl	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
1A-O	E235.F	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
1B-O	E235.F	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
2A-O	E235.F	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
2B-O	E235.F	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
3A-O	E235.F	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
3B-O	E235.F	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
4A-O	E235.F	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
4B-O	E235.F	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Influent	E235.F	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
1A-O	E235.NO3	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
1B-O	E235.NO3	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
2A-O	E235.NO3	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
2B-O	E235.NO3	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
3A-O	E235.NO3	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
3B-O	E235.NO3	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
4A-O	E235.NO3	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE 4B-O	E235.NO3	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE Influent	E235.NO3	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 1A-O	E235.NO2	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 1B-O	E235.NO2	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 2A-O	E235.NO2	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 2B-O	E235.NO2	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 3A-O	E235.NO2	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 3B-O	E235.NO2	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 4A-O	E235.NO2	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE										
4B-O	E235.NO2	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE										
Influent	E235.NO2	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
1A-O	E235.SO4	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
1B-O	E235.SO4	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
2A-O	E235.SO4	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
2B-O	E235.SO4	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
3A-O	E235.SO4	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
3B-O	E235.SO4	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
4A-O	E235.SO4	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
4B-O	E235.SO4	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Influent	E235.SO4	07-Dec-2022	08-Dec-2022	----	----		08-Dec-2022	28 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
1A-O	E421	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
1B-O	E421	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
2A-O	E421	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
2B-O	E421	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
3A-O	E421	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
3B-O	E421	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
4A-O	E421	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	180 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 4B-O	E421	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Influent	E421	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	180 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 1A-O	E290	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 1B-O	E290	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 2A-O	E290	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 2B-O	E290	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 3A-O	E290	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 3B-O	E290	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 4A-O	E290	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	14 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE										
4B-O	E290	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
Influent	E290	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	14 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE										
1A-O	E100	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE										
1B-O	E100	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE										
2A-O	E100	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE										
2B-O	E100	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE										
3A-O	E100	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE										
3B-O	E100	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE										
4A-O	E100	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE 4B-O	E100	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE Influent	E100	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	28 days	2 days	✓
Physical Tests : pH by Meter										
HDPE 1A-O	E108	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 1B-O	E108	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 2A-O	E108	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 2B-O	E108	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 3A-O	E108	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 3B-O	E108	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 4A-O	E108	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	0.25 hrs	0.26 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE 4B-O	E108	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Influent	E108	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	0.25 hrs	0.26 hrs	× EHTR-FM
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 1A-O	E420	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	180 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 1B-O	E420	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	180 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 2A-O	E420	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	180 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 2B-O	E420	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	180 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 3A-O	E420	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	180 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 3B-O	E420	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	180 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 4A-O	E420	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	180 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
4B-O	E420	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	180 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
Influent	E420	07-Dec-2022	09-Dec-2022	----	----		09-Dec-2022	180 days	2 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	773041	1	10	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	772501	1	17	5.8	5.0	✓
Conductivity in Water	E100	773040	1	10	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	773787	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	772498	1	14	7.1	5.0	✓
Nitrate in Water by IC	E235.NO3	772499	1	17	5.8	5.0	✓
Nitrite in Water by IC	E235.NO2	772502	1	17	5.8	5.0	✓
pH by Meter	E108	773039	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	772500	1	14	7.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	772517	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	773041	1	10	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	772501	1	17	5.8	5.0	✓
Conductivity in Water	E100	773040	1	10	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	773787	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	772498	1	14	7.1	5.0	✓
Nitrate in Water by IC	E235.NO3	772499	1	17	5.8	5.0	✓
Nitrite in Water by IC	E235.NO2	772502	1	17	5.8	5.0	✓
pH by Meter	E108	773039	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	772500	1	14	7.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	772517	1	16	6.2	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	773041	1	10	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	772501	1	17	5.8	5.0	✓
Conductivity in Water	E100	773040	1	10	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	773787	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	772498	1	14	7.1	5.0	✓
Nitrate in Water by IC	E235.NO3	772499	1	17	5.8	5.0	✓
Nitrite in Water by IC	E235.NO2	772502	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	772500	1	14	7.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	772517	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
Chloride in Water by IC	E235.Cl	772501	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	773787	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	772498	1	14	7.1	5.0	✓

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Nitrate in Water by IC	E235.NO3	772499	1	17	5.8	5.0	✓
Nitrite in Water by IC	E235.NO2	772502	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	772500	1	14	7.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	772517	1	16	6.2	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Saskatoon - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Saskatoon - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Chloride in Water by IC	E235.Cl Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 Saskatoon - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Total metals in Water by CRC ICPMS	E420 Saskatoon - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals in Water by CRC ICPMS	E421 Saskatoon - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Saskatoon - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Saskatoon - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
TDS in Water (Calculation)	EC103 Saskatoon - Environmental	Water	APHA 1030E (mod)	Total Dissolved Solids is calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N Saskatoon - Environmental	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 Saskatoon - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **SK2207072**	Page	: 1 of 14
Client	: Ensero Solutions Canada	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon, Saskatchewan Canada S7K 6X5
Telephone	:	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 07-Dec-2022 17:00
PO	: 1518	Date Analysis Commenced	: 08-Dec-2022
C-O-C number	: ----	Issue Date	: 14-Dec-2022 08:51
Sampler	: Client 306 978 3111		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Colby Bingham	Quality Systems Coordinator	Saskatoon Inorganics, Saskatoon, Saskatchewan
Colby Bingham	Quality Systems Coordinator	Saskatoon Metals, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Saskatoon Inorganics, Saskatoon, Saskatchewan
Janiko Lindain	Laboratory Assistant	Saskatoon Metals, Saskatoon, Saskatchewan
Kimberly Hanson	Laboratory Analyst	Saskatoon Metals, Saskatoon, Saskatchewan

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 773039)											
SK2207072-001	Influent	pH	----	E108	0.10	pH units	7.89	7.86	0.389%	3%	----
Physical Tests (QC Lot: 773040)											
SK2207072-001	Influent	conductivity	----	E100	2.0	µS/cm	1040	1050	0.858%	10%	----
Physical Tests (QC Lot: 773041)											
SK2207072-001	Influent	alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	81.5	82.2	0.900%	20%	----
Anions and Nutrients (QC Lot: 772498)											
SK2207064-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.147	0.144	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 772499)											
SK2207064-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	0.568	0.546	4.03%	20%	----
Anions and Nutrients (QC Lot: 772500)											
SK2207064-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	76.4	74.0	3.30%	20%	----
Anions and Nutrients (QC Lot: 772501)											
SK2207064-001	Anonymous	chloride	16887-00-6	E235.Cl	0.50	mg/L	7.92	8.14	2.65%	20%	----
Anions and Nutrients (QC Lot: 772502)											
SK2207064-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	0.010	0.013	0.002	Diff <2x LOR	----
Total Metals (QC Lot: 772517)											
SK2207052-001	Anonymous	aluminum, total	7429-90-5	E420	0.0600	mg/L	4.93	4.81	2.45%	20%	----
		antimony, total	7440-36-0	E420	0.00200	mg/L	0.0105	0.0100	0.00048	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00200	mg/L	0.0675	0.0656	2.86%	20%	----
		barium, total	7440-39-3	E420	0.00200	mg/L	0.836	0.778	7.07%	20%	----
		beryllium, total	7440-41-7	E420	0.000400	mg/L	<0.000400	<0.000400	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.200	mg/L	5.79	5.58	3.64%	20%	----
		cadmium, total	7440-43-9	E420	0.000100	mg/L	0.00106	0.00107	0.599%	20%	----
		calcium, total	7440-70-2	E420	1.00	mg/L	534	528	1.16%	20%	----
		cesium, total	7440-46-2	E420	0.000200	mg/L	0.00197	0.00187	0.000105	Diff <2x LOR	----
		chromium, total	7440-47-3	E420	0.00200	mg/L	0.0178	0.0167	0.00110	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00200	mg/L	0.00508	0.00506	0.00002	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.0100	mg/L	0.0222	0.0232	0.00094	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.200	mg/L	2.26	2.22	1.68%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 772517) - continued											
SK2207052-001	Anonymous	lead, total	7439-92-1	E420	0.00100	mg/L	0.00403	0.00382	0.000207	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0200	mg/L	0.924	0.942	1.92%	20%	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	528	515	2.44%	20%	----
		manganese, total	7439-96-5	E420	0.00200	mg/L	1.37	1.34	2.63%	20%	----
		molybdenum, total	7439-98-7	E420	0.00100	mg/L	0.372	0.369	0.883%	20%	----
		nickel, total	7440-02-0	E420	0.0100	mg/L	0.0597	0.0600	0.00027	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	1.00	mg/L	2.72	2.81	0.088	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	1.00	mg/L	321	319	0.542%	20%	----
		rubidium, total	7440-17-7	E420	0.00400	mg/L	0.0591	0.0586	0.925%	20%	----
		selenium, total	7782-49-2	E420	0.00100	mg/L	0.00938	0.00901	0.000367	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	2.00	mg/L	9.32	10.2	0.87	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.000200	mg/L	<0.000200	<0.000200	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	1.00	mg/L	2620	2600	0.935%	20%	----
		strontium, total	7440-24-6	E420	0.00400	mg/L	5.80	5.78	0.396%	20%	----
		sulfur, total	7704-34-9	E420	10.0	mg/L	3060	3060	0.0692%	20%	----
		tellurium, total	13494-80-9	E420	0.00400	mg/L	<0.00400	<0.00400	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000200	mg/L	0.000222	<0.000200	0.000022	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00600	mg/L	0.102	0.0929	9.81%	20%	----
		tungsten, total	7440-33-7	E420	0.00200	mg/L	0.0299	0.0294	1.66%	20%	----
		uranium, total	7440-61-1	E420	0.000200	mg/L	0.0180	0.0175	2.93%	20%	----
		vanadium, total	7440-62-2	E420	0.0100	mg/L	0.0402	0.0393	0.00094	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0600	mg/L	<0.0600	<0.0600	0	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00400	mg/L	0.00468	0.00457	0.00011	Diff <2x LOR	----
Dissolved Metals (QC Lot: 773787)											
SK2207072-001	Influent	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0128	0.0128	0.00360%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.0626	0.0632	1.09%	20%	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.161	0.160	0.875%	20%	----
		barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0507	0.0511	0.825%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, dissolved	7440-42-8	E421	0.010	mg/L	0.073	0.074	0.0008	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000585	0.0000522	11.4%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 773787) - continued											
SK2207072-001	Influent	calcium, dissolved	7440-70-2	E421	0.050	mg/L	132	133	1.18%	20%	----
		cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000023	0.000022	0.000001	Diff <2x LOR	----
		chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00096	0.00092	0.00004	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.0913	0.0903	1.09%	20%	----
		iron, dissolved	7439-89-6	E421	0.030	mg/L	<0.030	<0.030	0	Diff <2x LOR	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000057	0.000057	0.0000004	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0109	0.0110	0.471%	20%	----
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	23.5	22.8	2.85%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00500	mg/L	0.163	0.163	0.0814%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0167	0.0167	0.102%	20%	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00486	0.00489	0.00003	Diff <2x LOR	----
		phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.313	0.329	0.016	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.050	mg/L	35.5	35.4	0.318%	20%	----
		rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00240	0.00247	2.86%	20%	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.0262	0.0267	1.79%	20%	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.60	2.64	1.37%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	31.4	31.3	0.475%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.628	0.617	1.72%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	124	126	1.53%	20%	----
		tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000263	0.000271	2.88%	20%	----
		thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0683	0.0696	1.95%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00242	0.00244	0.00003	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0130	0.0130	0.0699%	20%	----
		zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 773040)						
conductivity	----	E100	1	µS/cm	1.6	----
Physical Tests (QCLot: 773041)						
alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Anions and Nutrients (QCLot: 772498)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 772499)						
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 772500)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 772501)						
chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 772502)						
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Total Metals (QCLot: 772517)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 772517) - continued						
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 773787)						
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 773787) - continued						
copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 773039)									
pH	----	E108	----	pH units	7 pH units	100.0	98.6	101	----
Physical Tests (QCLot: 773040)									
conductivity	----	E100	1	µS/cm	1000 µS/cm	99.9	90.0	110	----
Physical Tests (QCLot: 773041)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	99.2	85.0	115	----
Anions and Nutrients (QCLot: 772498)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.7	90.0	110	----
Anions and Nutrients (QCLot: 772499)									
nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 772500)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 772501)									
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 772502)									
nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	102	90.0	110	----
Total Metals (QCLot: 772517)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	100	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	95.7	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.8	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	93.1	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	97.7	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	98.4	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.4	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	97.0	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 772517) - continued									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	95.2	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	97.8	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.0	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	110	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	100	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	105	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	95.6	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	96.3	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	99.6	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	103	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.0	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	104	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	99.0	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	102	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Dissolved Metals (QCLot: 773787)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.4	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	93.6	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	101	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 773787) - continued									
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	101	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	105	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	96.6	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.5	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	115	80.0	120	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	103	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	97.1	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	99.3	80.0	120	----
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	102	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	105	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	100	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	104	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	103	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.3	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	105	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	104	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 772498)										
SK2207064-002	Anonymous	fluoride	16984-48-8	E235.F	0.970 mg/L	1 mg/L	97.0	75.0	125	----
Anions and Nutrients (QCLot: 772499)										
SK2207064-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3	2.51 mg/L	2.5 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 772500)										
SK2207064-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	98.0 mg/L	100 mg/L	98.0	75.0	125	----
Anions and Nutrients (QCLot: 772501)										
SK2207064-002	Anonymous	chloride	16887-00-6	E235.Cl	98.8 mg/L	100 mg/L	98.8	75.0	125	----
Anions and Nutrients (QCLot: 772502)										
SK2207064-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2	0.501 mg/L	0.5 mg/L	100	75.0	125	----
Total Metals (QCLot: 772517)										
SK2207053-001	Anonymous	aluminum, total	7429-90-5	E420	0.218 mg/L	0.2 mg/L	109	70.0	130	----
		antimony, total	7440-36-0	E420	0.0220 mg/L	0.02 mg/L	110	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0231 mg/L	0.02 mg/L	115	70.0	130	----
		barium, total	7440-39-3	E420	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0442 mg/L	0.04 mg/L	110	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0101 mg/L	0.01 mg/L	101	70.0	130	----
		boron, total	7440-42-8	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00436 mg/L	0.004 mg/L	109	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, total	7440-46-2	E420	0.0111 mg/L	0.01 mg/L	111	70.0	130	----
		chromium, total	7440-47-3	E420	0.0460 mg/L	0.04 mg/L	115	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0222 mg/L	0.02 mg/L	111	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	2.25 mg/L	2 mg/L	112	70.0	130	----
		lead, total	7439-92-1	E420	0.0219 mg/L	0.02 mg/L	110	70.0	130	----
		lithium, total	7439-93-2	E420	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.0217 mg/L	0.02 mg/L	109	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0228 mg/L	0.02 mg/L	114	70.0	130	----
		nickel, total	7440-02-0	E420	0.0423 mg/L	0.04 mg/L	106	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 772517) - continued										
SK2207053-001	Anonymous	phosphorus, total	7723-14-0	E420	12.4 mg/L	10 mg/L	124	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0224 mg/L	0.02 mg/L	112	70.0	130	----
		selenium, total	7782-49-2	E420	0.0483 mg/L	0.04 mg/L	121	70.0	130	----
		silicon, total	7440-21-3	E420	10.6 mg/L	10 mg/L	106	70.0	130	----
		silver, total	7440-22-4	E420	0.00434 mg/L	0.004 mg/L	109	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0432 mg/L	0.04 mg/L	108	70.0	130	----
		thallium, total	7440-28-0	E420	0.00412 mg/L	0.004 mg/L	103	70.0	130	----
		thorium, total	7440-29-1	E420	0.0235 mg/L	0.02 mg/L	118	70.0	130	----
		tin, total	7440-31-5	E420	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		titanium, total	7440-32-6	E420	0.0442 mg/L	0.04 mg/L	110	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0218 mg/L	0.02 mg/L	109	70.0	130	----
		uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, total	7440-62-2	E420	0.116 mg/L	0.1 mg/L	116	70.0	130	----
		zinc, total	7440-66-6	E420	0.428 mg/L	0.4 mg/L	107	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0451 mg/L	0.04 mg/L	113	70.0	130	----
Dissolved Metals (QCLot: 773787)										
SK2207072-002	1A-O	aluminum, dissolved	7429-90-5	E421	0.214 mg/L	0.2 mg/L	107	70.0	130	----
		antimony, dissolved	7440-36-0	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0426 mg/L	0.04 mg/L	107	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.0100 mg/L	0.01 mg/L	100	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.089 mg/L	0.1 mg/L	89.1	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00443 mg/L	0.004 mg/L	111	70.0	130	----
		calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, dissolved	7440-46-2	E421	0.0110 mg/L	0.01 mg/L	110	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0443 mg/L	0.04 mg/L	111	70.0	130	----
		cobalt, dissolved	7440-48-4	E421	0.0221 mg/L	0.02 mg/L	110	70.0	130	----
		copper, dissolved	7440-50-8	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.15 mg/L	2 mg/L	107	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0211 mg/L	0.02 mg/L	105	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 773787) - continued										
SK2207072-002	1A-O	lithium, dissolved	7439-93-2	E421	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, dissolved	7439-98-7	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		nickel, dissolved	7440-02-0	E421	0.0427 mg/L	0.04 mg/L	107	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	11.8 mg/L	10 mg/L	118	70.0	130	----
		potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0232 mg/L	0.02 mg/L	116	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0456 mg/L	0.04 mg/L	114	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.87 mg/L	10 mg/L	98.7	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00418 mg/L	0.004 mg/L	105	70.0	130	----
		sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0434 mg/L	0.04 mg/L	108	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0232 mg/L	0.02 mg/L	116	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		tungsten, dissolved	7440-33-7	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.112 mg/L	0.1 mg/L	112	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.437 mg/L	0.4 mg/L	109	70.0	130	----
		zirconium, dissolved	7440-67-7	E421	0.0437 mg/L	0.04 mg/L	109	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 1

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Environmental Division Saskatoon
Work Order Reference
SK2207072

Report To	Contact and company name below will appear on the final report	Reports / Recipients	Turnaround Time (TAT) Requested
Company:	Ensero Solutions Canada Inc.	Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)	☑ Routine [R] if received by 3pm M-F - no surcharges apply
Contact:	Rachel Martz	Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge m
Phone:	306-978-3111	☑ Compare Results to Criteria on Report - provide details below if box checked	☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge n
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge n
Street:	104-411 Downey Rd	Email 1 or Fax rmartz@ensero.com	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge n
City/Province:	Saskatoon, SK	Email 2 snenson@ensero.com	☐ Same day [E2] if received by 10am M-S - 200% rush surch
Postal Code:	S7N 4L8	Email 3 kpiecowye@ensero.com	Additional fees may apply to rush requests on we
Invoice To	Same as Report To ☐ YES ☑ NO	**Invoice Recipients**	Date and Time Required for all E&P TATs:
	Copy of Invoice with Report ☑ YES ☐ NO	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	For all tests with rush TATs requested, p
Company:	Ensero Solutions Canada Inc. 410-885 Dunsmuir St, Vancouver,	Email 1 or Fax ap@ensero.com	Analysi
Contact:	BC V6C1N5 Contact: Rachel Martz	Email 2 rmartz@ensero.com	
Project Information		**Oil and Gas Required Fields (client use)**	
ALS Account # / Quote #:		AFE/Cost Center: PO#	
Job #:	ECA22YT00211	Major/Minor Code: Routing Code:	
PO / AFE:	1518	Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (ALS use only):		**ALS Contact:** **Sampler:**	

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Indicate Filtered (F), Preserved (P) or Filte: P	F/P	Total Metals	Dissolved Metals	Routine	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRI	SUSPECTED HAZARD (see notes)
	Influent	7-Dec-22	12:43	Water	3			R	R	R	0	0	0
	1A-O	7-Dec-22	12:58	Water	3			R	R	R			
	1B-O	7-Dec-22	12:20	Water	3			R	R	R			
	2A-O	7-Dec-22	13:38	Water	3			R	R	R			
	2B-O	7-Dec-22	12:53	Water	3			R	R	R			
	3A-O	7-Dec-22	13:02	Water	3			R	R	R			
	3B-O	7-Dec-22	12:34	Water	3			R	R	R			
	4A-O	7-Dec-22	12:46	Water	3			R	R	R			
	4B-O	7-Dec-22	12:28	Water	3			R	R	R			

Drinking Water (DW) Samples[1] (client use)

Were samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Please send Ensero format EDD
Routine (anions, cations, alkalinity, pH, Conductivity, TDS, ion balance,hardness as CaCO3)

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
10.2							

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
			12/7/2022	Pam	5:00pm			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB 2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **SK2207279**	Page	: 1 of 10
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon SK Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 22-Dec-2022 13:58
PO	: 1518	Date Analysis Commenced	: 22-Dec-2022
C-O-C number	: ----	Issue Date	: 30-Dec-2022 14:18
Sampler	: Client		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Colby Bingham	Quality Systems Coordinator	Inorganics, Saskatoon, Saskatchewan
Colby Bingham	Quality Systems Coordinator	Metals, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Janiko Lindain	Laboratory Assistant	Metals, Saskatoon, Saskatchewan
Kimberly Hanson	Laboratory Analyst	Metals, Saskatoon, Saskatchewan

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
%	percent
µS/cm	microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time: 22-Dec-2022 09:57	22-Dec-2022 11:16	22-Dec-2022 10:38	22-Dec-2022 11:28	22-Dec-2022 10:52
					SK2207279-001	SK2207279-002	SK2207279-003	SK2207279-004	SK2207279-005
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	446	465	493	488	497
conductivity	----	E100	2.0	µS/cm	1100	1160	1190	1180	1220
pH	----	E108	0.10	pH units	8.04	8.19	8.22	8.20	8.25
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	137	162	169	173	185
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	112	132	138	142	152
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L	799	844	874	867	897
Anions and Nutrients									
chloride	16887-00-6	E235.Cl	0.50	mg/L	14.2	15.5	16.2	16.0	17.1
fluoride	16984-48-8	E235.F	0.020	mg/L	0.567	0.618	0.610	0.615	0.623
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	20.1	21.0	22.2	20.8	21.2
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	3.74	0.052	<0.050 DLDS	0.222	<0.050 DLDS
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	361	390	397	395	411
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L	23.8	21.0	22.2	21.0	21.2
Ion Balance									
anion sum	----	EC101	0.10	meq/L	11.9	12.7	13.1	13.0	13.6
cation sum	----	EC101	0.10	meq/L	11.6	12.2	12.9	12.7	13.1
ion balance (APHA)	----	EC101	0.01	%	-1.28	-2.01	-0.77	-1.17	-1.87
ion balance (cations/anions)	----	EC101	0.010	%	97.5	96.1	98.5	97.7	96.3
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0171	0.0093	0.0050	0.0069	0.0047
antimony, total	7440-36-0	E420	0.00010	mg/L	0.0636	0.0648	0.0635	0.0676	0.0678
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.165	0.169	0.166	0.161	0.151
barium, total	7440-39-3	E420	0.00010	mg/L	0.0560	0.0722	0.0890	0.0719	0.0904
beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L	0.093	0.091	0.089	0.092	0.094
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000670	0.0000409	0.0000328	0.0000319	0.0000198

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	22-Dec-2022 09:57	22-Dec-2022 11:16	22-Dec-2022 10:38	22-Dec-2022 11:28	22-Dec-2022 10:52
						SK2207279-001	SK2207279-002	SK2207279-003	SK2207279-004	SK2207279-005
						Result	Result	Result	Result	Result
Total Metals										
calcium, total	7440-70-2	E420	0.050	mg/L		139	147	149	150	158
cesium, total	7440-46-2	E420	0.000010	mg/L		0.000043	0.000028	0.000017	0.000035	0.000026
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00079	0.00021	<0.00010	0.00016	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		0.105	0.0536	0.0498	0.0444	0.0376
iron, total	7439-89-6	E420	0.010	mg/L		0.024	<0.010	<0.010	<0.010	<0.010
lead, total	7439-92-1	E420	0.000050	mg/L		0.000408	0.000153	<0.000050	0.000119	0.000058
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0129	0.0135	0.0138	0.0139	0.0145
magnesium, total	7439-95-4	E420	0.0050	mg/L		23.7	26.9	27.7	28.2	28.5
manganese, total	7439-96-5	E420	0.00010	mg/L		0.144	0.0393	0.00481	0.0248	0.00169
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.0174	0.0181	0.0184	0.0186	0.0187
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00479	0.00318	0.00263	0.00318	0.00207
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.286	0.245	0.191	0.158	0.109
potassium, total	7440-09-7	E420	0.050	mg/L		35.0	37.4	38.6	38.6	40.4
rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00241	0.00209	0.00182	0.00245	0.00245
selenium, total	7782-49-2	E420	0.000050	mg/L		0.0266	0.0280	0.0285	0.0291	0.0300
silicon, total	7440-21-3	E420	0.10	mg/L		5.79	5.68	5.41	6.11	5.39
silver, total	7440-22-4	E420	0.000010	mg/L		0.000012	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		42.6	45.4	47.3	47.1	48.9
strontium, total	7440-24-6	E420	0.00020	mg/L		0.621	0.667	0.676	0.678	0.717
sulfur, total	7704-34-9	E420	0.50	mg/L		132	140	143	143	149
tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000277	0.000219	0.000160	0.000247	0.000205
thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	0.00011	<0.00010	0.00014	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L		0.00032	<0.00030	<0.00030	<0.00030	<0.00030
tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
uranium, total	7440-61-1	E420	0.000010	mg/L		0.0745	0.0783	0.0822	0.0805	0.0863
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00283	0.00252	0.00200	0.00247	0.00202
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0153	0.0084	0.0075	0.0089	0.0044

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	22-Dec-2022 09:57	22-Dec-2022 11:16	22-Dec-2022 10:38	22-Dec-2022 11:28	22-Dec-2022 10:52
						SK2207279-001	SK2207279-002	SK2207279-003	SK2207279-004	SK2207279-005
						Result	Result	Result	Result	Result
Total Metals										
zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0129	0.0049	0.0024	0.0036	0.0026
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.0605	0.0648	0.0635	0.0661	0.0668
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.153	0.168	0.171	0.162	0.155
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0552	0.0688	0.0910	0.0725	0.0928
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.093	0.094	0.092	0.093	0.088
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000600	0.0000362	0.0000286	0.0000314	0.0000198
calcium, dissolved	7440-70-2	E421	0.050	mg/L		139	145	152	151	151
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000042	0.000028	0.000016	0.000032	0.000025
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00076	0.00015	<0.00010	0.00014	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.0909	0.0457	0.0468	0.0401	0.0366
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.030	<0.030	<0.030	<0.030	<0.030
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	0.000051	<0.000050	0.000059	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0123	0.0131	0.0138	0.0133	0.0140
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		24.1	25.1	27.5	26.9	29.2
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.140	0.0257	<0.00500	0.0219	<0.00500
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0167	0.0180	0.0188	0.0182	0.0182
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00493	0.00309	0.00257	0.00308	0.00214
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.251	0.224	0.199	0.182	0.122
potassium, dissolved	7440-09-7	E421	0.050	mg/L		35.5	36.0	38.2	38.0	40.1
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00225	0.00214	0.00169	0.00243	0.00238
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.0273	0.0293	0.0304	0.0300	0.0305
silicon, dissolved	7440-21-3	E421	0.050	mg/L		5.36	5.48	5.28	5.79	4.99
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		41.4	45.0	47.3	45.9	49.2
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.624	0.660	0.691	0.668	0.695

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	22-Dec-2022 09:57	22-Dec-2022 11:16	22-Dec-2022 10:38	22-Dec-2022 11:28	22-Dec-2022 10:52
						SK2207279-001	SK2207279-002	SK2207279-003	SK2207279-004	SK2207279-005
						Result	Result	Result	Result	Result
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		128	138	144	141	144
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		0.000274	0.000208	0.000154	0.000235	0.000197
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	0.00012	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	0.00010	<0.00010	<0.00010
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.0718	0.0786	0.0778	0.0767	0.0818
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00259	0.00229	0.00185	0.00234	0.00193
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0131	0.0069	0.0057	0.0079	0.0062
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	22-Dec-2022 11:58	22-Dec-2022 10:46	22-Dec-2022 11:04	22-Dec-2022 10:42	----
						SK2207279-006	SK2207279-007	SK2207279-008	SK2207279-009	--------
						Result	Result	Result	Result	----
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		482	496	456	466	----
conductivity	----	E100	2.0	µS/cm		1200	1260	1160	1200	----
pH	----	E108	0.10	pH units		8.13	8.14	8.06	8.14	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		160	165	159	165	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		131	135	130	135	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		872	926	832	850	----
Anions and Nutrients										
chloride	16887-00-6	E235.Cl	0.50	mg/L		15.7	16.8	15.3	15.9	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.609	0.619	0.606	0.594	----
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		23.6	25.4	21.7	21.4	----
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.050 DLDS	<0.050 DLDS	<0.050 DLDS	0.056	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		399	436	378	388	----
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		23.6	25.4	21.7	21.4	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		13.1	14.1	12.5	12.8	----
cation sum	----	EC101	0.10	meq/L		12.7	13.1	12.1	12.4	----
ion balance (APHA)	----	EC101	0.01	%		-1.55	-3.68	-1.63	-1.59	----
ion balance (cations/anions)	----	EC101	0.010	%		96.9	92.9	96.8	96.9	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0041	<0.0030	0.0060	<0.0030	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.0625	0.0561	0.0650	0.0666	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.126	0.0894	0.159	0.156	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0610	0.0723	0.0691	0.0825	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
boron, total	7440-42-8	E420	0.010	mg/L		0.090	0.083	0.093	0.094	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000648	0.0000526	0.0000467	0.0000196	----
calcium, total	7440-70-2	E420	0.050	mg/L		153	163	145	148	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	22-Dec-2022 11:58	22-Dec-2022 10:46	22-Dec-2022 11:04	22-Dec-2022 10:42	----
Analyte	CAS Number	Method	LOR	Unit		SK2207279-006	SK2207279-007	SK2207279-008	SK2207279-009	--------
						Result	Result	Result	Result	----
Total Metals										
cesium, total	7440-46-2	E420	0.000010	mg/L		0.000046	0.000040	0.000037	0.000050	----
chromium, total	7440-47-3	E420	0.00050	mg/L		0.00178	<0.00050	<0.00050	<0.00050	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	0.00016	<0.00010	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.0284	0.0136	0.0449	0.0318	----
iron, total	7439-89-6	E420	0.010	mg/L		0.014	<0.010	<0.010	<0.010	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.000094	0.000050	0.000155	<0.000050	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0138	0.0151	0.0135	0.0142	----
magnesium, total	7439-95-4	E420	0.0050	mg/L		28.4	30.3	26.5	27.7	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.00463	0.00022	0.0418	0.00262	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.0176	0.0174	0.0175	0.0170	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00277	0.00240	0.00392	0.00244	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.138	0.076	0.201	0.147	----
potassium, total	7440-09-7	E420	0.050	mg/L		38.9	39.9	37.2	38.2	----
rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00313	0.00335	0.00251	0.00249	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.0292	0.0311	0.0278	0.0296	----
silicon, total	7440-21-3	E420	0.10	mg/L		4.81	4.19	5.91	5.77	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, total	7440-23-5	E420	0.050	mg/L		47.6	49.1	47.0	48.0	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.682	0.707	0.661	0.681	----
sulfur, total	7704-34-9	E420	0.50	mg/L		146	160	140	148	----
tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000242	0.000191	0.000244	0.000228	----
thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
tin, total	7440-31-5	E420	0.00010	mg/L		0.00017	<0.00010	0.00017	<0.00010	----
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.0806	0.0869	0.0766	0.0814	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00127	<0.00050	0.00242	0.00191	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0103	0.0056	0.0143	0.0064	----
zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	22-Dec-2022 11:58	22-Dec-2022 10:46	22-Dec-2022 11:04	22-Dec-2022 10:42	----
						SK2207279-006	SK2207279-007	SK2207279-008	SK2207279-009	--------
						Result	Result	Result	Result	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0028	0.0023	0.0038	0.0019	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.0590	0.0532	0.0636	0.0608	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.129	0.0912	0.159	0.159	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0622	0.0718	0.0709	0.0840	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.084	0.075	0.087	0.088	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000621	0.0000526	0.0000390	0.0000199	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		146	148	138	140	----
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000046	0.000039	0.000041	0.000047	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	0.00015	<0.00010	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.0268	0.0134	0.0427	0.0298	----
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.030	<0.030	<0.030	<0.030	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	0.000098	<0.000050	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0134	0.0134	0.0128	0.0128	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		28.6	30.7	27.1	28.3	----
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		<0.00500	<0.00500	0.0415	<0.00500	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0175	0.0168	0.0174	0.0165	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00270	0.00228	0.00379	0.00243	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.134	0.074	0.186	0.124	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L		39.2	40.6	37.9	38.5	----
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00289	0.00314	0.00241	0.00249	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.0296	0.0315	0.0296	0.0288	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.58	3.82	5.73	5.53	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		47.7	49.1	45.8	47.7	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.671	0.693	0.657	0.653	----
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		140	150	137	140	----
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	22-Dec-2022 11:58	22-Dec-2022 10:46	22-Dec-2022 11:04	22-Dec-2022 10:42	----
Analyte	CAS Number	Method	LOR	Unit		SK2207279-006	SK2207279-007	SK2207279-008	SK2207279-009	--------
						Result	Result	Result	Result	----
Dissolved Metals										
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		0.000221	0.000182	0.000240	0.000222	----
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00014	<0.00010	0.00014	<0.00010	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.0748	0.0805	0.0749	0.0784	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00114	<0.00050	0.00227	0.00184	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0093	0.0043	0.0132	0.0066	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **SK2207279**	Page	: 1 of 18
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon, Saskatchewan Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 22-Dec-2022 13:58
PO	: 1518	Issue Date	: 30-Dec-2022 14:19
C-O-C number	: ----		
Sampler	: Client		
Site	: ----		
Quote number	: 2022 SK rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Matrix Spike (MS) Recoveries								
Anions and Nutrients	Anonymous	Anonymous	fluoride	16984-48-8	E235.F	69.5 % K	75.0-125%	Recovery less than lower data quality objective

Result Qualifiers

Qualifier	Description
K	*Matrix Spike recovery outside ALS DQO due to sample matrix effects.*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE										
1A-O	E235.Cl	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
1B-O	E235.Cl	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
2A-O	E235.Cl	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
2B-O	E235.Cl	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
3A-O	E235.Cl	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
3B-O	E235.Cl	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
4A-O	E235.Cl	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE 4B-O	E235.Cl	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Influent	E235.Cl	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 1A-O	E235.F	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 1B-O	E235.F	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 2A-O	E235.F	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 2B-O	E235.F	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 3A-O	E235.F	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 3B-O	E235.F	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 4A-O	E235.F	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
4B-O	E235.F	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Influent	E235.F	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
1A-O	E235.NO3	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
1B-O	E235.NO3	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
2A-O	E235.NO3	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
2B-O	E235.NO3	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
3A-O	E235.NO3	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
3B-O	E235.NO3	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
4A-O	E235.NO3	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	3 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE 4B-O	E235.NO3	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE Influent	E235.NO3	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 1A-O	E235.NO2	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 1B-O	E235.NO2	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 2A-O	E235.NO2	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 2B-O	E235.NO2	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 3A-O	E235.NO2	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 3B-O	E235.NO2	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 4A-O	E235.NO2	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	3 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE										
4B-O	E235.NO2	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE										
Influent	E235.NO2	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	3 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
1A-O	E235.SO4	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
1B-O	E235.SO4	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
2A-O	E235.SO4	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
2B-O	E235.SO4	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
3A-O	E235.SO4	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
3B-O	E235.SO4	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
4A-O	E235.SO4	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
4B-O	E235.SO4	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Influent	E235.SO4	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	28 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
1A-O	E421	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
1B-O	E421	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
2A-O	E421	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
2B-O	E421	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
3A-O	E421	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
3B-O	E421	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
4A-O	E421	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	180 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 4B-O	E421	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	180 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Influent	E421	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	180 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 1A-O	E290	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	14 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 1B-O	E290	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	14 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 2A-O	E290	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	14 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 2B-O	E290	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	14 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 3A-O	E290	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	14 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 3B-O	E290	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	14 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 4A-O	E290	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	14 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE										
4B-O	E290	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	14 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
Influent	E290	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	14 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE										
1A-O	E100	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	28 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE										
1B-O	E100	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	28 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE										
2A-O	E100	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	28 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE										
2B-O	E100	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	28 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE										
3A-O	E100	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	28 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE										
3B-O	E100	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	28 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE										
4A-O	E100	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	28 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE 4B-O	E100	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	28 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE Influent	E100	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	28 days	0 days	✓
Physical Tests : pH by Meter										
HDPE 1A-O	E108	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 1B-O	E108	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 2A-O	E108	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 2B-O	E108	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 3A-O	E108	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 3B-O	E108	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 4A-O	E108	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	0.25 hrs	0.26 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE 4B-O	E108	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	0.25 hrs	0.26 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE Influent	E108	22-Dec-2022	22-Dec-2022	----	----		22-Dec-2022	0.25 hrs	0.26 hrs	✖ EHTR-FM
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 1A-O	E420	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	180 days	1 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 1B-O	E420	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	180 days	1 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 2A-O	E420	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	180 days	1 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 2B-O	E420	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	180 days	1 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 3A-O	E420	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	180 days	1 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 3B-O	E420	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	180 days	1 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 4A-O	E420	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	180 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
4B-O	E420	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	180 days	1 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
Influent	E420	22-Dec-2022	23-Dec-2022	----	----		23-Dec-2022	180 days	1 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	787621	1	10	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	788404	1	12	8.3	5.0	✓
Conductivity in Water	E100	787620	1	10	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	787617	3	57	5.2	5.0	✓
Fluoride in Water by IC	E235.F	788401	1	11	9.0	5.0	✓
Nitrate in Water by IC	E235.NO3	788402	1	12	8.3	5.0	✓
Nitrite in Water by IC	E235.NO2	788405	1	12	8.3	5.0	✓
pH by Meter	E108	787618	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	788403	1	11	9.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	788161	1	9	11.1	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	787621	1	10	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	788404	1	12	8.3	5.0	✓
Conductivity in Water	E100	787620	1	10	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	787617	3	57	5.2	5.0	✓
Fluoride in Water by IC	E235.F	788401	1	11	9.0	5.0	✓
Nitrate in Water by IC	E235.NO3	788402	1	12	8.3	5.0	✓
Nitrite in Water by IC	E235.NO2	788405	1	12	8.3	5.0	✓
pH by Meter	E108	787618	1	10	10.0	5.0	✓
Sulfate in Water by IC	E235.SO4	788403	1	11	9.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	788161	1	9	11.1	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	787621	1	10	10.0	5.0	✓
Chloride in Water by IC	E235.Cl	788404	1	12	8.3	5.0	✓
Conductivity in Water	E100	787620	1	10	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	787617	3	57	5.2	5.0	✓
Fluoride in Water by IC	E235.F	788401	1	11	9.0	5.0	✓
Nitrate in Water by IC	E235.NO3	788402	1	12	8.3	5.0	✓
Nitrite in Water by IC	E235.NO2	788405	1	12	8.3	5.0	✓
Sulfate in Water by IC	E235.SO4	788403	1	11	9.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	788161	1	9	11.1	5.0	✓
Matrix Spikes (MS)							
Chloride in Water by IC	E235.Cl	788404	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	787617	3	57	5.2	5.0	✓
Fluoride in Water by IC	E235.F	788401	1	11	9.0	5.0	✓

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Nitrate in Water by IC	E235.NO3	788402	1	12	8.3	5.0	✓
Nitrite in Water by IC	E235.NO2	788405	1	12	8.3	5.0	✓
Sulfate in Water by IC	E235.SO4	788403	1	11	9.0	5.0	✓
Total metals in Water by CRC ICPMS	E420	788161	1	9	11.1	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Saskatoon - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Saskatoon - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Chloride in Water by IC	E235.Cl Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 Saskatoon - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Total metals in Water by CRC ICPMS	E420 Saskatoon - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals in Water by CRC ICPMS	E421 Saskatoon - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Saskatoon - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Saskatoon - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
TDS in Water (Calculation)	EC103 Saskatoon - Environmental	Water	APHA 1030E (mod)	Total Dissolved Solids is calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N Saskatoon - Environmental	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 Saskatoon - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 1

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Environmental Division Saskatoon

Work Order Reference SK2207279

Telephone : +1 306 668 837(

Report To	Contact and company name below will appear on the final report	Reports / Recipients		Turnaround Time (TAT) Requeste
Company:	Ensero Solutions Canada Inc.	Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)	☑ Routine [R] if received by 3pm M-F - no surcharges app
Contact:	Rachel Martz	Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharg
Phone:	306-978-3111	☑ Compare Results to Criteria on Report - provide details below if box checked		☐ 3 day [P3] if received by 3pm M-F - 25% rush surchar
	Company address below will appear on the final report	Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surchar
Street:	104-411 Downey Rd	Email 1 or Fax	rmartz@ensero.com	☐ 1 day [F] if received by 3pm M-F - 100% rush surchar
City/Province:	Saskatoon, SK	Email 2	snenson@ensero.com	☐ Same day [F2] if received by 10am M-S - 200% rush s
Postal Code:	S7N 4L8	Email 3	kpiecowye@ensero.com	Additional fees may apply to rush reques
Invoice To	Same as Report To ☐ YES ☑ NO	Invoice Recipients		Date and Time Required for all E&P TATs:
	Copy of Invoice with Report ☑ YES ☐ NO	Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX	For all tests with rush TATs reque.
Company:	Ensero Solutions Canada Inc. 410-885 Dunsmuir St, Vancouver,	Email 1 or Fax	ap@ensero.com	
Contact:	BC V6C1N5 Contact: Rachel Martz	Email 2	rmartz@ensero.com	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#:
Job #:	ECA22YT00211	Major/Minor Code:	Routing Code:
PO / AFE:	1518	Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (ALS use only):		ALS Contact:	Sampler:

Analysis Request

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Total Metals (P)	Dissolved Metals (F/P)	Routine (F/P)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	Influent	22-Dec-22	11:57	Water	3	R	R	R	0	0	0
	1A-O	22-Dec-22	13:16	Water	3	R	R	R			
	1B-O	22-Dec-22	12:38	Water	3	R	R	R			
	2A-O	22-Dec-22	13:28	Water	3	R	R	R			
	2B-O	22-Dec-22	12:52	Water	3	R	R	R			
	3A-O	22-Dec-22	13:58	Water	3	R	R	R			
	3B-O	22-Dec-22	12:46	Water	3	R	R	R			
	4A-O	22-Dec-22	13:04	Water	3	R	R	R			
	4B-O	22-Dec-22	12:42	Water	3	R	R	R			

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)	SAMPLE RECEIPT DETAILS (ALS use only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO		Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED
Are samples for human consumption/ use? ☐ YES ☑ NO	Please send Ensero format EDD Routine (anions, cations, alkalinity, pH, Conductivity, TDS, ion balance,hardness as CaCO3)	Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A INITIAL COOLER TEMPERATURES °C: 16.2 FINAL COOLER TEMPERATURES °C:

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date:	Time:	Received by: MES	Date: 22 Dec 22	Time: 3:58	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **SK2300060**	Page	: 1 of 10
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon SK Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 06-Jan-2023 14:40
PO	: 1518	Date Analysis Commenced	: 06-Jan-2023
C-O-C number	: ----	Issue Date	: 13-Jan-2023 15:04
Sampler	: Client		
Site	: ----		
Quote number	: 2023 Ensero Standard Rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Colby Bingham	Quality Systems Coordinator	Inorganics, Saskatoon, Saskatchewan
Colby Bingham	Quality Systems Coordinator	Metals, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Janiko Lindain	Laboratory Assistant	Metals, Saskatoon, Saskatchewan
Justin Jackson		Metals, Saskatoon, Saskatchewan
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kimberly Hanson	Laboratory Analyst	Metals, Saskatoon, Saskatchewan
Milad Khani	Laboratory Analyst	Inorganics, Saskatoon, Saskatchewan

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
%	percent
µS/cm	microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	06-Jan-2023 12:10	06-Jan-2023 12:15	06-Jan-2023 11:35	06-Jan-2023 12:45	06-Jan-2023 11:45
						SK2300060-001	SK2300060-002	SK2300060-003	SK2300060-004	SK2300060-005
						Result	Result	Result	Result	Result
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		463	505	489	508	529
conductivity	----	E100	2.0	µS/cm		1130	1190	1200	1210	1260
pH	----	E108	0.10	pH units		8.16	8.17	8.10	8.14	8.22
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		129	148	146	168	179
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		106	121	120	138	147
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		821	874	874	885	920
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		0.0152	----	0.0186	----	<0.0050
chloride	16887-00-6	E235.Cl	0.50	mg/L		14.9	16.3	16.2	16.2	17.5
fluoride	16984-48-8	E235.F	0.020	mg/L		0.827	0.677	0.683	0.677	0.686
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		21.9	24.4	25.7	21.7	22.0
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		4.12	0.053	<0.050 DLDS	<0.050 DLDS	<0.050 DLDS
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		370	395	398	405	422
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		26.0	24.4	25.7	21.7	22.0
Ion Balance										
anion sum	----	EC101	0.10	meq/L		12.1	12.9	13.0	13.2	13.8
cation sum	----	EC101	0.10	meq/L		12.0	13.0	12.7	13.2	13.8
ion balance (APHA)	----	EC101	0.01	%		-0.41	0.39	-1.17	<0.01	<0.01
ion balance (cations/anions)	----	EC101	0.010	%		99.2	101	97.7	100	100
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0174	0.0082	0.0053	0.0058	0.0057
antimony, total	7440-36-0	E420	0.00010	mg/L		0.0715	0.0695	0.0675	0.0684	0.0692
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.183	0.178	0.165	0.163	0.151
barium, total	7440-39-3	E420	0.00010	mg/L		0.0552	0.0668	0.0784	0.0711	0.0884
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L		0.090	0.088	0.089	0.090	0.097

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	06-Jan-2023 12:10	06-Jan-2023 12:15	06-Jan-2023 11:35	06-Jan-2023 12:45	06-Jan-2023 11:45
						SK2300060-001	SK2300060-002	SK2300060-003	SK2300060-004	SK2300060-005
						Result	Result	Result	Result	Result
Total Metals										
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000658	0.0000356	0.0000269	0.0000385	0.0000206
calcium, total	7440-70-2	E420	0.050	mg/L		142	149	150	146	158
cesium, total	7440-46-2	E420	0.000010	mg/L		0.000043	0.000032	0.000022	0.000035	0.000030
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00099	0.00026	<0.00010	0.00014	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L		0.119	0.0499	0.0370	0.0380	0.0383
iron, total	7439-89-6	E420	0.010	mg/L		0.046	<0.010	<0.010	<0.010	<0.010
lead, total	7439-92-1	E420	0.000050	mg/L		0.000506	0.000176	0.000054	0.000210	0.000086
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0110	0.0116	0.0116	0.0116	0.0133
magnesium, total	7439-95-4	E420	0.0050	mg/L		25.2	27.1	27.0	29.4	31.1
manganese, total	7439-96-5	E420	0.00010	mg/L		0.168	0.0358	0.00348	0.0197	0.00381
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.0180	0.0182	0.0183	0.0181	0.0186
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00548	0.00346	0.00251	0.00315	0.00208
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.319	0.307	0.291	0.186	0.125
potassium, total	7440-09-7	E420	0.050	mg/L		36.3	38.2	37.5	39.4	41.0
rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00235	0.00214	0.00189	0.00251	0.00245
selenium, total	7782-49-2	E420	0.000050	mg/L		0.0290	0.0309	0.0307	0.0308	0.0332
silicon, total	7440-21-3	E420	0.10	mg/L		4.50	4.67	4.97	4.76	4.17
silver, total	7440-22-4	E420	0.000010	mg/L		0.000015	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L		41.9	46.4	45.6	48.2	51.2
strontium, total	7440-24-6	E420	0.00020	mg/L		0.662	0.709	0.715	0.712	0.750
sulfur, total	7704-34-9	E420	0.50	mg/L		134	140	146	145	156
tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000300	0.000249	0.000201	0.000264	0.000226
thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, total	7440-31-5	E420	0.00010	mg/L		0.00017	0.00036	0.00038	0.00028	0.00020
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00060 DLM	<0.00030	<0.00030	<0.00030	<0.00030
tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	0.00010	<0.00010	<0.00010
uranium, total	7440-61-1	E420	0.000010	mg/L		0.0808	0.0833	0.0863	0.0881	0.0884
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00331	0.00285	0.00236	0.00279	0.00233

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	06-Jan-2023 12:10	06-Jan-2023 12:15	06-Jan-2023 11:35	06-Jan-2023 12:45	06-Jan-2023 11:45
						SK2300060-001	SK2300060-002	SK2300060-003	SK2300060-004	SK2300060-005
						Result	Result	Result	Result	Result
Total Metals										
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0131	0.0088	0.0063	0.0090	0.0060
zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0112	0.0050	0.0017	0.0031	0.0032
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.0593	0.0671	0.0620	0.0638	0.0651
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.159	0.177	0.168	0.163	0.152
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0573	0.0672	0.0769	0.0686	0.0861
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.090	0.088	0.086	0.090	0.093
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000465	0.0000292	0.0000275	0.0000285	0.0000204
calcium, dissolved	7440-70-2	E421	0.050	mg/L		144	158	151	157	163
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000040	0.000032	0.000021	0.000036	0.000030
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00096	0.00018	<0.00010	0.00012	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.0914	0.0412	0.0342	0.0346	0.0326
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.030	<0.030	<0.030	<0.030	<0.030
lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	0.000079	<0.000050	0.000088	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0131	0.0137	0.0135	0.0136	0.0148
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		25.2	26.9	27.1	28.1	29.6
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.160	0.0242	<0.00500	0.0172	<0.00500
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0163	0.0183	0.0177	0.0180	0.0181
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00500	0.00285	0.00230	0.00288	0.00188
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.310	0.273	0.263	0.192	0.118
potassium, dissolved	7440-09-7	E421	0.050	mg/L		37.0	39.0	38.1	39.6	41.6
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00237	0.00225	0.00209	0.00260	0.00253
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.0276	0.0292	0.0282	0.0300	0.0309
silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.56	4.74	4.75	4.90	4.01
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L		42.0	44.4	44.4	46.4	49.3

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: Influent	1A-O	1B-O	2A-O	2B-O
Client sampling date / time					06-Jan-2023 12:10	06-Jan-2023 12:15	06-Jan-2023 11:35	06-Jan-2023 12:45	06-Jan-2023 11:45
					SK2300060-001	SK2300060-002	SK2300060-003	SK2300060-004	SK2300060-005
					Result	Result	Result	Result	Result
Dissolved Metals									
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.653	0.727	0.714	0.733	0.745
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	136	137	137	141	148
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000279	0.000242	0.000179	0.000247	0.000209
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	0.00030	<0.00010	0.00026	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0765	0.0824	0.0786	0.0847	0.0863
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00290	0.00259	0.00216	0.00253	0.00214
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0117	0.0074	0.0050	0.0101	0.0045
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	06-Jan-2023 12:50	06-Jan-2023 11:52	06-Jan-2023 12:40	06-Jan-2023 12:00	----
Analyte	CAS Number	Method	LOR	Unit		SK2300060-006	SK2300060-007	SK2300060-008	SK2300060-009	--------
						Result	Result	Result	Result	----
Physical Tests										
hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		524	557	512	539	----
conductivity	----	E100	2.0	µS/cm		1260	1300	1230	1280	----
pH	----	E108	0.10	pH units		8.01	8.02	7.98	8.08	----
alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		156	158	162	168	----
alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	----
alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	----
alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		128	129	133	138	----
solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		923	960	893	940	----
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		----	<0.0050	----	<0.0050	----
chloride	16887-00-6	E235.Cl	0.50	mg/L		17.4	17.2	16.8	19.3	----
fluoride	16984-48-8	E235.F	0.020	mg/L		0.706	0.694	0.687	0.691	----
nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		26.2	27.5	21.4	20.5	----
nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.050 DLDS	<0.050 DLDS	<0.050 DLDS	<0.050 DLDS	----
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		422	437	413	444	----
nitrate + nitrite (as N)	----	EC235.N+N	0.0500	mg/L		26.2	27.5	21.4	20.5	----
Ion Balance										
anion sum	----	EC101	0.10	meq/L		13.7	14.2	13.3	14.0	----
cation sum	----	EC101	0.10	meq/L		13.6	14.4	13.3	14.1	----
ion balance (APHA)	----	EC101	0.01	%		-0.37	0.70	<0.01	0.36	----
ion balance (cations/anions)	----	EC101	0.010	%		99.3	101	100	101	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0084	<0.0030	0.0069	0.0072	----
antimony, total	7440-36-0	E420	0.00010	mg/L		0.0642	0.0564	0.0693	0.0699	----
arsenic, total	7440-38-2	E420	0.00010	mg/L		0.131	0.0919	0.158	0.142	----
barium, total	7440-39-3	E420	0.00010	mg/L		0.0634	0.0686	0.0733	0.0936	----
beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	----
bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
boron, total	7440-42-8	E420	0.010	mg/L		0.100	0.085	0.097	0.101	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000878	0.0000533	0.0000404	0.0000263	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	06-Jan-2023 12:50	06-Jan-2023 11:52	06-Jan-2023 12:40	06-Jan-2023 12:00	----
						SK2300060-006	SK2300060-007	SK2300060-008	SK2300060-009	--------
						Result	Result	Result	Result	----
Total Metals										
calcium, total	7440-70-2	E420	0.050	mg/L		156	162	152	162	----
cesium, total	7440-46-2	E420	0.000010	mg/L		0.000050	0.000040	0.000044	0.000062	----
chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00014	<0.00010	0.00012	<0.00010	----
copper, total	7440-50-8	E420	0.00050	mg/L		0.0390	0.0142	0.0378	0.0400	----
iron, total	7439-89-6	E420	0.010	mg/L		0.014	<0.010	<0.010	0.013	----
lead, total	7439-92-1	E420	0.000050	mg/L		0.000397	0.000094	0.000137	0.000234	----
lithium, total	7439-93-2	E420	0.0010	mg/L		0.0129	0.0136	0.0136	0.0149	----
magnesium, total	7439-95-4	E420	0.0050	mg/L		30.8	31.4	28.2	32.6	----
manganese, total	7439-96-5	E420	0.00010	mg/L		0.0169	0.00030	0.0240	0.00372	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.0176	0.0166	0.0180	0.0177	----
nickel, total	7440-02-0	E420	0.00050	mg/L		0.00293	0.00224	0.00334	0.00235	----
phosphorus, total	7723-14-0	E420	0.050	mg/L		0.228	0.069	0.163	0.115	----
potassium, total	7440-09-7	E420	0.050	mg/L		41.2	41.1	40.4	43.2	----
rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00315	0.00323	0.00237	0.00259	----
selenium, total	7782-49-2	E420	0.000050	mg/L		0.0319	0.0324	0.0302	0.0320	----
silicon, total	7440-21-3	E420	0.10	mg/L		3.86	3.73	4.89	4.58	----
silver, total	7440-22-4	E420	0.000010	mg/L		0.000014	<0.000010	<0.000010	<0.000010	----
sodium, total	7440-23-5	E420	0.050	mg/L		49.8	50.8	47.0	52.0	----
strontium, total	7440-24-6	E420	0.00020	mg/L		0.713	0.759	0.726	0.762	----
sulfur, total	7704-34-9	E420	0.50	mg/L		155	160	151	161	----
tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----
thallium, total	7440-28-0	E420	0.000010	mg/L		0.000261	0.000219	0.000265	0.000235	----
thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
tin, total	7440-31-5	E420	0.00010	mg/L		0.00028	<0.00010	0.00013	0.00020	----
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	0.00011	----
uranium, total	7440-61-1	E420	0.000010	mg/L		0.0866	0.0854	0.0875	0.0921	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00147	0.00063	0.00255	0.00199	----
zinc, total	7440-66-6	E420	0.0030	mg/L		0.0116	0.0052	0.0080	0.0145	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	06-Jan-2023 12:50	06-Jan-2023 11:52	06-Jan-2023 12:40	06-Jan-2023 12:00	----
						SK2300060-006	SK2300060-007	SK2300060-008	SK2300060-009	--------
						Result	Result	Result	Result	----
Total Metals										
zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0026	0.0015	0.0029	0.0018	----
antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.0603	0.0552	0.0652	0.0672	----
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.127	0.0934	0.159	0.144	----
barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0602	0.0683	0.0728	0.0922	----
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	----
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
boron, dissolved	7440-42-8	E421	0.010	mg/L		0.088	0.083	0.095	0.098	----
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000550	0.0000528	0.0000276	0.0000176	----
calcium, dissolved	7440-70-2	E421	0.050	mg/L		162	172	159	163	----
cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000047	0.000039	0.000039	0.000058	----
chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	0.00012	<0.00010	----
copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.0261	0.0137	0.0353	0.0354	----
iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.030	<0.030	<0.030	<0.030	----
lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000055	0.000075	<0.000050	0.000058	----
lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0144	0.0156	0.0144	0.0157	----
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		29.1	30.9	28.0	32.0	----
manganese, dissolved	7439-96-5	E421	0.00500	mg/L		<0.00500	<0.00500	0.0231	<0.00500	----
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0178	0.0161	0.0183	0.0179	----
nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00238	0.00206	0.00305	0.00208	----
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.125	0.064	0.135	<0.050	----
potassium, dissolved	7440-09-7	E421	0.050	mg/L		40.8	42.4	40.8	43.2	----
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00302	0.00343	0.00256	0.00261	----
selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.0312	0.0315	0.0303	0.0319	----
silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.88	3.51	4.64	4.36	----
silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, dissolved	7440-23-5	E421	0.050	mg/L		47.4	50.9	47.4	52.1	----
strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.726	0.748	0.739	0.769	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	06-Jan-2023 12:50	06-Jan-2023 11:52	06-Jan-2023 12:40	06-Jan-2023 12:00	----
						SK2300060-006	SK2300060-007	SK2300060-008	SK2300060-009	--------
						Result	Result	Result	Result	----
Dissolved Metals										
sulfur, dissolved	7704-34-9	E421	0.50	mg/L		148	152	146	154	----
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----
thallium, dissolved	7440-28-0	E421	0.000010	mg/L		0.000248	0.000198	0.000241	0.000217	----
thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
tin, dissolved	7440-31-5	E421	0.00010	mg/L		0.00014	<0.00010	<0.00010	0.00011	----
titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	0.00010	----
uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.0858	0.0774	0.0821	0.0888	----
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00122	<0.00050	0.00226	0.00166	----
zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0089	0.0047	0.0091	0.0058	----
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **SK2300060**	Page	: 1 of 17
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon, Saskatchewan Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 06-Jan-2023 14:40
PO	: 1518	Issue Date	: 13-Jan-2023 15:04
C-O-C number	: ----		
Sampler	: Client		
Site	: ----		
Quote number	: 2023 Ensero Standard Rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 1B-O	E298	06-Jan-2023	10-Jan-2023	----	----		10-Jan-2023	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 2B-O	E298	06-Jan-2023	10-Jan-2023	----	----		10-Jan-2023	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 3B-O	E298	06-Jan-2023	10-Jan-2023	----	----		10-Jan-2023	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) 4B-O	E298	06-Jan-2023	10-Jan-2023	----	----		10-Jan-2023	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Influent	E298	06-Jan-2023	10-Jan-2023	----	----		10-Jan-2023	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 1A-O	E235.Cl	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 1B-O	E235.Cl	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE 2A-O	E235.Cl	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 2B-O	E235.Cl	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 3A-O	E235.Cl	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 3B-O	E235.Cl	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 4A-O	E235.Cl	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 4B-O	E235.Cl	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Influent	E235.Cl	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 1A-O	E235.F	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 1B-O	E235.F	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE 2A-O	E235.F	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 2B-O	E235.F	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 3A-O	E235.F	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 3B-O	E235.F	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 4A-O	E235.F	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 4B-O	E235.F	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Influent	E235.F	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 1A-O	E235.NO3	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 1B-O	E235.NO3	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE 2A-O	E235.NO3	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 2B-O	E235.NO3	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 3A-O	E235.NO3	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 3B-O	E235.NO3	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 4A-O	E235.NO3	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 4B-O	E235.NO3	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE Influent	E235.NO3	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 1A-O	E235.NO2	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 1B-O	E235.NO2	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	3 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE 2A-O	E235.NO2	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 2B-O	E235.NO2	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 3A-O	E235.NO2	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 3B-O	E235.NO2	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 4A-O	E235.NO2	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 4B-O	E235.NO2	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE Influent	E235.NO2	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 1A-O	E235.SO4	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 1B-O	E235.SO4	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE 2A-O	E235.SO4	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 2B-O	E235.SO4	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 3A-O	E235.SO4	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 3B-O	E235.SO4	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 4A-O	E235.SO4	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 4B-O	E235.SO4	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Influent	E235.SO4	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	28 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 1A-O	E421	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 1B-O	E421	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	180 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 2A-O	E421	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 2B-O	E421	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 3A-O	E421	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 3B-O	E421	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 4A-O	E421	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 4B-O	E421	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Influent	E421	06-Jan-2023	09-Jan-2023	----	----		09-Jan-2023	180 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 1A-O	E290	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	14 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 1B-O	E290	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	14 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE 2A-O	E290	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	14 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 2B-O	E290	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	14 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 3A-O	E290	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	14 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 3B-O	E290	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	14 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 4A-O	E290	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	14 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 4B-O	E290	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	14 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Influent	E290	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	14 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE 1A-O	E100	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	28 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE 1B-O	E100	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	28 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE 2A-O	E100	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	28 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE 2B-O	E100	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	28 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE 3A-O	E100	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	28 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE 3B-O	E100	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	28 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE 4A-O	E100	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	28 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE 4B-O	E100	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	28 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE Influent	E100	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	28 days	0 days	✓
Physical Tests : pH by Meter										
HDPE 1A-O	E108	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	0.25 hrs	0.35 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 1B-O	E108	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	0.25 hrs	0.35 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE 2A-O	E108	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	0.25 hrs	0.35 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 2B-O	E108	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	0.25 hrs	0.35 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 3A-O	E108	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	0.25 hrs	0.35 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 3B-O	E108	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	0.25 hrs	0.35 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 4A-O	E108	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	0.25 hrs	0.35 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 4B-O	E108	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	0.25 hrs	0.35 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Influent	E108	06-Jan-2023	06-Jan-2023	----	----		06-Jan-2023	0.25 hrs	0.35 hrs	× EHTR-FM
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 1A-O	E420	06-Jan-2023	11-Jan-2023	----	----		11-Jan-2023	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 1B-O	E420	06-Jan-2023	11-Jan-2023	----	----		11-Jan-2023	180 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 2A-O	E420	06-Jan-2023	11-Jan-2023	----	----		11-Jan-2023	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 2B-O	E420	06-Jan-2023	11-Jan-2023	----	----		11-Jan-2023	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 3A-O	E420	06-Jan-2023	11-Jan-2023	----	----		11-Jan-2023	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 3B-O	E420	06-Jan-2023	11-Jan-2023	----	----		11-Jan-2023	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 4A-O	E420	06-Jan-2023	11-Jan-2023	----	----		11-Jan-2023	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 4B-O	E420	06-Jan-2023	11-Jan-2023	----	----		11-Jan-2023	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) Influent	E420	06-Jan-2023	11-Jan-2023	----	----		11-Jan-2023	180 days	5 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	796161	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	798422	1	19	5.2	5.0	✓
Chloride in Water by IC	E235.Cl	797361	1	9	11.1	5.0	✓
Conductivity in Water	E100	796160	1	13	7.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	797187	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	797360	1	9	11.1	5.0	✓
Nitrate in Water by IC	E235.NO3	797357	1	20	5.0	5.0	✓
Nitrite in Water by IC	E235.NO2	797358	1	9	11.1	5.0	✓
pH by Meter	E108	796159	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	797359	1	9	11.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	798771	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	796161	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	798422	1	19	5.2	5.0	✓
Chloride in Water by IC	E235.Cl	797361	1	9	11.1	5.0	✓
Conductivity in Water	E100	796160	1	13	7.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	797187	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	797360	1	9	11.1	5.0	✓
Nitrate in Water by IC	E235.NO3	797357	1	20	5.0	5.0	✓
Nitrite in Water by IC	E235.NO2	797358	1	9	11.1	5.0	✓
pH by Meter	E108	796159	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	797359	1	9	11.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	798771	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	796161	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	798422	1	19	5.2	5.0	✓
Chloride in Water by IC	E235.Cl	797361	1	9	11.1	5.0	✓
Conductivity in Water	E100	796160	1	13	7.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	797187	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	797360	1	9	11.1	5.0	✓
Nitrate in Water by IC	E235.NO3	797357	1	20	5.0	5.0	✓
Nitrite in Water by IC	E235.NO2	797358	1	9	11.1	5.0	✓
Sulfate in Water by IC	E235.SO4	797359	1	9	11.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	798771	1	20	5.0	5.0	✓
Matrix Spikes (MS)							

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Ammonia by Fluorescence	E298	798422	1	19	5.2	5.0	✓
Chloride in Water by IC	E235.Cl	797361	1	9	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	797187	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	797360	1	9	11.1	5.0	✓
Nitrate in Water by IC	E235.NO3	797357	1	20	5.0	5.0	✓
Nitrite in Water by IC	E235.NO2	797358	1	9	11.1	5.0	✓
Sulfate in Water by IC	E235.SO4	797359	1	9	11.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	798771	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Saskatoon - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Saskatoon - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Chloride in Water by IC	E235.Cl Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 Saskatoon - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total metals in Water by CRC ICPMS	E420 Saskatoon - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals in Water by CRC ICPMS	E421 Saskatoon - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Saskatoon - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Saskatoon - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
TDS in Water (Calculation)	EC103 Saskatoon - Environmental	Water	APHA 1030E (mod)	Total Dissolved Solids is calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N Saskatoon - Environmental	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Dissolved Metals Water Filtration	EP421 Saskatoon - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of

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Canada Toll Free: 1 800 668 9878

Environmental Division Saskatoon

Work Order Reference SK2300060

Telephone : +1 306 668 8370

Report To	Contact and company name below will appear on the final report
Company:	Ensero Solutions Canada Inc.
Contact:	Rachel Martz
Phone:	306-978-3111
	Company address below will appear on the final report
Street:	104-411 Downey Rd
City/Province:	Saskatoon, SK
Postal Code:	S7N 4L8
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Ensero Solutions Canada Inc. 410-885 Dunsmuir St, Vancouver,
Contact:	BC V6C1N5 Contact: Rachel Martz

Reports / Recipients	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	rmartz@ensero.com
Email 2	snenson@ensero.com
Email 3	kpiecowye@ensero.com
Invoice Recipients	
Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	ap@ensero.com
Email 2	rmartz@ensero.com

Turnaround Time (TAT) Re
☑ Routine [R] if received by 3pm M-F - no surchar
☐ 4 day [P4] if received by 3pm M-F - 20% rush s
☐ 3 day [P3] if received by 3pm M-F - 25% rush
☐ 2 day [P2] if received by 3pm M-F - 50% rush
☐ 1 day [E] if received by 3pm M-F - 100% rush
☐ Same day [E2] if received by 10am M-S - 200%
Additional fees may apply to rus
Date and Time Required for all E&P TATs:
For all tests with rush T

Project Information	
ALS Account # / Quote #:	
Job #:	ECA22YT00211
PO / AFE:	1518
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only): | **ALS Contact:** | **Sampler:**

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Total Metals	Dissolved Metals	Routine	Ammonia	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
					Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below	P	F/P		P			
	Influent	6-Jan-23	14:10	Water	4	R	R	R	R	0	0	0
	1A-O	6-Jan-23	14:15	Water	3	R	R	R				
	1B-O	6-Jan-23	13:35	Water	4	R	R	R	R			
	2A-O	6-Jan-23	14:45	Water	3	R	R	R				
	2B-O	6-Jan-23	13:45	Water	4	R	R	R	R			
	3A-O	6-Jan-23	14:50	Water	3	R	R	R				
	3B-O	6-Jan-23	13:52	Water	4	R	R	R	R			
	4A-O	6-Jan-23	14:40	Water	3	R	R	R				
	4B-O	6-Jan-23	14:00	Water	4	R	R	R	R			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Please send Ensero format EDD
Routine (anions, cations, alkalinity, pH, Conductivity, TDS, ion balance,hardness as CaCO3)

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
18.0							

SHIPMENT RELEASE (client use)		
Released by:	Date:	Time:

INITIAL SHIPMENT RECEPTION (ALS use only)		
Received by: ME3	Date: 6/1/23	Time: 4:40

FINAL SHIPMENT RECEPTION (ALS use only)		
Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FEB2022 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form.**

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **SK2300364**	Page	: 1 of 10
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon SK Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 30-Jan-2023 15:00
PO	: 1518	Date Analysis Commenced	: 31-Jan-2023
C-O-C number	: ----	Issue Date	: 06-Feb-2023 13:25
Sampler	: Client		
Site	: ----		
Quote number	: 2023 Ensero Standard Rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Colby Bingham	Laboratory Supervisor	Inorganics, Saskatoon, Saskatchewan
Colby Bingham	Laboratory Supervisor	Metals, Saskatoon, Saskatchewan
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Janiko Lindain	Laboratory Assistant	Metals, Saskatoon, Saskatchewan
Kimberly Hanson	Laboratory Analyst	Metals, Saskatoon, Saskatchewan
Milad Khani	Laboratory Analyst	Inorganics, Saskatoon, Saskatchewan
Ruth Islas	Laboratory Assistant	Metals, Saskatoon, Saskatchewan

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
%	percent
µS/cm	microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
DTMF	*Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: Influent	1A-O	1B-O	2A-O	2B-O
Client sampling date / time					30-Jan-2023 07:27	30-Jan-2023 11:44	30-Jan-2023 09:38	30-Jan-2023 11:14	30-Jan-2023 09:10
					SK2300364-001	SK2300364-002	SK2300364-003	SK2300364-004	SK2300364-005
					Result	Result	Result	Result	Result
Physical Tests									
Hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L	474	509	540	526	517
Conductivity	----	E100	2.0	µS/cm	1100	1200	1250	1190	1220
pH	----	E108	0.10	pH units	7.84	8.22	8.19	8.17	8.20
Alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L	132	175	186	200	197
Alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	108	144	152	164	162
Solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L	842	905	960	898	919
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0111	----	0.0071	----	0.0088
Chloride	16887-00-6	E235.Cl	0.50	mg/L	14.9	15.8	17.3	17.2	18.3
Fluoride	16984-48-8	E235.F	0.020	mg/L	0.493	0.528	0.588	0.537	0.565
Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L	22.3	21.9	22.4	15.4	12.5
Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L	4.15	0.056	0.054	0.059	0.056
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	381	422	453	424	461
Nitrate + Nitrite (as N)	----	EC235.N+N	0.0500	mg/L	26.4	22.0	22.4	15.4	12.6
Ion Balance									
Anion sum	----	EC101	0.10	meq/L	12.4	13.7	14.6	13.7	14.3
Cation sum	----	EC101	0.10	meq/L	12.2	13.1	13.9	13.5	13.5
Ion balance (APHA)	----	EC101	0.01	%	-0.81	-2.24	-2.46	-0.74	-2.88
Ion balance (cations/anions)	----	EC101	0.010	%	98.4	95.6	95.2	98.5	94.4
Total Metals									
Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0183	0.0059	0.0034	0.0047	0.0052
Antimony, total	7440-36-0	E420	0.00010	mg/L	0.0664	0.0756	0.0724	0.0734	0.0718
Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.183	0.188	0.179	0.178	0.145
Barium, total	7440-39-3	E420	0.00010	mg/L	0.0553	0.0690	0.0857	0.0697	0.0832
Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8	E420	0.010	mg/L	0.099	0.101	0.101	0.100	0.097

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	30-Jan-2023 07:27	30-Jan-2023 11:44	30-Jan-2023 09:38	30-Jan-2023 11:14	30-Jan-2023 09:10
						SK2300364-001	SK2300364-002	SK2300364-003	SK2300364-004	SK2300364-005
						Result	Result	Result	Result	Result
Total Metals										
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000672	0.0000281	0.0000327	0.0000265	0.0000200
Calcium, total	7440-70-2	E420	0.050	mg/L		146	165	165	159	156
Cesium, total	7440-46-2	E420	0.000010	mg/L		0.000042	0.000024	0.000019	0.000031	0.000028
Chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00087	0.00011	<0.00010	<0.00010	<0.00010
Copper, total	7440-50-8	E420	0.00050	mg/L		0.0981	0.0345	0.0414	0.0303	0.0333
Iron, total	7439-89-6	E420	0.010	mg/L		0.022	<0.010	<0.010	<0.010	<0.010
Lead, total	7439-92-1	E420	0.000050	mg/L		0.000563	0.000092	<0.000050	0.000062	<0.000050
Lithium, total	7439-93-2	E420	0.0010	mg/L		0.0102	0.0111	0.0118	0.0114	0.0121
Magnesium, total	7439-95-4	E420	0.0050	mg/L		25.3	28.8	29.8	29.3	30.7
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.142	0.0117	0.00150	0.00750	0.00101
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.0177	0.0206	0.0200	0.0193	0.0199
Nickel, total	7440-02-0	E420	0.00050	mg/L		0.00499	0.00263	0.00226	0.00287	0.00199
Phosphorus, total	7723-14-0	E420	0.050	mg/L		0.290	0.252	0.266	0.135	0.053
Potassium, total	7440-09-7	E420	0.050	mg/L		34.0	37.3	38.4	38.0	39.4
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00233	0.00221	0.00186	0.00256	0.00250
Selenium, total	7782-49-2	E420	0.000050	mg/L		0.0281	0.0311	0.0325	0.0315	0.0332
Silicon, total	7440-21-3	E420	0.10	mg/L		4.50	5.15	5.29	4.85	3.25
Silver, total	7440-22-4	E420	0.000010	mg/L		0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5	E420	0.050	mg/L		43.8	47.9	48.5	49.2	50.6
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.632	0.732	0.757	0.697	0.770
Sulfur, total	7704-34-9	E420	0.50	mg/L		133	151	162	155	165
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, total	7440-28-0	E420	0.000010	mg/L		0.000273	0.000192	0.000143	0.000209	0.000160
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	0.00012	<0.00010	0.00015	<0.00010
Titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	0.00011	<0.00010	<0.00010
Uranium, total	7440-61-1	E420	0.000010	mg/L		0.0730	0.0835	0.0875	0.0847	0.0891
Vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00316	0.00259	0.00212	0.00255	0.00189

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	30-Jan-2023 07:27	30-Jan-2023 11:44	30-Jan-2023 09:38	30-Jan-2023 11:14	30-Jan-2023 09:10
						SK2300364-001	SK2300364-002	SK2300364-003	SK2300364-004	SK2300364-005
						Result	Result	Result	Result	Result
Total Metals										
Zinc, total	7440-66-6	E420	0.0030	mg/L		0.0152	0.0064	0.0059	0.0086	0.0043
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0104	0.0014	0.0022	0.0016	0.0011
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.0682	0.0720	0.0713	0.0713	0.0752
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.187	0.186	0.179	0.175	0.145
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0597	0.0672	0.0854	0.0649	0.0764
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	7440-42-8	E421	0.010	mg/L		0.089	0.090	0.094	0.092	0.090
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000718	0.0000257	0.0000258	0.0000240	0.0000172
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		149	160	169	164	157
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000040	0.000022	0.000017	0.000033	0.000027
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00084	0.00010	<0.00010	<0.00010	<0.00010
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.0865	0.0306	0.0392	0.0285	0.0321
Iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.030	<0.030	<0.030	<0.030	<0.030
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	0.000053	<0.000050	<0.000050	<0.000050
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0103	0.0112	0.0121	0.0116	0.0125
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		24.8	26.6	28.8	28.3	30.4
Manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.143	0.00859	<0.00500	0.00679	<0.00500
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0182	0.0196	0.0203	0.0199	0.0200
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00506	0.00260	0.00222	0.00275	0.00178
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.320	0.238	0.215	0.108	<0.050
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		35.9	37.0	38.7	38.7	39.9
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00253	0.00218	0.00182	0.00244	0.00240
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.0297	0.0303	0.0316	0.0314	0.0324
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.47	4.92	5.00	4.55	3.07
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		41.4	45.9	48.2	46.6	50.3

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	30-Jan-2023 07:27	30-Jan-2023 11:44	30-Jan-2023 09:38	30-Jan-2023 11:14	30-Jan-2023 09:10
						SK2300364-001	SK2300364-002	SK2300364-003	SK2300364-004	SK2300364-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.685	0.712	0.742	0.724	0.755
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L		137	152	157	150	162
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L		0.000277	0.000197	0.000139	0.000198	0.000160
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	0.00011	<0.00010	<0.00010
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.0700	0.0821	0.0846	0.0787	0.0836
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00315	0.00248	0.00202	0.00240	0.00180
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0109	0.0059	0.0051	0.0084	0.0037
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	30-Jan-2023 11:18	30-Jan-2023 09:16	30-Jan-2023 11:10	30-Jan-2023 09:51	----
						SK2300364-006	SK2300364-007	SK2300364-008	SK2300364-009	--------
						Result	Result	Result	Result	----
Physical Tests										
Hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		521	549	498	501	----
Conductivity	----	E100	2.0	µS/cm		1230	1300	1140	1180	----
pH	----	E108	0.10	pH units		8.07	8.06	8.07	8.10	----
Alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		167	176	178	171	----
Alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	----
Alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	----
Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		137	144	146	140	----
Solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		923	985	850	883	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L		----	<0.0050	----	0.0052	----
Chloride	16887-00-6	E235.Cl	0.50	mg/L		16.7	18.2	15.3	18.1	----
Fluoride	16984-48-8	E235.F	0.020	mg/L		0.563	0.600	0.519	0.536	----
Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		23.8	24.2	14.6	14.1	----
Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		0.060	0.051	<0.050 DLDS	0.052	----
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		433	474	405	440	----
Nitrate + Nitrite (as N)	----	EC235.N+N	0.0500	mg/L		23.9	24.2	14.6	14.2	----
Ion Balance										
Anion sum	----	EC101	0.10	meq/L		14.0	15.0	12.8	13.5	----
Cation sum	----	EC101	0.10	meq/L		13.5	14.2	12.9	13.2	----
Ion balance (APHA)	----	EC101	0.01	%		-1.82	-2.74	0.39	-1.12	----
Ion balance (cations/anions)	----	EC101	0.010	%		96.4	94.7	101	97.8	----
Total Metals										
Aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0032	<0.0030	0.0032	0.0069	----
Antimony, total	7440-36-0	E420	0.00010	mg/L		0.0587	0.0519	0.0693	0.0682	----
Arsenic, total	7440-38-2	E420	0.00010	mg/L		0.0991	0.0683	0.157	0.121	----
Barium, total	7440-39-3	E420	0.00010	mg/L		0.0558	0.0640	0.0660	0.0744	----
Beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	----
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
Boron, total	7440-42-8	E420	0.010	mg/L		0.083	0.074	0.094	0.093	----
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000706	0.0000534	0.0000223	0.0000155	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	30-Jan-2023 11:18	30-Jan-2023 09:16	30-Jan-2023 11:10	30-Jan-2023 09:51	----
Analyte	CAS Number	Method	LOR	Unit		SK2300364-006	SK2300364-007	SK2300364-008	SK2300364-009	--------
						Result	Result	Result	Result	----
Total Metals										
Calcium, total	7440-70-2	E420	0.050	mg/L		166	173	154	155	----
Cesium, total	7440-46-2	E420	0.000010	mg/L		0.000039	0.000036	0.000038	0.000055	----
Chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
Cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
Copper, total	7440-50-8	E420	0.00050	mg/L		0.0231	0.0133	0.0238	0.0278	----
Iron, total	7439-89-6	E420	0.010	mg/L		<0.010	<0.010	<0.010	<0.010	----
Lead, total	7439-92-1	E420	0.000050	mg/L		0.000092	0.000052	0.000062	<0.000050	----
Lithium, total	7439-93-2	E420	0.0010	mg/L		0.0111	0.0121	0.0109	0.0116	----
Magnesium, total	7439-95-4	E420	0.0050	mg/L		30.3	32.6	27.3	29.1	----
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.00268	0.00027	0.00838	0.00066	----
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.0177	0.0168	0.0180	0.0184	----
Nickel, total	7440-02-0	E420	0.00050	mg/L		0.00211	0.00213	0.00266	0.00200	----
Phosphorus, total	7723-14-0	E420	0.050	mg/L		0.073	<0.050	0.082	<0.050	----
Potassium, total	7440-09-7	E420	0.050	mg/L		38.1	39.4	36.5	38.9	----
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00282	0.00323	0.00242	0.00229	----
Selenium, total	7782-49-2	E420	0.000050	mg/L		0.0328	0.0329	0.0303	0.0303	----
Silicon, total	7440-21-3	E420	0.10	mg/L		3.58	3.20	4.16	2.37	----
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
Sodium, total	7440-23-5	E420	0.050	mg/L		51.2	52.4	46.2	49.0	----
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.712	0.759	0.698	0.715	----
Sulfur, total	7704-34-9	E420	0.50	mg/L		157	169	150	158	----
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----
Thallium, total	7440-28-0	E420	0.000010	mg/L		0.000194	0.000171	0.000198	0.000174	----
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
Titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
Uranium, total	7440-61-1	E420	0.000010	mg/L		0.0847	0.0910	0.0798	0.0830	----
Vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00090	<0.00050	0.00211	0.00132	----
Zinc, total	7440-66-6	E420	0.0030	mg/L		0.0098	0.0050	0.0101	0.0052	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	30-Jan-2023 11:18	30-Jan-2023 09:16	30-Jan-2023 11:10	30-Jan-2023 09:51	----
Analyte	CAS Number	Method	LOR	Unit		SK2300364-006	SK2300364-007	SK2300364-008	SK2300364-009	--------
						Result	Result	Result	Result	----
Total Metals										
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0014	0.0012	0.0041	0.0020	----
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.0606	0.0507	0.0707	0.0706	----
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.0988	0.0676	0.159	0.123	----
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0546	0.0598	0.0742	0.0812	----
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.010	mg/L		0.078	0.067	0.088	0.087	----
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000671	0.0000498	0.0000224	0.0000134	----
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		161	169	154	150	----
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000037	0.000035	0.000034	0.000048	----
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.0215	0.0127	0.0220	0.0270	----
Iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.030	<0.030	<0.030	<0.030	----
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000057	<0.000050	0.000063	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0116	0.0124	0.0121	0.0123	----
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		28.9	30.9	27.6	30.8	----
Manganese, dissolved	7439-96-5	E421	0.00500	mg/L		<0.00500	<0.00500	0.00732	<0.00500	----
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0182	0.0166	0.0180	0.0184	----
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00216	0.00210	0.00270	0.00204	----
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.071	<0.050	0.064	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		38.5	39.7	39.0	41.0	----
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00308	0.00323	0.00226	0.00243	----
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.0313	0.0334	0.0300	0.0316	----
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		3.38	3.08	4.07	2.38	----
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		47.8	50.2	45.8	49.8	----
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.736	0.738	0.717	0.751	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID: 3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time: 30-Jan-2023 11:18	30-Jan-2023 09:16	30-Jan-2023 11:10	30-Jan-2023 09:51	----
					SK2300364-006	SK2300364-007	SK2300364-008	SK2300364-009	--------
					Result	Result	Result	Result	----
Dissolved Metals									
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	158	170	150	162	----
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000190	0.000165	0.000188	0.000182	----
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0793	0.0846	0.0754	0.0824	----
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00080	<0.00050	0.00197	0.00122	----
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0112	0.0041	0.0157 DTMF	0.0042	----
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----
Dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **SK2300364**	Page	: 1 of 17
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon, Saskatchewan Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 30-Jan-2023 15:00
PO	: 1518	Issue Date	: 06-Feb-2023 13:25
C-O-C number	: ----		
Sampler	: Client		
Site	: ----		
Quote number	: 2023 Ensero Standard Rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
1B-O	E298	30-Jan-2023	02-Feb-2023	----	----		02-Feb-2023	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
2B-O	E298	30-Jan-2023	02-Feb-2023	----	----		02-Feb-2023	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
3B-O	E298	30-Jan-2023	02-Feb-2023	----	----		02-Feb-2023	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
4B-O	E298	30-Jan-2023	02-Feb-2023	----	----		02-Feb-2023	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Influent	E298	30-Jan-2023	02-Feb-2023	----	----		02-Feb-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
1A-O	E235.Cl	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
1B-O	E235.Cl	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE 2A-O	E235.Cl	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 2B-O	E235.Cl	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 3A-O	E235.Cl	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 3B-O	E235.Cl	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 4A-O	E235.Cl	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 4B-O	E235.Cl	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Influent	E235.Cl	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 1A-O	E235.F	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 1B-O	E235.F	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE 2A-O	E235.F	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 2B-O	E235.F	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 3A-O	E235.F	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 3B-O	E235.F	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 4A-O	E235.F	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE 4B-O	E235.F	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Influent	E235.F	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 1A-O	E235.NO3	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 1B-O	E235.NO3	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	3 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE 2A-O	E235.NO3	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 2B-O	E235.NO3	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 3A-O	E235.NO3	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 3B-O	E235.NO3	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 4A-O	E235.NO3	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE 4B-O	E235.NO3	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE Influent	E235.NO3	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 1A-O	E235.NO2	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 1B-O	E235.NO2	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	3 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE 2A-O	E235.NO2	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 2B-O	E235.NO2	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 3A-O	E235.NO2	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 3B-O	E235.NO2	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 4A-O	E235.NO2	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 4B-O	E235.NO2	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE Influent	E235.NO2	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	3 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 1A-O	E235.SO4	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 1B-O	E235.SO4	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE 2A-O	E235.SO4	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 2B-O	E235.SO4	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 3A-O	E235.SO4	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 3B-O	E235.SO4	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 4A-O	E235.SO4	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE 4B-O	E235.SO4	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Influent	E235.SO4	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 1A-O	E421	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	180 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 1B-O	E421	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	180 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 2A-O	E421	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	180 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 2B-O	E421	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	180 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 3A-O	E421	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	180 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 3B-O	E421	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	180 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Influent	E421	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	180 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 4A-O	E421	30-Jan-2023	03-Feb-2023	----	----		03-Feb-2023	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 4B-O	E421	30-Jan-2023	03-Feb-2023	----	----		03-Feb-2023	180 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 1A-O	E290	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 1B-O	E290	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	14 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE 2A-O	E290	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 2B-O	E290	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 3A-O	E290	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 3B-O	E290	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 4A-O	E290	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 4B-O	E290	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Influent	E290	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	14 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 1A-O	E100	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 1B-O	E100	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE 2A-O	E100	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 2B-O	E100	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 3A-O	E100	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 3B-O	E100	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 4A-O	E100	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE 4B-O	E100	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE Influent	E100	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	28 days	2 days	✓
Physical Tests : pH by Meter										
HDPE 1A-O	E108	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 1B-O	E108	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	0.25 hrs	0.25 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE 2A-O	E108	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 2B-O	E108	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 3A-O	E108	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 3B-O	E108	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 4A-O	E108	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 4B-O	E108	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Influent	E108	30-Jan-2023	01-Feb-2023	----	----		01-Feb-2023	0.25 hrs	0.25 hrs	× EHTR-FM
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 1A-O	E420	30-Jan-2023	02-Feb-2023	----	----		02-Feb-2023	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 1B-O	E420	30-Jan-2023	02-Feb-2023	----	----		02-Feb-2023	180 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 2A-O	E420	30-Jan-2023	02-Feb-2023	----	----		02-Feb-2023	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 2B-O	E420	30-Jan-2023	02-Feb-2023	----	----		02-Feb-2023	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 3A-O	E420	30-Jan-2023	02-Feb-2023	----	----		02-Feb-2023	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 3B-O	E420	30-Jan-2023	02-Feb-2023	----	----		02-Feb-2023	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 4A-O	E420	30-Jan-2023	02-Feb-2023	----	----		02-Feb-2023	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 4B-O	E420	30-Jan-2023	02-Feb-2023	----	----		02-Feb-2023	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) Influent	E420	30-Jan-2023	02-Feb-2023	----	----		02-Feb-2023	180 days	3 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	820218	1	12	8.3	5.0	✓
Ammonia by Fluorescence	E298	821952	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	821028	1	18	5.5	5.0	✓
Conductivity in Water	E100	820217	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	823018	2	22	9.0	5.0	✓
Fluoride in Water by IC	E235.F	821032	1	15	6.6	5.0	✓
Nitrate in Water by IC	E235.NO3	821030	1	15	6.6	5.0	✓
Nitrite in Water by IC	E235.NO2	821031	1	15	6.6	5.0	✓
pH by Meter	E108	820216	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	821029	1	18	5.5	5.0	✓
Total metals in Water by CRC ICPMS	E420	821578	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	820218	1	12	8.3	5.0	✓
Ammonia by Fluorescence	E298	821952	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	821028	1	18	5.5	5.0	✓
Conductivity in Water	E100	820217	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	823018	2	22	9.0	5.0	✓
Fluoride in Water by IC	E235.F	821032	1	15	6.6	5.0	✓
Nitrate in Water by IC	E235.NO3	821030	1	15	6.6	5.0	✓
Nitrite in Water by IC	E235.NO2	821031	1	15	6.6	5.0	✓
pH by Meter	E108	820216	1	16	6.2	5.0	✓
Sulfate in Water by IC	E235.SO4	821029	1	18	5.5	5.0	✓
Total metals in Water by CRC ICPMS	E420	821578	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	820218	1	12	8.3	5.0	✓
Ammonia by Fluorescence	E298	821952	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	821028	1	18	5.5	5.0	✓
Conductivity in Water	E100	820217	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	823018	2	22	9.0	5.0	✓
Fluoride in Water by IC	E235.F	821032	1	15	6.6	5.0	✓
Nitrate in Water by IC	E235.NO3	821030	1	15	6.6	5.0	✓
Nitrite in Water by IC	E235.NO2	821031	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	821029	1	18	5.5	5.0	✓
Total metals in Water by CRC ICPMS	E420	821578	1	20	5.0	5.0	✓
Matrix Spikes (MS)							

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Ammonia by Fluorescence	E298	821952	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	821028	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	823018	2	22	9.0	5.0	✓
Fluoride in Water by IC	E235.F	821032	1	15	6.6	5.0	✓
Nitrate in Water by IC	E235.NO3	821030	1	15	6.6	5.0	✓
Nitrite in Water by IC	E235.NO2	821031	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	821029	1	18	5.5	5.0	✓
Total metals in Water by CRC ICPMS	E420	821578	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Saskatoon - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Saskatoon - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Chloride in Water by IC	E235.Cl Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 Saskatoon - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total metals in Water by CRC ICPMS	E420 Saskatoon - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals in Water by CRC ICPMS	E421 Saskatoon - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Saskatoon - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Saskatoon - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
TDS in Water (Calculation)	EC103 Saskatoon - Environmental	Water	APHA 1030E (mod)	Total Dissolved Solids is calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N Saskatoon - Environmental	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Dissolved Metals Water Filtration	EP421 Saskatoon - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **SK2300364**	Page	: 1 of 22
Client	: Ensero Solutions Canada	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon, Saskatchewan Canada S7K 6X5
Telephone	:	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 30-Jan-2023 15:00
PO	: 1518	Date Analysis Commenced	: 31-Jan-2023
C-O-C number	: ----	Issue Date	: 06-Feb-2023 13:26
Sampler	: Client 306 978 3111		
Site	: ----		
Quote number	: 2023 Ensero Standard Rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Colby Bingham	Laboratory Supervisor	Saskatoon Inorganics, Saskatoon, Saskatchewan
Colby Bingham	Laboratory Supervisor	Saskatoon Metals, Saskatoon, Saskatchewan
Harpreet Chawla	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Hedy Lai	Team Leader - Inorganics	Saskatoon Inorganics, Saskatoon, Saskatchewan
Janiko Lindain	Laboratory Assistant	Saskatoon Metals, Saskatoon, Saskatchewan
Kimberly Hanson	Laboratory Analyst	Saskatoon Metals, Saskatoon, Saskatchewan
Milad Khani	Laboratory Analyst	Saskatoon Inorganics, Saskatoon, Saskatchewan
Ruth Islas	Laboratory Assistant	Saskatoon Metals, Saskatoon, Saskatchewan

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 820216)											
SK2300364-001	Influent	pH	----	E108	0.10	pH units	7.84	7.92	0.952%	3%	----
Physical Tests (QC Lot: 820217)											
SK2300364-001	Influent	Conductivity	----	E100	2.0	µS/cm	1100	1100	0.00%	10%	----
Physical Tests (QC Lot: 820218)											
SK2300364-001	Influent	Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	108	105	3.05%	20%	----
Anions and Nutrients (QC Lot: 821028)											
SK2300378-001	Anonymous	Chloride	16887-00-6	E235.Cl	2.50	mg/L	7.96	8.18	0.22	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 821029)											
SK2300378-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	370	368	0.449%	20%	----
Anions and Nutrients (QC Lot: 821030)											
SK2300378-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	0.100	mg/L	0.355	0.353	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 821031)											
SK2300378-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2	0.050	mg/L	0.055	0.054	0.001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 821032)											
SK2300378-001	Anonymous	Fluoride	16984-48-8	E235.F	0.100	mg/L	0.192	0.184	0.008	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 821952)											
CG2301286-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.500	mg/L	28.0	28.0	0.251%	20%	----
Total Metals (QC Lot: 821578)											
RG2300087-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.494	0.499	1.04%	20%	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00787	0.00785	0.232%	20%	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.0617	0.0685	10.5%	20%	----
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	0.075	0.075	0.0002	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000126	0.0000146	0.0000020	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	28.0	26.8	4.46%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	0.000024	0.000028	0.000003	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	0.00160	0.00152	0.00008	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00080	0.00077	0.00002	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 821578) - continued											
RG2300087-001	Anonymous	Copper, total	7440-50-8	E420	0.00050	mg/L	0.00246	0.00246	0.000003	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	9.26	9.07	2.06%	20%	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000274	0.000261	0.000013	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0011	0.0010	0.00006	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	19.2	19.6	1.83%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.196	0.196	0.354%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00121	0.00120	0.761%	20%	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00588	0.00595	1.06%	20%	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	0.606	0.555	8.88%	20%	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	3.67	3.64	0.803%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00179	0.00194	0.00015	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000087	0.000085	0.000002	Diff <2x LOR	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	18.6	19.3	3.96%	20%	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	6.77	6.60	2.50%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.285	0.277	2.69%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	5.53	5.52	0.152%	20%	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	0.0197	0.0191	2.85%	20%	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.000027	0.000027	0.00000006	Diff <2x LOR	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00150	0.00154	0.00004	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	0.0057	0.0056	0.0001	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00022	0.00021	0.00002	Diff <2x LOR	----
Dissolved Metals (QC Lot: 820280)											
RG2300085-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00032	0.00028	0.00004	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00810	0.00792	2.25%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 820280) - continued											
RG2300085-001	Anonymous	Boron, dissolved	7440-42-8	E421	0.010	mg/L	0.169	0.174	2.90%	20%	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	0.0000080	0.0000030	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	102	103	1.44%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.140	0.141	0.280%	20%	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.00195	0.00198	1.79%	20%	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0695	0.0700	0.784%	20%	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	49.3	49.7	0.861%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0119	0.0115	3.04%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00275	0.00286	4.12%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00068	0.00065	0.00003	Diff <2x LOR	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	2.00	mg/L	6.28	6.44	0.159	Diff <2x LOR	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00076	0.00081	0.00005	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	14.1	13.6	3.48%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	43.8	43.3	0.964%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.508	0.508	0.0139%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	83.6	82.1	1.83%	20%	----
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00756	0.00759	0.426%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.145	0.144	0.416%	20%	----
		Zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 823018)											

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 823018) - continued											
SK2300364-008	4A-O	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0041	0.0045	0.0004	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.0707	0.0724	2.50%	20%	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.159	0.160	0.876%	20%	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0742	0.0714	3.87%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	0.088	0.087	0.0004	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000224	0.0000218	0.0000006	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	154	149	3.11%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000034	0.000031	0.000002	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.0220	0.0223	1.54%	20%	----
		Iron, dissolved	7439-89-6	E421	0.030	mg/L	<0.030	<0.030	0	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000063	0.000063	0.0000002	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0121	0.0113	7.17%	20%	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	27.6	28.0	1.72%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00500	mg/L	0.00732	0.00784	0.00052	Diff <2x LOR	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0180	0.0189	4.80%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00270	0.00259	0.00012	Diff <2x LOR	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.064	0.070	0.006	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	39.0	38.3	1.72%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00226	0.00252	10.9%	20%	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.0300	0.0307	2.23%	20%	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.07	4.14	1.69%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	45.8	46.7	1.83%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.717	0.764	6.40%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	150	151	0.578%	20%	----
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000188	0.000189	0.933%	20%	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 823018) - continued											
SK2300364-008	4A-O	Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0754	0.0784	3.93%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00197	0.00195	0.00002	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0157	0.0164	4.12%	20%	----
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 820217)						
Conductivity	----	E100	1	µS/cm	1.3	----
Physical Tests (QCLot: 820218)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Anions and Nutrients (QCLot: 821028)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 821029)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 821030)						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 821031)						
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 821032)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 821952)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Total Metals (QCLot: 821578)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 821578) - continued						
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 820280)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 820280) - continued						
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 823018)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 823018) - continued						
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 820216)									
pH	----	E108	----	pH units	7 pH units	99.8	98.6	101	----
Physical Tests (QCLot: 820217)									
Conductivity	----	E100	1	µS/cm	1000 µS/cm	99.7	90.0	110	----
Physical Tests (QCLot: 820218)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	95.4	85.0	115	----
Anions and Nutrients (QCLot: 821028)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.2	90.0	110	----
Anions and Nutrients (QCLot: 821029)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 821030)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 821031)									
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	98.1	90.0	110	----
Anions and Nutrients (QCLot: 821032)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 821952)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
Total Metals (QCLot: 821578)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	100.0	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	100	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	98.5	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	96.0	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	94.9	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	104	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	97.3	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 821578) - continued									
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	100	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	95.5	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.0	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	96.0	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	103	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.0	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	103	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	98.7	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	100	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.1	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	104	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	97.8	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	97.6	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	110	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	99.7	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	96.2	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	93.0	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	95.6	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	96.1	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.8	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	104	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	105	80.0	120	----
Dissolved Metals (QCLot: 820280)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	108	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	107	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	107	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	109	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	102	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Dissolved Metals (QCLot: 820280) - continued									
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	110	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	108	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	110	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	109	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	110	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	108	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	110	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	110	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	108	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	114	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	107	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	110	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	116	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	106	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	112	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	111	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	112	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	105	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	107	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	104	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	108	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	106	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	107	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	110	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	107	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	109	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	112	80.0	120	----
Dissolved Metals (QCLot: 823018)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	117	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	118	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	108	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 823018) - continued									
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	112	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	107	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	105	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	105	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	109	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	111	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	109	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	112	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	110	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	107	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	105	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	109	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	112	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	116	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	107	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	115	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	111	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	118	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	115	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	107	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	113	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	118	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	112	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	112	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	107	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	107	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	106	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.7	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	106	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	111	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	113	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	116	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 821028)										
SK2300378-001	Anonymous	Chloride	16887-00-6	E235.Cl	97.3 mg/L	100 mg/L	97.3	75.0	125	----
Anions and Nutrients (QCLot: 821029)										
SK2300378-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 821030)										
SK2300378-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3	2.56 mg/L	2.5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 821031)										
SK2300378-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2	0.498 mg/L	0.5 mg/L	99.5	75.0	125	----
Anions and Nutrients (QCLot: 821032)										
SK2300378-001	Anonymous	Fluoride	16984-48-8	E235.F	0.899 mg/L	1 mg/L	89.9	75.0	125	----
Anions and Nutrients (QCLot: 821952)										
CG2301289-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
Total Metals (QCLot: 821578)										
RG2300087-002	Anonymous	Aluminum, total	7429-90-5	E420	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.00978 mg/L	0.01 mg/L	97.8	70.0	130	----
		Boron, total	7440-42-8	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00401 mg/L	0.004 mg/L	100	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.00947 mg/L	0.01 mg/L	94.7	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0380 mg/L	0.04 mg/L	95.1	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		Copper, total	7440-50-8	E420	0.0188 mg/L	0.02 mg/L	93.8	70.0	130	----
		Iron, total	7439-89-6	E420	2.03 mg/L	2 mg/L	101	70.0	130	----
		Lead, total	7439-92-1	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		Lithium, total	7439-93-2	E420	0.0950 mg/L	0.1 mg/L	95.0	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 821578) - continued										
RG2300087-002	Anonymous	Molybdenum, total	7439-98-7	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		Phosphorus, total	7723-14-0	E420	10.0 mg/L	10 mg/L	100	70.0	130	----
		Potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		Rubidium, total	7440-17-7	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		Silicon, total	7440-21-3	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		Silver, total	7440-22-4	E420	0.00383 mg/L	0.004 mg/L	95.8	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	20.9 mg/L	20 mg/L	105	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0395 mg/L	0.04 mg/L	98.8	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00397 mg/L	0.004 mg/L	99.3	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		Tin, total	7440-31-5	E420	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0433 mg/L	0.04 mg/L	108	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0222 mg/L	0.02 mg/L	111	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00429 mg/L	0.004 mg/L	107	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.0988 mg/L	0.1 mg/L	98.8	70.0	130	----
		Zinc, total	7440-66-6	E420	0.403 mg/L	0.4 mg/L	101	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0414 mg/L	0.04 mg/L	103	70.0	130	----
Dissolved Metals (QCLot: 820280)										
RG2300085-002	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.196 mg/L	0.2 mg/L	97.8	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0226 mg/L	0.02 mg/L	113	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		Barium, dissolved	7440-39-3	E421	0.0184 mg/L	0.02 mg/L	91.8	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0382 mg/L	0.04 mg/L	95.4	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00916 mg/L	0.01 mg/L	91.6	70.0	130	----
		Boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.0105 mg/L	0.01 mg/L	105	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0395 mg/L	0.04 mg/L	98.8	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 820280) - continued										
RG2300085-002	Anonymous	Iron, dissolved	7439-89-6	E421	2.00 mg/L	2 mg/L	99.8	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0811 mg/L	0.1 mg/L	81.1	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0232 mg/L	0.02 mg/L	116	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0389 mg/L	0.04 mg/L	97.3	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	10.4 mg/L	10 mg/L	104	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0452 mg/L	0.04 mg/L	113	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00420 mg/L	0.004 mg/L	105	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0428 mg/L	0.04 mg/L	107	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00379 mg/L	0.004 mg/L	94.8	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0221 mg/L	0.02 mg/L	110	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0440 mg/L	0.04 mg/L	110	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.396 mg/L	0.4 mg/L	99.1	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0464 mg/L	0.04 mg/L	116	70.0	130	----
Dissolved Metals (QCLot: 823018)										
SK2300364-009	4B-O	Aluminum, dissolved	7429-90-5	E421	0.212 mg/L	0.2 mg/L	106	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0396 mg/L	0.04 mg/L	98.9	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00944 mg/L	0.01 mg/L	94.4	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00410 mg/L	0.004 mg/L	102	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 823018) - continued										
SK2300364-009	4B-O	Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.00979 mg/L	0.01 mg/L	97.9	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		Copper, dissolved	7440-50-8	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.98 mg/L	2 mg/L	99.2	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0943 mg/L	0.1 mg/L	94.3	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0225 mg/L	0.02 mg/L	113	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0385 mg/L	0.04 mg/L	96.3	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	11.5 mg/L	10 mg/L	115	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0423 mg/L	0.04 mg/L	106	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	11.4 mg/L	10 mg/L	114	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00386 mg/L	0.004 mg/L	96.6	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0459 mg/L	0.04 mg/L	115	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00387 mg/L	0.004 mg/L	96.8	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0217 mg/L	0.02 mg/L	108	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0220 mg/L	0.02 mg/L	110	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.410 mg/L	0.4 mg/L	102	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0454 mg/L	0.04 mg/L	114	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

Page 1 of 1

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Environmental Division Saskatoon

Work Order Reference

SK2300364

Telephone : +1 306 668 8370

Report To	Contact and company name below will appear on the final report
Company:	Ensero Solutions Canada Inc.
Contact:	Rachel Martz
Phone:	306-978-3111
	Company address below will appear on the final report
Street:	104-411 Downey Rd
City/Province:	Saskatoon, SK
Postal Code:	S7N 4L8
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Ensero Solutions Canada Inc. 410-885 Dunsmuir St, Vancouver,
Contact:	BC V6C1N5 Contact: Rachel Martz
Project Information	
ALS Account # / Quote #:	
Job #:	ECA22YT00211
PO / AFE:	1518
LSD:	
ALS Lab Work Order # (ALS use only):	

Reports / Recipients

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☑ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: rmartz@ensero.com

Email 2: snenson@ensero.com

Email 3: kpiecowye@ensero.com

Invoice Recipients

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: ap@ensero.com

Email 2: rmartz@ensero.com

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Contact: **Sampler:**

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge m

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge m

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge m

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge m

☐ Same day [E2] if received by 10am M-S - 200% rush surcl

Additional fees may apply to rush requests or

Date and Time Required for all E&P TATs:

For all tests with rush TATs requested, please contact your AM to confirm availability.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Total Metals (P)	Dissolved Metals (F/P)	Routine	Ammonia (P)	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	Influent	30-Jan-23	9:27	Water	4	R	R	R	R	0	0	0
	1A-O	30-Jan-23	13:44	Water	3	R	R	R				
	1B-O	30-Jan-23	11:38	Water	4	R	R	R	R			
	2A-O	30-Jan-23	13:14	Water	3	R	R	R				
	2B-O	30-Jan-23	11:10	Water	4	R	R	R	R			
	3A-O	30-Jan-23	13:18	Water	3	R	R	R				
	3B-O	30-Jan-23	11:16	Water	4	R	R	R	R			
	4A-O	30-Jan-23	13:10	Water	3	R	R	R				
	4B-O	30-Jan-23	11:51	Water	4	R	R	R	R			

Drinking Water (DW) Samples[1] (client use)

samples taken from a Regulated DW System? ☐ YES ☑ NO

samples for human consumption/ use? ☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Please send Ensero format EDD

Routine (anions, cations, alkalinity, pH, Conductivity, TDS, ion balance,hardness as CaCO3)

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
6c							

SHIPMENT RELEASE (client use)

Released by: Date: Time:

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by: Date: 30/1/23 Time: 4:45

FINAL SHIPMENT RECEPTION (ALS use only)

Received by: Date: Time:

FEB2022 FRONT

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

[1] If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **SK2300833**	Page	: 1 of 10
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon SK Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 03-Mar-2023 12:30
PO	: 1518	Date Analysis Commenced	: 03-Mar-2023
C-O-C number	: ----	Issue Date	: 10-Mar-2023 07:38
Sampler	: Client		
Site	: ----		
Quote number	: 2023 Ensero Standard Rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Colby Bingham	Laboratory Supervisor	Inorganics, Saskatoon, Saskatchewan
Colby Bingham	Laboratory Supervisor	Metals, Saskatoon, Saskatchewan
Milad Khani	Laboratory Analyst	Metals, Saskatoon, Saskatchewan
Ruth Islas	Laboratory Assistant	Metals, Saskatoon, Saskatchewan
Xihua Yao	Laboratory Analyst	Inorganics, Saskatoon, Saskatchewan

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
%	percent
µS/cm	microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
DTMF	*Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	03-Mar-2023 07:02	03-Mar-2023 10:54	03-Mar-2023 08:46	03-Mar-2023 10:57	03-Mar-2023 08:51
						SK2300833-001	SK2300833-002	SK2300833-003	SK2300833-004	SK2300833-005
						Result	Result	Result	Result	Result
Physical Tests										
Hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		503	555	535	589	594
Conductivity	----	E100	2.0	µS/cm		1140	1210	1220	1280	1300
pH	----	E108	0.10	pH units		8.34	8.33	8.22	8.20	8.19
Alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		124	202	161	194	180
Alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		1.1	1.5	<1.0	<1.0	<1.0
Alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		104	168	132	159	148
Solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		827	891	891	952	966
Anions and Nutrients										
Chloride	16887-00-6	E235.Cl	0.50	mg/L		12.8	16.2	15.9	17.8	19.5
Fluoride	16984-48-8	E235.F	0.020	mg/L		0.475	0.513	0.516	0.538	0.554
Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		22.8	13.0	14.4	15.5	14.0
Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		2.86	<0.050 DLDS	<0.050 DLDS	<0.050 DLDS	<0.050 DLDS
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		361	414	437	444	469
Nitrate + Nitrite (as N)	----	EC235.N+N	0.0500	mg/L		25.7	13.0	14.4	15.5	14.0
Ion Balance										
Anion sum	----	EC101	0.10	meq/L		11.8	13.4	13.2	14.0	14.3
Cation sum	----	EC101	0.10	meq/L		12.9	14.2	14.0	15.2	15.6
Ion balance (APHA)	----	EC101	0.01	%		4.45	2.90	2.94	4.11	4.35
Ion balance (cations/anions)	----	EC101	0.010	%		109	106	106	108	109
Total Metals										
Aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0174	0.0084	0.0044	0.0034	0.0035
Antimony, total	7440-36-0	E420	0.00010	mg/L		0.0715	0.0765	0.0767	0.0817	0.0762
Arsenic, total	7440-38-2	E420	0.00010	mg/L		0.200	0.209	0.176	0.198	0.154
Barium, total	7440-39-3	E420	0.00010	mg/L		0.0524	0.0686	0.0806	0.0700	0.0689
Beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8	E420	0.010	mg/L		0.101	0.110	0.110	0.112	0.107
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000529	0.0000205	0.0000153	0.0000237	0.0000185

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	03-Mar-2023 07:02	03-Mar-2023 10:54	03-Mar-2023 08:46	03-Mar-2023 10:57	03-Mar-2023 08:51
						SK2300833-001	SK2300833-002	SK2300833-003	SK2300833-004	SK2300833-005
						Result	Result	Result	Result	Result
Total Metals										
Calcium, total	7440-70-2	E420	0.050	mg/L		157	177	161	184	175
Cesium, total	7440-46-2	E420	0.000010	mg/L		0.000055	0.000042	0.000027	0.000050	0.000036
Chromium, total	7440-47-3	E420	0.00050	mg/L		0.00071	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, total	7440-48-4	E420	0.00010	mg/L		0.00084	<0.00010	<0.00010	<0.00010	<0.00010
Copper, total	7440-50-8	E420	0.00050	mg/L		0.0698	0.0259	0.0317	0.0308	0.0331
Iron, total	7439-89-6	E420	0.010	mg/L		<0.010	0.010	<0.010	<0.010	<0.010
Lead, total	7439-92-1	E420	0.000050	mg/L		0.000277	0.000067	0.000065	0.000066	0.000052
Lithium, total	7439-93-2	E420	0.0010	mg/L		0.0111	0.0125	0.0132	0.0132	0.0142
Magnesium, total	7439-95-4	E420	0.0050	mg/L		26.7	30.1	32.0	32.6	35.7
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.145	0.00978	0.00142	0.00285	0.00138
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.0194	0.0212	0.0210	0.0207	0.0201
Nickel, total	7440-02-0	E420	0.00050	mg/L		0.00524	0.00220	0.00185	0.00282	0.00228
Phosphorus, total	7723-14-0	E420	0.050	mg/L		0.309	0.213	0.068	0.077	<0.050
Potassium, total	7440-09-7	E420	0.050	mg/L		38.2	42.2	42.6	43.4	45.4
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00251	0.00238	0.00223	0.00287	0.00284
Selenium, total	7782-49-2	E420	0.000050	mg/L		0.0294	0.0328	0.0343	0.0356	0.0364
Silicon, total	7440-21-3	E420	0.10	mg/L		4.74	3.88	3.05	5.00	2.86
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5	E420	0.050	mg/L		43.9	49.1	53.4	53.1	56.2
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.647	0.705	0.719	0.738	0.754
Sulfur, total	7704-34-9	E420	0.50	mg/L		140	161	168	170	183
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, total	7440-28-0	E420	0.000010	mg/L		0.000299	0.000214	0.000171	0.000302	0.000208
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	0.00012	<0.00010	<0.00010
Uranium, total	7440-61-1	E420	0.000010	mg/L		0.0800	0.0936	0.0940	0.0867	0.0870
Vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00357	0.00308	0.00234	0.00297	0.00205
Zinc, total	7440-66-6	E420	0.0030	mg/L		0.0056	0.0037	0.0054	0.0067	0.0052

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	03-Mar-2023 07:02	03-Mar-2023 10:54	03-Mar-2023 08:46	03-Mar-2023 10:57	03-Mar-2023 08:51
						SK2300833-001	SK2300833-002	SK2300833-003	SK2300833-004	SK2300833-005
						Result	Result	Result	Result	Result
Total Metals										
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0155	0.0027	0.0121 DTMF	0.0016	0.0013
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.0694	0.0771	0.0765	0.0788	0.0814
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.199	0.210	0.174	0.204	0.158
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0539	0.0696	0.0778	0.0690	0.0699
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	7440-42-8	E421	0.010	mg/L		0.100	0.110	0.109	0.112	0.108
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000507	0.0000247	0.0000193	0.0000243	0.0000200
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		156	172	162	181	178
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000052	0.000043	0.000026	0.000049	0.000041
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		0.00081	<0.00010	<0.00010	<0.00010	<0.00010
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.0639	0.0233	0.0293	0.0293	0.0321
Iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.030	<0.030	<0.030	<0.030	<0.030
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0119	0.0132	0.0142	0.0145	0.0153
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		27.6	30.4	31.7	33.4	36.2
Manganese, dissolved	7439-96-5	E421	0.00500	mg/L		0.143	<0.00500	<0.00500	<0.00500	<0.00500
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0187	0.0210	0.0208	0.0204	0.0211
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00497	0.00215	0.00171	0.00270	0.00230
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.266	0.150	<0.050	0.093	<0.050
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		37.2	40.7	42.4	45.1	46.2
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00250	0.00235	0.00216	0.00278	0.00268
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.0294	0.0328	0.0336	0.0363	0.0365
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.67	3.71	2.88	4.79	2.73
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		43.4	48.5	50.6	53.3	58.0
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.619	0.697	0.695	0.720	0.776

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	Influent	1A-O	1B-O	2A-O	2B-O
					Client sampling date / time	03-Mar-2023 07:02	03-Mar-2023 10:54	03-Mar-2023 08:46	03-Mar-2023 10:57	03-Mar-2023 08:51
						SK2300833-001	SK2300833-002	SK2300833-003	SK2300833-004	SK2300833-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L		142	160	166	173	179
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L		0.000298	0.000197	0.000164	0.000299	0.000209
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	0.00011	<0.00010	<0.00010
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.0755	0.0848	0.0812	0.0836	0.0853
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00339	0.00293	0.00218	0.00286	0.00203
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0047	0.0030	0.0053	0.0072	0.0068
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	Field

Please refer to the General Comments section for an explanation of any qualifiers detected.

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	03-Mar-2023 11:00	03-Mar-2023 08:55	03-Mar-2023 10:28	03-Mar-2023 08:33	----
Analyte	CAS Number	Method	LOR	Unit		SK2300833-006	SK2300833-007	SK2300833-008	SK2300833-009	--------
						Result	Result	Result	Result	----
Physical Tests										
Hardness (as CaCO3), dissolved	----	EC100	0.50	mg/L		594	619	528	543	----
Conductivity	----	E100	2.0	µS/cm		1290	1330	1180	1220	----
pH	----	E108	0.10	pH units		8.14	8.16	8.16	8.17	----
Alkalinity, bicarbonate (as HCO3)	71-52-3	E290	1.0	mg/L		198	204	200	176	----
Alkalinity, carbonate (as CO3)	3812-32-6	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	----
Alkalinity, hydroxide (as OH)	14280-30-9	E290	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	----
Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L		162	168	164	144	----
Solids, total dissolved [TDS], calculated	----	EC103	1.0	mg/L		963	1000	858	899	----
Anions and Nutrients										
Chloride	16887-00-6	E235.Cl	0.50	mg/L		17.8	18.5	17.4	18.8	----
Fluoride	16984-48-8	E235.F	0.020	mg/L		0.537	0.547	0.518	0.506	----
Nitrate (as N)	14797-55-8	E235.NO3	0.020	mg/L		18.0	18.4	6.49	8.66	----
Nitrite (as N)	14797-65-0	E235.NO2	0.010	mg/L		<0.050 DLDS	<0.050 DLDS	<0.050 DLDS	<0.050 DLDS	----
Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		442	461	422	453	----
Nitrate + Nitrite (as N)	----	EC235.N+N	0.0500	mg/L		18.0	18.4	6.49	8.66	----
Ion Balance										
Anion sum	----	EC101	0.10	meq/L		14.2	14.8	13.0	13.5	----
Cation sum	----	EC101	0.10	meq/L		15.3	16.0	13.8	14.4	----
Ion balance (APHA)	----	EC101	0.01	%		3.73	3.90	2.98	3.22	----
Ion balance (cations/anions)	----	EC101	0.010	%		108	108	106	107	----
Total Metals										
Aluminum, total	7429-90-5	E420	0.0030	mg/L		0.0031	0.0033	<0.0030	0.0037	----
Antimony, total	7440-36-0	E420	0.00010	mg/L		0.0728	0.0635	0.0744	0.0797	----
Arsenic, total	7440-38-2	E420	0.00010	mg/L		0.116	0.0733	0.174	0.150	----
Barium, total	7440-39-3	E420	0.00010	mg/L		0.0641	0.0676	0.0660	0.0683	----
Beryllium, total	7440-41-7	E420	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	----
Bismuth, total	7440-69-9	E420	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
Boron, total	7440-42-8	E420	0.010	mg/L		0.104	0.089	0.101	0.098	----
Cadmium, total	7440-43-9	E420	0.0000050	mg/L		0.0000628	0.0000580	0.0000165	0.0000210	----
Calcium, total	7440-70-2	E420	0.050	mg/L		190	188	164	163	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	03-Mar-2023 11:00	03-Mar-2023 08:55	03-Mar-2023 10:28	03-Mar-2023 08:33	----
Analyte	CAS Number	Method	LOR	Unit		SK2300833-006	SK2300833-007	SK2300833-008	SK2300833-009	--------
						Result	Result	Result	Result	----
Total Metals										
Cesium, total	7440-46-2	E420	0.000010	mg/L		0.000048	0.000044	0.000047	0.000068	----
Chromium, total	7440-47-3	E420	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
Cobalt, total	7440-48-4	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
Copper, total	7440-50-8	E420	0.00050	mg/L		0.0241	0.0134	0.0248	0.0308	----
Iron, total	7439-89-6	E420	0.010	mg/L		<0.010	<0.010	<0.010	0.020	----
Lead, total	7439-92-1	E420	0.000050	mg/L		0.000119	0.000068	0.000066	0.000065	----
Lithium, total	7439-93-2	E420	0.0010	mg/L		0.0133	0.0138	0.0126	0.0137	----
Magnesium, total	7439-95-4	E420	0.0050	mg/L		32.6	34.5	31.4	33.4	----
Manganese, total	7439-96-5	E420	0.00010	mg/L		0.00252	0.00028	0.00343	0.00340	----
Molybdenum, total	7439-98-7	E420	0.000050	mg/L		0.0213	0.0181	0.0189	0.0194	----
Nickel, total	7440-02-0	E420	0.00050	mg/L		0.00221	0.00248	0.00229	0.00253	----
Phosphorus, total	7723-14-0	E420	0.050	mg/L		0.060	<0.050	0.064	0.057	----
Potassium, total	7440-09-7	E420	0.050	mg/L		44.9	45.0	42.0	44.7	----
Rubidium, total	7440-17-7	E420	0.00020	mg/L		0.00307	0.00360	0.00264	0.00261	----
Selenium, total	7782-49-2	E420	0.000050	mg/L		0.0352	0.0348	0.0287	0.0284	----
Silicon, total	7440-21-3	E420	0.10	mg/L		4.39	4.02	3.04	2.25	----
Silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
Sodium, total	7440-23-5	E420	0.050	mg/L		52.2	55.2	51.2	54.1	----
Strontium, total	7440-24-6	E420	0.00020	mg/L		0.774	0.781	0.687	0.749	----
Sulfur, total	7704-34-9	E420	0.50	mg/L		170	175	160	171	----
Tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----
Thallium, total	7440-28-0	E420	0.000010	mg/L		0.000240	0.000210	0.000248	0.000229	----
Thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
Tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
Titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
Tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
Uranium, total	7440-61-1	E420	0.000010	mg/L		0.0919	0.0915	0.0855	0.0824	----
Vanadium, total	7440-62-2	E420	0.00050	mg/L		0.00125	<0.00050	0.00208	0.00130	----
Zinc, total	7440-66-6	E420	0.0030	mg/L		0.0107	0.0048	0.0059	0.0043	----
Zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	03-Mar-2023 11:00	03-Mar-2023 08:55	03-Mar-2023 10:28	03-Mar-2023 08:33	----
						SK2300833-006	SK2300833-007	SK2300833-008	SK2300833-009	--------
						Result	Result	Result	Result	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L		0.0020	0.0017	0.0018	0.0012	----
Antimony, dissolved	7440-36-0	E421	0.00010	mg/L		0.0678	0.0597	0.0772	0.0788	----
Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L		0.120	0.0752	0.178	0.152	----
Barium, dissolved	7440-39-3	E421	0.00010	mg/L		0.0637	0.0713	0.0682	0.0656	----
Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.010	mg/L		0.102	0.089	0.101	0.094	----
Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L		0.0000687	0.0000594	0.0000216	0.0000156	----
Calcium, dissolved	7440-70-2	E421	0.050	mg/L		183	190	160	162	----
Cesium, dissolved	7440-46-2	E421	0.000010	mg/L		0.000052	0.000043	0.000047	0.000066	----
Chromium, dissolved	7440-47-3	E421	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.00020	mg/L		0.0226	0.0133	0.0239	0.0278	----
Iron, dissolved	7439-89-6	E421	0.030	mg/L		<0.030	<0.030	<0.030	<0.030	----
Lead, dissolved	7439-92-1	E421	0.000050	mg/L		0.000075	0.000066	0.000064	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.0010	mg/L		0.0138	0.0144	0.0136	0.0144	----
Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		33.2	35.2	31.3	33.6	----
Manganese, dissolved	7439-96-5	E421	0.00500	mg/L		<0.00500	<0.00500	<0.00500	<0.00500	----
Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L		0.0198	0.0173	0.0196	0.0196	----
Nickel, dissolved	7440-02-0	E421	0.00050	mg/L		0.00212	0.00245	0.00225	0.00242	----
Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L		0.052	<0.050	<0.050	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.050	mg/L		44.9	47.3	40.7	44.4	----
Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L		0.00334	0.00369	0.00261	0.00258	----
Selenium, dissolved	7782-49-2	E421	0.000050	mg/L		0.0351	0.0362	0.0293	0.0299	----
Silicon, dissolved	7440-21-3	E421	0.050	mg/L		4.21	3.95	2.97	2.16	----
Silver, dissolved	7440-22-4	E421	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.050	mg/L		53.3	55.4	50.4	56.1	----
Strontium, dissolved	7440-24-6	E421	0.00020	mg/L		0.735	0.742	0.718	0.739	----
Sulfur, dissolved	7704-34-9	E421	0.50	mg/L		168	183	162	167	----
Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method	LOR	Unit	Client sample ID	3A-O	3B-O	4A-O	4B-O	----
					Client sampling date / time	03-Mar-2023 11:00	03-Mar-2023 08:55	03-Mar-2023 10:28	03-Mar-2023 08:33	----
						SK2300833-006	SK2300833-007	SK2300833-008	SK2300833-009	--------
						Result	Result	Result	Result	----
Dissolved Metals										
Thallium, dissolved	7440-28-0	E421	0.000010	mg/L		0.000237	0.000194	0.000250	0.000230	----
Thorium, dissolved	7440-29-1	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
Titanium, dissolved	7440-32-6	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	----
Uranium, dissolved	7440-61-1	E421	0.000010	mg/L		0.0898	0.0866	0.0830	0.0777	----
Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L		0.00117	<0.00050	0.00201	0.00117	----
Zinc, dissolved	7440-66-6	E421	0.0010	mg/L		0.0096	0.0047	0.0066	0.0038	----
Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L		<0.00030	<0.00030	<0.00030	<0.00030	----
Dissolved metals filtration location	----	EP421	-	-		Field	Field	Field	Field	----

Please refer to the General Comments section for an explanation of any qualifiers detected.

ALS Canada Ltd.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **SK2300833**	Page	: 1 of 18
Client	: **Ensero Solutions Canada**	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon, Saskatchewan Canada S7K 6X5
Telephone	: 306 978 3111	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 03-Mar-2023 12:30
PO	: 1518	Issue Date	: 10-Mar-2023 07:38
C-O-C number	: ----		
Sampler	: Client		
Site	: ----		
Quote number	: 2023 Ensero Standard Rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Matrix Spike (MS) Recoveries								
Total Metals	Anonymous	Anonymous	Antimony, total	7440-36-0	E420	131 % K	70.0-130%	Recovery greater than upper data quality objective
Total Metals	Anonymous	Anonymous	Arsenic, total	7440-38-2	E420	57.4 % K	70.0-130%	Recovery less than lower data quality objective
Total Metals	Anonymous	Anonymous	Cadmium, total	7440-43-9	E420	63.8 % K	70.0-130%	Recovery less than lower data quality objective
Total Metals	Anonymous	Anonymous	Phosphorus, total	7723-14-0	E420	68.7 % K	70.0-130%	Recovery less than lower data quality objective
Total Metals	Anonymous	Anonymous	Rubidium, total	7440-17-7	E420	35.8 % K	70.0-130%	Recovery less than lower data quality objective
Total Metals	Anonymous	Anonymous	Sulfur, total	7704-34-9	E420	418 % K	70.0-130%	Recovery greater than upper data quality objective
Total Metals	Anonymous	Anonymous	Thorium, total	7440-29-1	E420	224 % K	70.0-130%	Recovery greater than upper data quality objective

Result Qualifiers

Qualifier	*Description*
K	*Matrix Spike recovery outside ALS DQO due to sample matrix effects.*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE 1A-O	E235.Cl	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 1B-O	E235.Cl	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 2A-O	E235.Cl	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 2B-O	E235.Cl	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 3A-O	E235.Cl	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 3B-O	E235.Cl	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE 4A-O	E235.Cl	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE										
4B-O	E235.Cl	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
Influent	E235.Cl	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
1A-O	E235.F	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
1B-O	E235.F	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
2A-O	E235.F	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
2B-O	E235.F	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
3A-O	E235.F	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
3B-O	E235.F	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
4A-O	E235.F	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
4B-O	E235.F	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Influent	E235.F	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
1A-O	E235.NO3	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
1B-O	E235.NO3	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
2A-O	E235.NO3	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
2B-O	E235.NO3	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
3A-O	E235.NO3	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
3B-O	E235.NO3	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE										
4A-O	E235.NO3	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	3 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC										
HDPE 4B-O	E235.NO3	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC										
HDPE Influent	E235.NO3	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 1A-O	E235.NO2	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 1B-O	E235.NO2	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 2A-O	E235.NO2	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 2B-O	E235.NO2	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 3A-O	E235.NO2	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 3B-O	E235.NO2	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE 4A-O	E235.NO2	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	3 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC										
HDPE										
4B-O	E235.NO2	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC										
HDPE										
Influent	E235.NO2	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	3 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
1A-O	E235.SO4	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
1B-O	E235.SO4	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
2A-O	E235.SO4	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
2B-O	E235.SO4	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
3A-O	E235.SO4	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
3B-O	E235.SO4	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
4A-O	E235.SO4	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
4B-O	E235.SO4	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Influent	E235.SO4	03-Mar-2023	03-Mar-2023	----	----		03-Mar-2023	28 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
1A-O	E421	03-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
1B-O	E421	03-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
2A-O	E421	03-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
2B-O	E421	03-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
3A-O	E421	03-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
3B-O	E421	03-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
4A-O	E421	03-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Influent	E421	03-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) 4B-O	E421	03-Mar-2023	08-Mar-2023	----	----		08-Mar-2023	180 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 1A-O	E290	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 1B-O	E290	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 2A-O	E290	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 2B-O	E290	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 3A-O	E290	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 3B-O	E290	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE 4A-O	E290	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	14 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE										
4B-O	E290	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
Influent	E290	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	14 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
1A-O	E100	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
1B-O	E100	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
2A-O	E100	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
2B-O	E100	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
3A-O	E100	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
3B-O	E100	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
4A-O	E100	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	28 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE 4B-O	E100	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE Influent	E100	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	28 days	1 days	✓
Physical Tests : pH by Meter										
HDPE 1A-O	E108	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 1B-O	E108	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 2A-O	E108	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 2B-O	E108	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 3A-O	E108	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 3B-O	E108	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 4A-O	E108	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	0.25 hrs	0.26 hrs	× EHTR-FM

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE 4B-O	E108	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	0.25 hrs	0.26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Influent	E108	03-Mar-2023	04-Mar-2023	----	----		04-Mar-2023	0.25 hrs	0.26 hrs	× EHTR-FM
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 1A-O	E420	03-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 1B-O	E420	03-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 2A-O	E420	03-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 2B-O	E420	03-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 3A-O	E420	03-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 3B-O	E420	03-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) 4A-O	E420	03-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
4B-O	E420	03-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
Influent	E420	03-Mar-2023	06-Mar-2023	----	----		06-Mar-2023	180 days	3 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	852132	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	852200	1	9	11.1	5.0	✓
Conductivity in Water	E100	852131	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	852095	2	39	5.1	5.0	✓
Fluoride in Water by IC	E235.F	852198	1	9	11.1	5.0	✓
Nitrate in Water by IC	E235.NO3	852196	1	9	11.1	5.0	✓
Nitrite in Water by IC	E235.NO2	852197	1	9	11.1	5.0	✓
pH by Meter	E108	852130	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	852199	1	9	11.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	853573	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	852132	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	852200	1	9	11.1	5.0	✓
Conductivity in Water	E100	852131	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	852095	2	39	5.1	5.0	✓
Fluoride in Water by IC	E235.F	852198	1	9	11.1	5.0	✓
Nitrate in Water by IC	E235.NO3	852196	1	9	11.1	5.0	✓
Nitrite in Water by IC	E235.NO2	852197	1	9	11.1	5.0	✓
pH by Meter	E108	852130	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	852199	1	9	11.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	853573	1	16	6.2	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	852132	1	17	5.8	5.0	✓
Chloride in Water by IC	E235.Cl	852200	1	9	11.1	5.0	✓
Conductivity in Water	E100	852131	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	852095	2	39	5.1	5.0	✓
Fluoride in Water by IC	E235.F	852198	1	9	11.1	5.0	✓
Nitrate in Water by IC	E235.NO3	852196	1	9	11.1	5.0	✓
Nitrite in Water by IC	E235.NO2	852197	1	9	11.1	5.0	✓
Sulfate in Water by IC	E235.SO4	852199	1	9	11.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	853573	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
Chloride in Water by IC	E235.Cl	852200	1	9	11.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	852095	2	39	5.1	5.0	✓
Fluoride in Water by IC	E235.F	852198	1	9	11.1	5.0	✓

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Nitrate in Water by IC	E235.NO3	852196	1	9	11.1	5.0	✓
Nitrite in Water by IC	E235.NO2	852197	1	9	11.1	5.0	✓
Sulfate in Water by IC	E235.SO4	852199	1	9	11.1	5.0	✓
Total metals in Water by CRC ICPMS	E420	853573	1	16	6.2	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Saskatoon - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Saskatoon - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Chloride in Water by IC	E235.Cl Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC	E235.NO2 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC	E235.NO3 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Saskatoon - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 Saskatoon - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Total metals in Water by CRC ICPMS	E420 Saskatoon - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals in Water by CRC ICPMS	E421 Saskatoon - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Saskatoon - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in $CaCO_3$ equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Saskatoon - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
TDS in Water (Calculation)	EC103 Saskatoon - Environmental	Water	APHA 1030E (mod)	Total Dissolved Solids is calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N Saskatoon - Environmental	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 Saskatoon - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **SK2300833**	Page	: 1 of 20
Client	: Ensero Solutions Canada	Laboratory	: Saskatoon - Environmental
Contact	: Rachel Martz	Account Manager	: Brian Morgan
Address	: 410 – 885 Dunsmuir Street Vancouver BC Canada V6C 1N5	Address	: 819 58 Street East Saskatoon, Saskatchewan Canada S7K 6X5
Telephone	:	Telephone	: 1 306 221 7147
Project	: ECA22YT00211	Date Samples Received	: 03-Mar-2023 12:30
PO	: 1518	Date Analysis Commenced	: 03-Mar-2023
C-O-C number	: ----	Issue Date	: 10-Mar-2023 07:38
Sampler	: Client 306 978 3111		
Site	: ----		
Quote number	: 2023 Ensero Standard Rates		
No. of samples received	: 9		
No. of samples analysed	: 9		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Colby Bingham	Laboratory Supervisor	Saskatoon Inorganics, Saskatoon, Saskatchewan
Colby Bingham	Laboratory Supervisor	Saskatoon Metals, Saskatoon, Saskatchewan
Milad Khani	Laboratory Analyst	Saskatoon Metals, Saskatoon, Saskatchewan
Ruth Islas	Laboratory Assistant	Saskatoon Metals, Saskatoon, Saskatchewan
Xihua Yao	Laboratory Analyst	Saskatoon Inorganics, Saskatoon, Saskatchewan

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 852130)											
RG2300198-001	Anonymous	pH	----	E108	0.10	pH units	7.59	7.61	0.325%	3%	----
Physical Tests (QC Lot: 852131)											
RG2300198-001	Anonymous	Conductivity	----	E100	2.0	µS/cm	2450	2440	0.409%	10%	----
Physical Tests (QC Lot: 852132)											
RG2300198-001	Anonymous	Alkalinity, total (as CaCO3)	----	E290	2.0	mg/L	112	110	1.21%	20%	----
Anions and Nutrients (QC Lot: 852196)											
SK2300833-001	Influent	Nitrate (as N)	14797-55-8	E235.NO3	0.100	mg/L	22.8	23.0	0.885%	20%	----
Anions and Nutrients (QC Lot: 852197)											
SK2300833-001	Influent	Nitrite (as N)	14797-65-0	E235.NO2	0.050	mg/L	2.86	2.82	1.34%	20%	----
Anions and Nutrients (QC Lot: 852198)											
SK2300833-001	Influent	Fluoride	16984-48-8	E235.F	0.100	mg/L	0.475	0.483	0.008	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 852199)											
SK2300833-001	Influent	Sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	361	362	0.198%	20%	----
Anions and Nutrients (QC Lot: 852200)											
SK2300833-001	Influent	Chloride	16887-00-6	E235.Cl	2.50	mg/L	12.8	14.7	1.89	Diff <2x LOR	----
Total Metals (QC Lot: 853573)											
RG2300198-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0060	mg/L	0.0200	0.0192	0.0007	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00458	0.00445	2.95%	20%	----
		Barium, total	7440-39-3	E420	0.00020	mg/L	0.136	0.140	2.82%	20%	----
		Beryllium, total	7440-41-7	E420	0.000040	mg/L	<0.000040	<0.000040	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.020	mg/L	0.879	0.899	2.24%	20%	----
		Cadmium, total	7440-43-9	E420	0.0000100	mg/L	0.0000188	0.0000177	0.0000011	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.100	mg/L	262	263	0.650%	20%	----
		Cesium, total	7440-46-2	E420	0.000020	mg/L	0.000194	0.000204	0.000010	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	0.00246	0.00261	0.00015	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00020	mg/L	<0.00020	0.00021	0.00001	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00100	mg/L	0.0219	0.0222	1.30%	20%	----
		Iron, total	7439-89-6	E420	0.020	mg/L	0.055	0.056	0.0005	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 853573) - continued											
RG2300198-001	Anonymous	Lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0020	mg/L	0.105	0.109	3.17%	20%	----
		Magnesium, total	7439-95-4	E420	0.0100	mg/L	96.0	96.0	0.00107%	20%	----
		Manganese, total	7439-96-5	E420	0.00020	mg/L	1.43	1.46	1.74%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.0244	0.0246	0.881%	20%	----
		Nickel, total	7440-02-0	E420	0.00100	mg/L	0.00135	0.00152	0.00018	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.100	mg/L	3.96	4.17	5.06%	20%	----
		Potassium, total	7440-09-7	E420	0.100	mg/L	10.1	10.3	1.53%	20%	----
		Rubidium, total	7440-17-7	E420	0.00040	mg/L	0.00283	0.00271	0.00012	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000100	mg/L	0.210	0.217	3.28%	20%	----
		Silicon, total	7440-21-3	E420	0.20	mg/L	9.93	10.2	2.47%	20%	----
		Silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.100	mg/L	192	194	1.07%	20%	----
		Strontium, total	7440-24-6	E420	0.00040	mg/L	1.46	1.45	0.718%	20%	----
		Sulfur, total	7704-34-9	E420	1.00	mg/L	427	436	2.05%	20%	----
		Tellurium, total	13494-80-9	E420	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00020	mg/L	0.00024	0.00024	0.000003	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000020	mg/L	0.00107	0.00103	4.21%	20%	----
		Vanadium, total	7440-62-2	E420	0.00100	mg/L	0.00366	0.00370	0.00003	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0060	mg/L	0.0078	0.0075	0.0003	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 852095)											
SK2300833-001	Influent	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0155	0.0146	6.08%	20%	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.0694	0.0673	3.08%	20%	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.199	0.199	0.0948%	20%	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0539	0.0536	0.660%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	0.100	0.101	1.51%	20%	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000507	0.0000481	0.0000026	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 852095) - continued											
SK2300833-001	Influent	Calcium, dissolved	7440-70-2	E421	0.050	mg/L	156	156	0.0194%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000052	0.000056	0.000003	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00081	0.00086	0.00005	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.0639	0.0648	1.34%	20%	----
		Iron, dissolved	7439-89-6	E421	0.030	mg/L	<0.030	<0.030	0	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0119	0.0120	0.917%	20%	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	27.6	27.0	2.26%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00500	mg/L	0.143	0.144	0.776%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0187	0.0179	3.97%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00497	0.00492	0.00006	Diff <2x LOR	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.266	0.271	0.005	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	37.2	37.1	0.346%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00250	0.00246	1.51%	20%	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.0294	0.0292	0.465%	20%	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.67	4.67	0.118%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	43.4	44.5	2.66%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.619	0.592	4.47%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	142	141	0.501%	20%	----
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000298	0.000292	2.22%	20%	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0755	0.0753	0.311%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00339	0.00349	0.00010	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0047	0.0050	0.0003	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 855167)											
RG2300211-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.564	0.577	2.20%	20%	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00019	0.00018	0.000004	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 855167) - continued											
RG2300211-001	Anonymous	Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00243	0.00228	6.61%	20%	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.182	0.169	7.13%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	0.000047	0.000042	0.000004	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	0.040	0.040	0.0009	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000531	0.0000576	8.08%	20%	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	147	148	0.415%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000058	0.000046	0.000012	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	0.00122	0.00107	0.00015	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00215	0.00215	0.151%	20%	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00448	0.00446	0.387%	20%	----
		Iron, dissolved	7439-89-6	E421	0.030	mg/L	3.17	2.96	6.70%	20%	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.00170	0.00170	0.434%	20%	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0193	0.0190	1.49%	20%	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	35.8	35.8	0.0153%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00500	mg/L	0.150	0.144	3.84%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000329	0.000318	0.000011	Diff <2x LOR	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00430	0.00449	0.00018	Diff <2x LOR	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.094	0.067	0.026	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	3.29	3.28	0.157%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00185	0.00154	0.00031	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000186	0.000153	0.000033	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	13.5	13.4	0.795%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000025	0.000025	0.0000002	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	38.2	39.0	2.12%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.302	0.296	1.85%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	25.4	25.0	1.78%	20%	----
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000013	0.000015	0.000002	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	0.00033	0.00035	0.00001	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00300	0.00296	1.26%	20%	----
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.0227	0.0273	18.4%	20%	----
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	0.00014	0.00013	0.000007	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00258	0.00250	3.06%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 855167) - continued											
RG2300211-001	Anonymous	Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00302	0.00298	0.00004	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0054	0.0051	0.0003	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	0.00120	0.00125	0.00005	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 852131)						
Conductivity	----	E100	1	µS/cm	1.2	----
Physical Tests (QCLot: 852132)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Anions and Nutrients (QCLot: 852196)						
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 852197)						
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	<0.010	----
Anions and Nutrients (QCLot: 852198)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 852199)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 852200)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Total Metals (QCLot: 853573)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 853573) - continued						
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 852095)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 852095) - continued						
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 855167)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 855167) - continued						
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 852130)									
pH	----	E108	----	pH units	7 pH units	99.5	98.6	101	----
Physical Tests (QCLot: 852131)									
Conductivity	----	E100	1	µS/cm	1000 µS/cm	100	90.0	110	----
Physical Tests (QCLot: 852132)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	95.2	85.0	115	----
Anions and Nutrients (QCLot: 852196)									
Nitrate (as N)	14797-55-8	E235.NO3	0.02	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 852197)									
Nitrite (as N)	14797-65-0	E235.NO2	0.01	mg/L	0.5 mg/L	98.9	90.0	110	----
Anions and Nutrients (QCLot: 852198)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.6	90.0	110	----
Anions and Nutrients (QCLot: 852199)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	99.1	90.0	110	----
Anions and Nutrients (QCLot: 852200)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.8	90.0	110	----
Total Metals (QCLot: 853573)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	105	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	110	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	104	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	105	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.6	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 853573) - continued									
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	109	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	105	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	105	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.8	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	102	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	107	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.1	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	110	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	99.4	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	106	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	105	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	109	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	105	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	105	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	110	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	108	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	99.5	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	106	80.0	120	----
Dissolved Metals (QCLot: 852095)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	110	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	104	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	110	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	111	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 852095) - continued									
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	100	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	105	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	105	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	105	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	108	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	119	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	113	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.1	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.4	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	108	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	97.7	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	101	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	105	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	107	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	106	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	103	80.0	120	----
Dissolved Metals (QCLot: 855167)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	104	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.6	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 855167) - continued									
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	105	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	107	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	101	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	100	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.4	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	96.4	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	97.6	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	111	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	94.1	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	110	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.7	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.6	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	104	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	99.1	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	104	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.3	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.6	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	100	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	102	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 852196)										
SK2300833-001	Influent	Nitrate (as N)	14797-55-8	E235.NO3	ND mg/L	2.5 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 852197)										
SK2300833-001	Influent	Nitrite (as N)	14797-65-0	E235.NO2	ND mg/L	0.5 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 852198)										
SK2300833-001	Influent	Fluoride	16984-48-8	E235.F	0.845 mg/L	1 mg/L	84.5	75.0	125	----
Anions and Nutrients (QCLot: 852199)										
SK2300833-001	Influent	Sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 852200)										
SK2300833-001	Influent	Chloride	16887-00-6	E235.Cl	92.1 mg/L	100 mg/L	92.1	75.0	125	----
Total Metals (QCLot: 853573)										
RG2300201-001	Anonymous	Aluminum, total	7429-90-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0263 mg/L	0.02 mg/L	131	70.0	130	K
		Arsenic, total	7440-38-2	E420	0.0115 mg/L	0.02 mg/L	57.4	70.0	130	K
		Barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0113 mg/L	0.01 mg/L	113	70.0	130	----
		Boron, total	7440-42-8	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00255 mg/L	0.004 mg/L	63.8	70.0	130	K
		Calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.0100 mg/L	0.01 mg/L	100	70.0	130	----
		Chromium, total	7440-47-3	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0230 mg/L	0.02 mg/L	115	70.0	130	----
		Copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Iron, total	7439-89-6	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		Lead, total	7439-92-1	E420	0.0228 mg/L	0.02 mg/L	114	70.0	130	----
		Lithium, total	7439-93-2	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0255 mg/L	0.02 mg/L	128	70.0	130	----
		Nickel, total	7440-02-0	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 853573) - continued										
RG2300201-001	Anonymous	Phosphorus, total	7723-14-0	E420	6.87 mg/L	10 mg/L	68.7	70.0	130	K
		Potassium, total	7440-09-7	E420	3.22 mg/L	4 mg/L	80.4	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.00715 mg/L	0.02 mg/L	35.8	70.0	130	K
		Selenium, total	7782-49-2	E420	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
		Silicon, total	7440-21-3	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		Silver, total	7440-22-4	E420	0.00519 mg/L	0.004 mg/L	130	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	83.6 mg/L	20 mg/L	418	70.0	130	K
		Tellurium, total	13494-80-9	E420	0.0481 mg/L	0.04 mg/L	120	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00462 mg/L	0.004 mg/L	116	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0447 mg/L	0.02 mg/L	224	70.0	130	K
		Tin, total	7440-31-5	E420	0.0230 mg/L	0.02 mg/L	115	70.0	130	----
		Titanium, total	7440-32-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00432 mg/L	0.004 mg/L	108	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.110 mg/L	0.1 mg/L	110	70.0	130	----
		Zinc, total	7440-66-6	E420	ND mg/L	0.4 mg/L	ND	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0372 mg/L	0.04 mg/L	92.9	70.0	130	----
Dissolved Metals (QCLot: 852095)										
SK2300833-002	1A-O	Aluminum, dissolved	7429-90-5	E421	0.223 mg/L	0.2 mg/L	111	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0422 mg/L	0.04 mg/L	106	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00947 mg/L	0.01 mg/L	94.7	70.0	130	----
		Boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00416 mg/L	0.004 mg/L	104	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.00974 mg/L	0.01 mg/L	97.4	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		Copper, dissolved	7440-50-8	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.99 mg/L	2 mg/L	99.4	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 852095) - continued										
SK2300833-002	1A-O	Lithium, dissolved	7439-93-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	11.3 mg/L	10 mg/L	113	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0444 mg/L	0.04 mg/L	111	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	10.3 mg/L	10 mg/L	103	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00382 mg/L	0.004 mg/L	95.6	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00372 mg/L	0.004 mg/L	92.9	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0435 mg/L	0.04 mg/L	109	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.109 mg/L	0.1 mg/L	109	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.412 mg/L	0.4 mg/L	103	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
Dissolved Metals (QCLot: 855167)										
RG2300211-002	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.209 mg/L	0.2 mg/L	105	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0219 mg/L	0.02 mg/L	109	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0221 mg/L	0.02 mg/L	111	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00931 mg/L	0.01 mg/L	93.1	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00417 mg/L	0.004 mg/L	104	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.0104 mg/L	0.01 mg/L	104	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 855167) - continued										
RG2300211-002	Anonymous	Chromium, dissolved	7440-47-3	E421	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		Iron, dissolved	7439-89-6	E421	2.07 mg/L	2 mg/L	104	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0228 mg/L	0.02 mg/L	114	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	10.1 mg/L	10 mg/L	101	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	4.31 mg/L	4 mg/L	108	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0476 mg/L	0.04 mg/L	119	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00400 mg/L	0.004 mg/L	100.0	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0436 mg/L	0.04 mg/L	109	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00394 mg/L	0.004 mg/L	98.5	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0216 mg/L	0.02 mg/L	108	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.388 mg/L	0.4 mg/L	97.0	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0440 mg/L	0.04 mg/L	110	70.0	130	----

Qualifiers

Qualifier	Description
K	*Matrix Spike recovery outside ALS DQO due to sample matrix effects.*

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 22 -

Page 1 of 1

Environmental Division Saskatoon

Work Order Reference SK2300833

Telephone : +1 306 668 8370

Report To	Contact and company name below will appear on the final report
Company:	Ensero Solutions Canada Inc.
Contact:	Rachel Martz
Phone:	306-978-3111
	Company address below will appear on the final report
Street:	104-411 Downey Rd
City/Province:	Saskatoon, SK
Postal Code:	S7N 4L8
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Ensero Solutions Canada Inc. 410-885 Dunsmuir St, Vancouver,
Contact:	BC V6C1N5 Contact: Rachel Martz

Reports / Recipients	
Select Report Format:	☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	rmartz@ensero.com
Email 2	snenson@ensero.com
Email 3	kpiecowye@ensero.com
Invoice Recipients	
Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	ap@ensero.com
Email 2	rmartz@ensero.com

Turnaround Time (TAT) Request

- ☑ Routine [R] if received by 3pm M-F - no surcharges a
- ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcha
- ☐ 3 day [P3] if received by 3pm M-F - 25% rush surch
- ☐ 2 day [P2] if received by 3pm M-F - 50% rush surch
- ☐ 1 day [E] if received by 3pm M-F - 100% rush surc
- ☐ Same day [E2] if received by 10am M-S - 200% rus

Additional fees may apply to rush req

Date and Time Required for all E&P TATs:

For all tests with rush TATs

Project Information	
ALS Account # / Quote #:	
Job #:	ECA22YT00211
PO / AFE:	1518
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (ALS use only):

ALS Contact: **Sampler:**

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Total Metals	Dissolved Metals	Routine	Indicate Filtered (F), Preserved (P)																SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
									P	F/P																	
	Influent	3-Mar-23	9:02	Water	3	R	R	R																	0	0	0
	1A-O	3-Mar-23	12:54	Water	3	R	R	R																			
	1B-O	3-Mar-23	10:46	Water	3	R	R	R																			
	2A-O	3-Mar-23	12:57	Water	3	R	R	R																			
	2B-O	3-Mar-23	10:51	Water	3	R	R	R																			
	3A-O	3-Mar-23	13:00	Water	3	R	R	R																			
	3B-O	3-Mar-23	10:55	Water	3	R	R	R																			
	4A-O	3-Mar-23	12:28	Water	3	R	R	R																			
	4B-O	3-Mar-23	10:33	Water	3	R	R	R																			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Please send Ensero format EDD
Routine (anions, cations, alkalinity, pH, Conductivity, TDS, ion balance,hardness as CaCO3)

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
20.2					

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
	3/Mar/23	2:30

FINAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

APPENDIX B:

IN-SITU RESULTS

In-Situ Results

Name	Date	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Specific Conductivity (µS/cm)	pH
Influent	13-Sep-2022	23.9	98.3	8.28	127.2	679	8.26
	20-Sep-2022	24.3	78.5	6.57	200.9	675	8.27
	28-Sep-2022	24.7	79.0	6.56	183.7	659	8.26
	06-Oct-2022	25.0	79.5	6.93	194.1	668	8.19
	20-Oct-2022	27.0	83.4	6.64	186.9	656	8.26
	27-Oct-2022	26.2	72.7	5.87	202.2	679	8.27
	03-Nov-2022	25.9	79.9	6.48	184.3	882	8.04
	10-Nov-2022	25.1	92.9	7.64	184.5	892	7.88
	17-Nov-2022	23.5	87.8	7.44	220.2	1133	8.08
	24-Nov-2022	24.9	80.5	6.65	205.1	1131	7.90
	02-Dec-2022	25.6	72.6	5.93	183.6	1123	7.51
	07-Dec-2022	22.2	85.0	7.40	248.1	1087	8.00
	22-Dec-2022	24.9	81.6	6.72	233.5	1148	7.80
	06-Jan-2023	25.9	74.9	6.07	246.0	1164	8.06
	01-Feb-2023	24.3	54.5	4.55	236.4	1140	7.60
	03-Mar-2023	25.5	88.6	7.23	247.9	1151	8.21
Series 1 Cell A (Rip Rap Channel)	07-Sep-2022	22.8	81.8	6.19	230.5	703	7.98
	13-Sep-2022	21.1	81.2	7.19	165.8	695	7.94
	20-Sep-2022	21.8	53.8	4.72	227.7	676	7.62
	28-Sep-2022	23.5	60.6	5.14	186.8	663	7.65
	06-Oct-2022	20.3	66.6	5.98	203.0	669	7.73
	13-Oct-2022	21.4	76.4	6.76	259.1	659	7.84
	20-Oct-2022	20.9	82.1	7.23	208.3	663	8.18
	27-Oct-2022	21.7	77.6	6.81	222.8	677	8.1
	03-Nov-2022	22.1	83.8	7.29	228.2	885	8.04
	10-Nov-2022	19.7	98.9	9.03	245.2	897	8.08
	17-Nov-2022	18.4	74.1	6.93	238.5	1145	7.91
	24-Nov-2022	21.3	92.3	8.23	191.6	1135	8.25

In-Situ Results

Name	Date	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Specific Conductivity (µS/cm)	pH
Series 1 Cell A (Rip Rap Channel)	02-Dec-2022	21.9	82.1	7.17	178.7	1121	8.12
	07-Dec-2022	16.5	98.9	9.63	276.5	1098	8.03
	22-Dec-2022	21.4	93.4	8.22	220.9	1188	7.95
	06-Jan-2023	20.5	78.2	7.01	225.3	1204	8.04
	01-Feb-2023	20.5	71.5	6.40	264.1	1217	7.96
	03-Mar-2023	19.5	82.5	7.55	249.5	1217	8.12
Series 1 Cell B (Rip Rap Channel)	07-Sep-2022	21.8	80.8	7.07	229.1	710	7.97
	13-Sep-2022	21.7	94.4	8.28	161.2	695	7.99
	20-Sep-2022	21.9	84.5	7.39	208.6	671	8.14
	28-Sep-2022	22.3	82.2	7.14	174.1	669	8.06
	06-Oct-2022	20.5	89.5	8.05	212.0	673	8.11
	13-Oct-2022	20.7	82.2	7.37	253.4	684	8.14
	20-Oct-2022	21.0	97.4	8.66	194.7	669	8.40
	27-Oct-2022	21.5	92.0	8.11	215.5	678	8.36
	03-Nov-2022	21.5	89.4	7.88	209.2	893	8.25
	10-Nov-2022	19.4	102.9	9.44	221.2	901	8.23
	17-Nov-2022	18.5	89.7	8.37	241.1	1149	8.07
	24-Nov-2022	20.8	100.6	8.97	184.0	1153	8.34
	02-Dec-2022	21.7	91.9	8.07	174.8	1131	8.12
	07-Dec-2022	16.3	110.0	10.75	271.5	1121	8.09
	22-Dec-2022	21.0	89.8	7.97	221.9	1232	7.92
	06-Jan-2023	21.0	71.3	6.33	232.4	1228	7.91
	01-Feb-2023	21.5	76.9	6.96	249.3	1278	8.11
	03-Mar-2023	19.9	92.2	8.35	244.4	1228	8.20
Series 2 Cell A (Rip Rap Channel)	07-Sep-2022	24.2	73.6	6.13	221.3	702	7.97
	13-Sep-2022	21.4	74.2	6.55	162.8	689	7.72
	20-Sep-2022	21.9	53.7	4.69	199.9	669	7.56
	28-Sep-2022	24.2	75.3	3.64	181.8	664	7.64

In-Situ Results

Name	Date	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Specific Conductivity (µS/cm)	pH
Series 2 Cell A (Rip Rap Channel)	06-Oct-2022	20.9	80.0	7.14	211.3	670	7.85
	13-Oct-2022	21.8	93.3	8.21	255.4	647	7.89
	20-Oct-2022	21.2	96.4	8.53	190.1	659	8.40
	27-Oct-2022	21.5	87.8	7.37	212.0	673	8.17
	03-Nov-2022	21.9	84.4	7.33	195.2	884	8.23
	10-Nov-2022	19.6	92.7	8.47	216.0	900	8.09
	17-Nov-2022	18.4	86.5	8.09	220.4	1145	7.97
	24-Nov-2022	20.9	91.0	8.10	179.8	1138	8.34
	02-Dec-2022	21.7	87.3	7.64	173.8	1133	8.12
	07-Dec-2022	17.1	108.6	10.46	242.8	1104	8.19
	22-Dec-2022	21.3	77.8	6.86	227.2	1206	7.74
	06-Jan-2023	20.4	74.7	6.72	233.1	1234	7.75
	01-Feb-2023	20.7	61.2	5.47	241.8	1212	7.55
	03-Mar-2023	19.4	59.5	5.46	269.3	1271	7.50
Series 2 Cell B (Rip Rap Channel)	07-Sep-2022	22.6	77.4	6.65	221.2	708	7.88
	13-Sep-2022	22.2	84.8	7.23	140.0	691	7.90
	20-Sep-2022	22.2	90.5	7.86	187.0	666	8.08
	28-Sep-2022	22.6	78.5	6.77	174.4	670	7.89
	06-Oct-2022	20.7	77.9	6.97	202.7	680	7.97
	13-Oct-2022	21.0	82.8	7.38	253.3	682	8.04
	20-Oct-2022	21.3	109.3	9.65	175.9	666	8.36
	27-Oct-2022	21.3	104.3	9.23	188.1	680	8.41
	03-Nov-2022	21.2	100.9	8.94	155.3	891	8.30
	10-Nov-2022	19.2	113.9	10.5	197.2	904	8.36
	17-Nov-2022	18.2	96.4	9.06	215.4	1134	8.07
	24-Nov-2022	20.5	109.6	9.84	179.3	1157	8.39
	02-Dec-2022	21.1	90.1	7.99	171.9	1147	8.23
	07-Dec-2022	16.7	115.8	11.25	237.6	1132	8.23

In-Situ Results

Name	Date	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Specific Conductivity (µS/cm)	pH
Series 2 Cell B (Rip Rap Channel)	22-Dec-2022	20.5	96.1	8.61	223.3	1259	7.96
	06-Jan-2023	20.9	86.6	7.7	231.1	1270	8.12
	01-Feb-2023	21.3	75.3	6.65	237.0	1215	7.93
	03-Mar-2023	20.4	79.2	7.12	272.5	1300	7.77
Series 3 Cell A (Rip Rap Channel)	07-Sep-2022	-	54.4	4.38	222.7	709	7.55
	13-Sep-2022	22.5	58.9	5.09	139.8	680	7.47
	20-Sep-2022	22.8	60.3	5.18	196.1	677	7.47
	28-Sep-2022	25.0	57.5	4.71	169.5	675	7.44
	06-Oct-2022	22.0	51.8	4.51	208.2	679	7.35
	13-Oct-2022	22.9	39.3	3.38	263.6	680	7.32
	20-Oct-2022	22.0	56.9	4.92	193.9	668	7.43
	27-Oct-2022	22.2	40.7	3.53	206.6	690	7.28
	03-Nov-2022	22.7	58.6	5.05	180.9	899	7.51
	10-Nov-2022	20.5	70.0	6.27	218.9	907	7.49
	17-Nov-2022	19.6	61.0	5.56	216.9	1149	7.48
	24-Nov-2022	21.8	58.9	5.16	210.2	1156	7.43
	02-Dec-2022	22.5	65.1	5.63	186.7	1153	7.44
	07-Dec-2022	17.4	82.1	7.83	233.1	1117	7.43
	22-Dec-2022	22.0	71.6	6.23	227.4	1231	7.30
	06-Jan-2023	21.5	57.9	5.10	243.0	1271	7.33
	01-Feb-2023	21.9	54.0	4.72	241.6	1255	7.22
	03-Mar-2023	21.2	47.3	4.18	273.8	1286	7.20
Series 3 Cell B (Rip Rap Channel)	07-Sep-2022	24.4	75.9	6.33	220.1	721	7.51
	13-Sep-2022	22.6	93.3	8.05	116.4	681	7.80
	20-Sep-2022	22.5	84.8	7.34	190.0	682	7.67
	28-Sep-2022	23.3	61.0	5.19	154.1	693	7.60
	06-Oct-2022	21.3	60.6	5.37	193.8	696	7.65
	13-Oct-2022	21.4	64.4	5.70	258.7	717	7.55

In-Situ Results

Name	Date	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Specific Conductivity (µS/cm)	pH
Series 3 Cell B (Rip Rap Channel)	20-Oct-2022	21.5	64.9	6.72	185.6	687	7.51
	27-Oct-2022	21.7	58.2	5.11	206.0	697	7.59
	03-Nov-2022	21.7	67.3	5.90	178.0	908	7.49
	10-Nov-2022	19.8	78.2	7.12	188.1	927	7.56
	17-Nov-2022	19.0	74.2	6.88	225.6	1152	7.53
	24-Nov-2022	20.7	72.2	6.45	198.1	1172	7.61
	02-Dec-2022	21.5	77.7	6.84	182.5	1181	7.56
	07-Dec-2022	16.9	81.1	7.82	223.3	1160	7.46
	22-Dec-2022	20.9	77.3	6.89	225.7	1297	7.48
	06-Jan-2023	20.9	71.7	6.38	244.0	1327	7.56
	01-Feb-2023	21.2	70.5	6.24	241.4	1325	7.66
	03-Mar-2023	20.6	59.5	5.34	272.5	1352	7.52
Series 4 Cell A (Cascade)	07-Sep-2022	24.4	73.3	3.12	216.2	738	7.69
	13-Sep-2022	21.6	76.7	6.96	118.7	688	7.90
	20-Sep-2022	22.5	60.1	5.19	208.0	670	7.64
	28-Sep-2022	25.0	61.6	5.06	171.7	668	7.81
	06-Oct-2022	22.1	94.0	8.16	190.1	662	8.08
	13-Oct-2022	22.2	87.5	7.60	265.1	667	8.00
	20-Oct-2022	22.1	109.2	9.50	172.3	652	8.33
	27-Oct-2022	21.5	80.1	7.06	206.3	671	8.06
	03-Nov-2022	21.8	88.7	7.77	168.6	888	8.20
	10-Nov-2022	19.5	77.8	7.11	178.7	894	7.80
	17-Nov-2022	18.7	65.9	6.13	201.7	1149	7.80
	24-Nov-2022	20.9	67.9	6.04	178.3	1147	7.95
	02-Dec-2022	21.8	56.3	4.93	156.1	1133	7.62
	07-Dec-2022	16.8	75.4	7.32	236.7	1106	7.71
	22-Dec-2022	21.4	42.7	3.77	250.6	1196	7.06
	06-Jan-2023	21.5	27.6	2.43	256.2	1235	7.24

In-Situ Results

Name	Date	Temperature (°C)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Specific Conductivity (µS/cm)	pH
Series 4 Cell A (Cascade)	01-Feb-2023	21.7	32.6	2.86	234.3	1169	7.23
	03-Mar-2023	21.0	56.9	5.05	270.5	1198	7.37
Series 4 Cell B (Cascade)	07-Sep-2022	24.6	72.8	6.03	213.7	718	7.69
	13-Sep-2022	22.0	91.4	7.97	103.4	688	8.13
	20-Sep-2022	22.3	93.6	8.12	192.2	675	8.19
	28-Sep-2022	23.7	85.6	7.23	158.6	678	8.18
	06-Oct-2022	21.1	90.7	8.03	185.7	667	8.17
	13-Oct-2022	20.9	91.2	8.14	254.9	685	8.17
	20-Oct-2022	21.5	106.4	9.49	169.3	647	8.39
	27-Oct-2022	21.4	97.9	8.65	197.1	665	8.39
	03-Nov-2022	21.3	111.0	9.81	160.9	890	8.36
	10-Nov-2022	19.2	106.1	9.76	160.8	896	8.10
	17-Nov-2022	18.3	83.7	7.84	198.2	1154	7.86
	24-Nov-2022	20.3	100.3	9.04	173.2	1149	8.24
	02-Dec-2022	20.8	92.3	8.23	165.1	1118	8.10
	07-Dec-2022	16.3	117.4	11.50	219.5	1130	8.23
	22-Dec-2022	20.2	78.6	7.11	226.5	1225	7.59
	06-Jan-2023	20.7	75.9	6.78	258.0	1293	7.76
	01-Feb-2023	21.0	91.1	8.11	229.1	1192	7.85
	03-Mar-2023	20.3	85.4	7.71	277.2	1226	7.79

In situ data from February 1, 2023, corresponds to the January 20, 2023, sampling event. In situ data collected on January 30, 2023, was not used as equipment issues occurred.

MEMORANDUM

Date:	**March 20th, 2023**
To:	**Bill Bowden, Environmental Manager, Victoria Gold Corp, bboweden@vgcx.com**
From:	**David Krug, Core Geoscience Services Inc., david@coregeo.ca**
Subject:	**Victoria Gold Haggart Creek Bioengineering Assessment – Eagle Gold Mine – 2022**

1. BACKGROUND

Victoria Gold Corp (VGC) retained Core Geoscience Services Inc. (CoreGeo) in partnership with Yukon Seed & Restoration Inc. (YSR) to conduct monitoring and assessment of the bioengineering structure and erosion control measures implemented along Haggart Creek in 2021, as part of the 2022 reclamation monitoring program. The results of the assessment are presented in this memo.

During a site visit to the Eagle Gold mine in the fall of 2021, Laberge Environmental Services in partnership with CoreGeo assessed and evaluated treatment options for a slough near Haggart Creek. After a site assessment, a combination prescription of seeding with the custom erosion control seed mix and locally collected native seed, as well as the installation of a bioengineering structure was proposed as an erosion control. Work began immediately to address concerns around further movement of material into Haggart Creek (Laberge, 2021).

A 30 m long fascine of locally collected willow and plant material was installed at the base of the slough area, next to the creek, to prevent further movement of the slough material into the creek. The facine was installed bellow a row of straw bales and silt fences, which has been installed to mitigate erosion impacts. Most of the willow were little tree willow (*Salix arbusculoides*) with some Alaska willow (*S. alaxensis*) and balsam poplar (*Populus balsamifera*). Additional activities included the application of a seed mix containing alpine bluegrass (9% Pure Live Seed), tufted hairgrass (87% Pure Live Seed), and 4% and rocky mountain fescue (4% Pure Live Seed) at a rate of 20 kg/ha. Seeds from bluejoint reedgrass (*Calamagrostis canadensis*), Siberian yarrow (*Achillea sibirica*), common yarrow (*Achillea millefolium*), bear root (*Hedysaurm alpinum*), spike trisetum (*Trisetum spicatum*) bluegrass (*Poa* sp.), green alder (*Alnus viridis subsp. crispa*) and grey willow (*Salix glauca*) were hand collected and spread over a two-metre-wide area closest to the creek.

2. RECLAMATION ASSESSMENT

David Krug (CoreGeo) and Andrew Thomson (YSR) assessed the bioengineering structures and seeded area during a site visit on August 24th, 2022. The following observations were made:

- Good growth of both *S. alaxensis* and *S. arbusculoides* willow along the fascine. Some of the large stakes showed new growth, but more growth was observed from the smaller stakes.
- Fascine structure showed lots of new growth. Approximately 90% of stakes have growth, with some growth up to 0.5 m in height. Percent growth was determined based on visual assessment using random subsampling of groups of 10 stakes (i.e., 9/10 stakes in each group exhibited new growth).
- Willow growth appeared to be less where other vegetation was present, particularly along the north end of the fascine structure.

- Volunteer willows were observed growing along the edges of the hay bales. Hay bales were also observed to be colonized by a fungi spp., possibly ink cap mushrooms.
- Limited new growth of grass and forbs was observed throughout the impacted area. Some small patches of unidentified grass and other young vegetation were observed. Areas with the highest coverage and growth were along the edges of the hay bales, or other natural features such as woody debris.
- Wattle fences were installed at several locations on the slough area where runoff trenches were beginning to form. Approximately 90% of the willows installed for the wattle fences showed new growth up to 0.3 m.
- The slough area appeared to be stable with no obvious signs of new slumping or runoff apparent. The fascine and other erosion control structures appeared to be effective in stopping movement of the slough material.

The bioengineered structures appeared to be growing well and are supporting the goal of preventing further movement of the slough area. Over time, bioengineered structures will continue to grow and create solid vegetative structures that will persist in preventing movement of soil material. A photo log showing the slough area, bioengineering structures and seeded areas is presented below.

3. RECOMMENDATIONS

The following list of recommendations are intended to help ensure desirable outcomes are reached for all bioengineering and erosion control programs now and in the future. Recommendations include:

- Monitoring the slough area annually for minimum of 5 years to ensure that the structure is still meeting the function of preventing erosion and sedimentation into Haggart Creek. Other monitoring activities to conduct in future years could include a vegetation assessment to determine the composition and cover of the vegetation community growing on the slough area. This will help inform which species are the most successful in establishing in this area. Due to the difficulty of identifying the small plant species beginning to colonize on the slough area, the effectiveness of the seeding efforts is currently unknown. Ongoing monitoring will be important to assess the effectiveness and establishment of the seeded species. As vegetation cover is not the only indicator of slope stability, and additional mass movement may cause the vegetative structures to fail, monitoring should also consider geo-technical factors beyond surface vegetation cover. Geotechnical monitoring is conducted on an annual basis as part of the Annual Physical Stability Report conducted by All North. Ongoing geotechnical monitoring is conducted by Technical Services which includes visual observation and extensometers.
- Willow stakes can appear to be growing well when lots above ground growth is observed, however, if below-ground root structures do not establish, stakes will die after only a few years. Some die-off is to be expected, but it is still recommended that new stakes be installed in problem areas if die-off appears to be impacting the integrity of the structure. Sheltered areas along the edges of the hay bales and logs appeared to be ideal sites for vegetation growth, likely due to increased moisture and shelter provided by these features. If vegetation continues to struggle growing on the slough area after several growing seasons, it is recommended that additional biodegradable features (hay bales and woody debris be installed to facilitate additional growth.

- The effectiveness of this erosion control intervention comes from the use of multiple tools and techniques including creating surface texture (hay bales, logs), installing appropriate bioengineered structures, and planting appropriate native plant seeds. For future erosion control and reclamation activities, this combination approach should be taken with site specific factors in mind.

4. CLOSURE

CoreGeo and YSR would like thank Victoria Gold for the opportunity to conduct this work. If you require any additional information or clarification, please do not hesitate to contact David Krug by phone (226) 203-1996 or by email at david@coregeo.ca.

Sincerely,

David Krug (he/him)
Environmental Scientist

Core Geoscience Services Inc.
4109 4th Ave, Whitehorse, YT Y1A 1H6

5. REFERENCES

Laberge Environmental. 2021. Technical Memo-Seeding and Erosion Control Installation at Specific Sites, Eagle Gold Project. 2021. Prepared for Victoria Gold Corp.

6. PHOTO LOG

Photo 1: Bioengineering structure along Haggart creek. Woody debris and logs also pictured on the right, deployed as part of erosion control measures.

Photo 2: Fascine structure with new growth from vertical stakes.

Photo 3: Fascine structure with new growth from buried fascine bundle.

Photo 4: Fascine structure - south end.

Photo 5: Fascine structure - north end.

Photo 6: Straw bales installed for erosion control. New growth from willows and other vegetation along the edges of straw bales.

Photo 7: Patch of new vegetation on slough area.

Photo 8: Vegetation growth along the edges of straw bales.

Photo 9: Wattle fences installed along erosion channels in slough area.

MEMORANDUM

Date:	**March 20th, 2023**
To:	**Bill Bowden, Environmental Manager, Victoria Gold Corp, bboweden@vgcx.com**
From:	**David Krug, Core Geoscience Services Inc., david@coregeo.ca**
Subject:	**Victoria Gold Lower Dublin South Pond Bioengineering Assessment Memo – Eagle Gold Mine – 2022**

1. BACKGROUND

Victoria Gold Corp (VGC) retained Core Geoscience Services Inc. (CoreGeo) in partnership with Yukon Seed & Restoration Inc. (YSR) to conduct monitoring and assessment of bioengineered interventions to stabilize the cutbank above the Lower Dublin South Pond (LDSP) as part of the 2022 reclamation monitoring program. The results of the assessment are presented in this memo.

Bioengineering activities were implemented along the cutbank near the LDSP at the Eagle Gold Mine in 2019 by Laberge Environmental Services (Laberge). The work was completed in collaboration with students from the Yukon University Environmental Monitoring Program, and Victoria Gold staff (Laberge, 2019). Locally collected willow (*Salix spp.*) were deployed throughout the area as live stakes, pole drains and a wattle fence. These activities, along with seeding that occurred in 2019 (Laberge, 2019), and 2021 (Laberge, 2021), were implemented to reduce erosion potential, and promote the stability of the slope above the LDSP (Laberge, 2019). Prior to staking and other activities, the slope was relatively smooth and exhibited signs of runoff (channels), slumping, and instability.

2. EROSION CONTROL ASSESSMENT

David Krug (CoreGeo) and Andrew Thomson (YSR) conducted assessment of the bioengineered slopes during a site visit on August 24th, 2022. The cutbank overlaps with Site #2 as part of the erosion control seeding program but is presented separately in the erosion control seeding memo (CoreGeo 2023).

The following observations were made during the assessment of the bioengineered interventions on the cutbank slope:

- Willow stakes and other bioengineering interventions appeared to have mixed success. Live willow stakes were assessed to have approximately 50% survival as determined by live growth on the above-ground portion of the stake. Some stakes had up to 0.5 m of new leafy growth.
- Some willow stakes had no above-ground growth, and when pulled from the ground, showed no signs of root development (Photo 7).
- The wattle fences and live pole drains exhibited more growth compared to individual stakes as indicated by the amount of new growth of the willows used in construction. Approximately 90% of the wattle fences and pole drains exhibited new above ground growth as determined by visual assessment of the visible nodes along the length of the fence or pole drain (i.e., nine of ten nodes showed new growth). No pole drains or wattle fences were removed or dug up to assess below-ground growth to maintain the structural integrity of the slope and the function the structures.

- Runoff channels and signs of erosion were observed throughout the area. Minor movement of material from the slope above the cutbank is apparent but has not destabilized the slope.
- Channels were observed to be winding through the live willow stakes (Photo 2) and around the pole drains (Photo 4). It appeared that where the pole drains had once been in a runoff channel, the channel has now re-routed around the pole drain, rendering the pole drain ineffective.
- Wattle fences appeared to be effective in acting as sediment traps and preventing runoff and erosion; however, channels were observed to re-route around these structures.
- The seed deployed as part of the 2021 erosion control program had limited coverage and minimal growth. Few volunteer species were observed besides those willows and other woody species already present on the area.
- Silt fencing appeared to have limited success at stopping material from moving down the slope (Photo 4 & 5).

Based on the observations presented above, the bioengineering activities implemented along the cutbank have not yet met the goal of preventing further erosion from occurring. Individually, the bioengineered structures are performing well with respect to what they are capable of, but overall, are insufficient under current conditions in fully stabilizing and preventing erosion over the entire area. The site-specific conditions, along with insufficient planting density and relatively short period of time since installation, are contributing factors to this result. It should be noted that although erosion continues to be observed, runoff from this area is captured by existing ditches and reports to the LDSP.

3. RECOMMENDATIONS

The following list of recommendations are expected to improve the outcome of the bioengineering efforts along the cutbank area:

- Site preparation, such as making the surface rough and loose, breaking up the length of slope, and decompaction of the soil are important activities for erosion control and reclamation. This can be implemented around the existing structures if done with hand tools or small machinery. The slope angle and surface texture of the LDSP cutbank is such that water, soil, and seeds will run off the surface. By creating a rough soil texture and breaking up the length of the slope by creating terrace like structures, other erosion control measures such as live staking or seeding will be more successful. It is recommended that site preparation activities (either using small machinery or by hand) be implemented on the cutbank.
- Following site preparation, additional bioengineering interventions and live stakes can be deployed, preferably in the fall or late winter/early spring to take advantage of peak soil moisture and dormancy characteristics of the live stakes. Additional styles of bioengineering approaches such as modified brush layers or live smiles (Polster 1999) can be used as a means of breaking up the length of the slope, and act as sediment traps to control erosion. Installing these structures, along with wattle fences and pole drains, at a higher density than are currently present would decrease the erosion potential of the slope. Structures staggered every 2-3 m over the entire cutbank area would significantly increase the effectiveness of the bioengineering erosion control. Installing live stakes to fill in the spaces (every 0.5-1 m) between the more robust existing structures would further increase

the effectiveness of this strategy. It is recommended that additional bioengineered interventions be implemented on the cutbank.

- Following the implementation of the above recommendations, an additional application of the custom reclamation seed mix (alpine bluegrass, rocky mountain fescue, tufted hairgrass, and slender wheatgrass) is recommended. Site prep and bioengineered structures help create microsite conditions that support the establishment and growth of these seeds.

Used in consecutive combination, augmentative site prep, bioengineering, and the application of native plant seeds would be effective at controlling erosion on the LDSP cutbank, if deployed at an appropriate scale or density for the site.

4. CLOSURE

CoreGeo and YSR would like to thank Victoria Gold for the opportunity to conduct this work. If you require any additional information or clarification, please do not hesitate to contact David Krug by phone (226) 203-1996 or by email at david@coregeo.ca.

Sincerely,

David Krug (he/him)
Environmental Scientist
Core Geoscience Services Inc.
4109 4th Ave, Whitehorse, YT Y1A 1H6

5. REFERENCES

Laberge Environmental. 2019. Technical Memo- Erosion Control Installation at Specific Sites, Eagle Gold Project. Prepared for Victoria Gold Corp.

Laberge Environmental. 2021. Technical Memo-Seeding and Erosion Control Installation at Specific Sites, Eagle Gold Project. Prepared for Victoria Gold Corp.

Polster, D.F. 1999. Soil Bioengineering for Steep/Unstable Slopes and Riparian Restoration. Paper presented at the Fourth Annual Roads, Rails and Environment Workshop. November 2 – 3, 1999. Revelstoke, B.C.

6. PHOTO LOG

Photo 1: Panoramic view of the LDPS cutbank.

Photo 2: Runoff channel formed between live willow stakes.

Photo 3: Wattle fence exhibiting new above ground growth.

Photo 4: Pole drain with runoff channel forming adjacent.

Photo 5: New growth on live willow stakes.

Photo 6: Runoff channels weaving way through live willow stakes.

Photo 7: Dead willow stake removed from soil- showing no root structures.

TECHNICAL MEMORANDUM

DATE November 15, 2022 **Project No.** 22537365

TO Ben Widdowson
Victoria Gold Corporation

CC Lawrence Bakelaar, Darren Kennard

FROM Jonathan Friebel **EMAIL Jonathan.Friebel@wsp.com**

EAGLE GOLD MINE BATHYMETRIC SURVEY AND STORAGE CAPACITY ASSESSMENT OF EVENT POND AND CONTROL POND

1.0 INTRODUCTION

Golder Associates Ltd., a member of WSP (Golder), was contracted by Victoria Gold Corp. (VGCX) to conduct bathymetric survey work at two ponds at the Eagle Gold Mine (EGM) mine site, located approximately 370 km north of Whitehorse and 50 km north of Mayo in the Yukon Territory. The two ponds are the Events Pond (EP) and the Control Pond (CP), also called the Lower Dublin South Pond Facility (LDSP), as shown in Figure 1.

The survey was completed over three days, from September 26 – 28, 2022. The collected bathymetric data was used to assess the change in storage capacity due to sediment buildup in both ponds. This survey was conducted remotely (from the pond edge) because of environmental concerns with using large manned motorized watercraft within the ponds. The ponds are lined with geomembrane with a subdrain system and operating a motorized (propeller driven) watercraft creates a hazard to the liner integrity. A remotely operated vehicle with shrouded thrusters was used to minimize risk to the pond liner.

This memorandum summarizes the execution of the bathymetric survey program and describes the compiled survey data. The compiled data in electronic format is transmitted separately to EGM.

2.0 BATHYMETRIC SURVEY

2.1 Survey Method

WSP Golder used a remotely operated vehicle (ROV) to perform the survey to mitigate safety concerns with using a manned watercraft within the lined ponds. The ROV is shown prior to launch in the north-west corner of the Event Pond in Figure 2. To collect bathymetry points, a Sonarmite SFX was mounted onto the ROV. To georeference the depth soundings, a Trimble R10 RTK GNSS receiver and TSC3 data collector were also mounted on the ROV. The Trimble data collector stores the RTK position along with the depth from the Sonarmite. The Trimble was set to store points every 1 m of distance travelled.

Bathymetric data were supplemented by water level and ground data collected using an RTK-GPS mounted on a handheld survey pole along the pond banks in shallow water, where conditions were safe to do so.

DRAFT

LEGEND

POND BOUNDARY

DRAFT

0 100 200

1:4,250 METRES

NOTE(S)

REFERENCE(S)

JUNE 2022 IMAGERY PROVIDED BY VICTORIA GOLD MINE.
PROJECTION: UTM ZONE 8 HORIZONTAL DATUM: NAD 83 VERTICAL DATUM: CGVD2013

CLIENT
VICTORIA GOLD MINE

PROJECT
EAGLE GOLD MINE POND BATHYMETRIC SURVEY

TITLE
EAGLE GOLD MINE SITE PLAN

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-11-15
DESIGNED	JF
PREPARED	PT
REVIEWED	
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
22537365	03	A	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

25mm

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PATH: I:\2022\22537365\Mapping\Products\Hydrology\22537356_Fig1_Site-Plan_RevA.mxd PRINTED ON: 2022-11-15 AT: 1:29:17 PM

Figure 2 : Golder's Remotely Operated Vehicle (ROV) Equipped with Sonarmite Echosounder and RTK-GNSS Head

2.2 Summary of Daily Activities

The following is a summary of the daily activities completed. The survey was conducted by water resources engineer Jonathan Friebel.

- 24 September 2022
  - Mobilization to Whitehorse – fly from Calgary
- 25 September 2022
  - Drive to site from Whitehorse
- 26 September 2022
  - Survey setup and benchmark installation at the Control Pond
  - Topographic survey of banks and significant features around Control Pond
  - Bathymetric survey of the Control Pond using the Hydrone and Sonarmite
- 27 September 2022
  - Relocate to Events Pond – Survey Setup
  - Bathymetric survey of Events Pond using the Hydrone and Sonarmite
- 28 September 2022
  - Finish survey of Event Pond
  - Demobilize to Whitehorse
- 29 September 2022
  - Fly back to Calgary

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3.0 DATA PROCESSING AND 3D SURFACE GENERATION

3.1 Estimated Survey Accuracy

Survey positioning data were reviewed for horizonal and vertical precision using survey metadata logged by the Trimble R10. All points surveyed had a horizontal precision within 0.03 m and a vertical precision within 0.05 m. The depth measured by the echo-sounder was subtracted from the elevations recorded by the Trimble R10 to give the elevation of the pond invert. The vertical accuracy of the echosounder provided in the manufacturer's specifications is 0.01 m or 0.1% of total depth. However, a vertical accuracy of approximately ±0.1 m should be considered for purposes of volume calculations.

3.2 Survey Control

WSP Golder's surveyor used existing EGM benchmarks at the Control Pond and Event Pond to calibrate the survey. The coordinate system that was used is UTM Zone 8, NAD 83 with HT2_0 geoid. See Table 1 for the coordinates of the benchmarks.

The survey was completed using the EGM base station transmitting on frequency 445.31250MHz. Data for the base station and EGM benchmarks were provided by the EGM surveyor on September 24, 2022.

Table 1 : Benchmark Coordinates and Elevation

Benchmark	Location	Northing	Easting	Elevation (masl)
9130	West end of Event Pond	7101270.655	458869.424	896.804
9140	North-west corner of Event Pond	7101309.103	458874.427	895.683
9131	North-west corner of Control Pond	7100905.225	458708.688	813.608
9141	North side of Control Pond	7100918.496	458736.145	813.791

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Plate 1: Echosounder Calibration Checks

FIELD PHOTOS	
Photo 1: September 26, 2022. Checking echosounder calibration in the Control Pond. **Total water depth = draft + ES depth = 0.19m + 0.53m = 0.72 m.**	**Photo 2: September 26, 2022. Checking echosounder calibration in the Control Pond – measured depth = 0.71 m.**

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3.3 Survey Data Quality Assurance and Quality Control Checks

Before starting the survey, the echosounder calibration was checked using a manual measurement on a survey level rod. As shown in Photo 1 and Photo 2, the echosounder depth was recorded at 0.53 m, with a measured draft (distance from water to the base of the echosounder) of 0.19m, giving a total depth of 0.72 m. The measured depth on the survey level rod was 0.71 m. This gives a variance of 0.01 m between the measured and echosounder depth.

A sound velocity of 1439 m/s was used to calculate depths, assuming a water temperature of 8°C. This velocity is within the expected range for water at expected temperatures. A change in water temperature of 2°C would be expected to introduce a depth error of 0.5%.

The points collected in the bathymetry survey were reviewed for positional accuracy (i.e., the accuracy of the x and y coordinates) and coverage against EGM orthoimagery (VGCX 2022a) and photogrammetry (VGCX 2022b). Point elevations were checked to fall within the general elevation ranges of the survey sites.

Terrain points were compared to June 29, 2022 photogrammetry surface data provided by EGM. A vertical variance of 0.01 – 0.1 m between terrain data and the EGM surface data was observed at recorded check points on the pond embankments and side slopes. As the photogrammetry data provided had a 0.5x0.5 m grid size, this variance was deemed to be acceptable.

The bathymetric survey data were compared to terrain point data collected below the water line on a smooth surface, to check the accuracy of the echo sounder. The vertical variance of the echosounder to the terrain data at similar locations was generally 0.05 – 0.1 m.

Following the survey of the Event Pond on September 27 a signal latency issue was noted during the daily QC check. This issue was resolved during post-processing. Some minor data artifacts are still present on both figures in the form of “bullseyes” especially along the edge of slope breaks. These are related to the latency issue and to the difficulty in resolving sharp slope changes without precise breaklines in the survey data and as-builts.

3.4 Surveyed Points

1) Control Pond

- 637 out of 8,782 (7%) of the points for Control Pond were removed. These points were either flagged with RTK-GPS quality control checks or were determined to have erroneous depth readings relative to adjacent points. Surveyed points for the Control Pond, including benchmarks, and data collected using both the survey rod and echosounder, are shown in Figure 3.

2) Event Pond

- 166 out of 8,306 (2%) of the points for Event Pond were removed. These points were either flagged with RTK-GPS quality control checks or were determined to have erroneous depth readings relative to adjacent points. Surveyed points for the Event Pond, including benchmarks, and data collected using both the survey rod and echosounder, are shown in Figure 6.

Subsequently, preliminary surfaces were generated from the survey points and outlying elevations were removed through visual inspection and comparison with adjacent points.

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3.5 Surface Interpolation and Stage-Storage Curves

Shorelines were derived from June 29, 2022 survey data and orthoimagery for both ponds, digitized in ArcGIS, and calibrated to the surveyed water level elevation of 811.09 masl at the Control Pond and 888.42 masl at the Event Pond.

Raster elevation surfaces with 0.5 m resolution were created in ESRI ArcGIS using a spline-based interpolation method (Topo to Raster) which takes contour lines or point elevations and converts them to a digital elevation model. Bathymetric surfaces were merged with the June 29, 2022 as-built data using the surveyed water level elevation as a match line. Contours with 0.1 m vertical spacing were derived from the bathymetric surfaces. The resulting bathymetric surfaces and contours are shown in Figure 4 for the Control Pond and Figure 7 for the Event Pond.

As-built surfaces to be used for comparison with the bathymetric data were derived from CAD as-built data for each pond provided by EGM staff on September 28, 2022 (BGC 2019, Tetra Tech 2018). The as-built data provided was comprised of contours with 0.5 m elevation intervals for the Control Pond and 1.0 m elevation intervals for the Event Pond.

As-built surfaces were created in ESRI ArcGIS with 0.5 m resolution.

Control Pond

A stage-storage curve for the Control Pond derived from the bathymetric surface and 2022 photogrammetry is shown in Figure 9. The available volume at the top of the Control Pond spillway, at the approximate Full Supply Elevation (FSE) of 812 masl, was calculated to be 60.103 m^3. The volume calculated based on the January 29, 2018 as-built was 68,521 m^3. The 2022 FSE volume at the time of the survey is approximately 88% of the original as-built volume.

Most of the reduction in available storage capacity is due to sediment buildup in the east end and south-east of the pond. Additionally, there is a depression shown in the as-built on the north end of the rock berm that appears to be filled by sediment. This was likely intended to be a sediment trap. Due to the 0.5 m elevation interval in the as-built contours, some uncertainty in this area should be assumed for the isopach in this area.

It was also noted that the rock berm shown in the as-built was not visible in the survey results. As EGM staff indicated that the sediment in the east end of the pond has been cleaned out seasonally, it is possible the rock berm was removed.

As noted in Section 3.3, some artifacts resulting from signal latency and surface interpolation are visible, especially on the toes of the pond slopes. The error in volume calculations resulting from these artifacts is expected to be less than 0.1%.

Event Pond

A stage-storage curve for the Event Pond derived from the bathymetry surface and 2022 photogrammetry is shown in Figure 10. The available volume at the top of the Event Pond embankment, at the approximate Full Supply Elevation (FSE) of 894.4 masl, was calculated to be 292,056 m^3. The volume calculated based on the November 4, 2019 as-built was 300,577 m^3. The 2022 FSE volume at the time of the survey is approximately 98% of the original as-built volume.

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Most of the sediment build-up is in the sump on the west end of the Event Pond, and on the north-west side of the Event Pond below the inflow from the in-heap pond spillway. Due to the 1.0 m elevation interval in the as-built contours, some uncertainty in this area should be assumed for the isopach in this area.

There is also some sediment build-up at the base of the sideslopes along the length of the pond. As noted in Section 3.3, some artifacts resulting from signal latency and point interpolation are visible on the toes of the pond side slopes. The error in volume calculations resulting from these artifacts is expected to be less than 0.1%.

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LEGEND

- SURVEY BENCHMARK
- ECHOSOUNDER SURVEY POINT
- RTK SURVEY POINT

DRAFT

0 50 100

1:1,200 METRES

NOTE(S)

REFERENCE(S)

JUNE 2022 IMAGERY PROVIDED BY VICTORIA GOLD MINE. BATHYMETRIC DATA COLLECTED BY WSP GOLDER INC. 26 AND 27 SEPTEMBER, 2022.
PROJECTION: UTM ZONE 8 HORIZONTAL DATUM: NAD 83 VERTICAL DATUM: CGVD2013

CLIENT
VICTORIA GOLD MINE

PROJECT
EAGLE GOLD MINE POND BATHYMETRIC SURVEY

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-11-15
DESIGNED	JF
PREPARED	PT
REVIEWED	
APPROVED	

TITLE
CONTROL POND – SEPTEMBER 26 / 27, 2022 BATHYMETRIC SURVEY POINTS

PROJECT NO.	CONTROL	REV.	FIGURE
22537365	03	A	3

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25mm

0

LEGEND

- 2m ELEVATION CONTOUR
- WATER SURFACE BOUNDARY (ELEVATION 811.09 MASL, SEPTEMBER 26, 2022)

ELEVATION (m)

- < 805
- 805 - 810
- 810 - 815
- 815 - 820
- 820 - 825
- 825 - 830
- 830 - 835
- > 835

DRAFT

0 50 100

1:1,200 METRES

NOTE(S)

REFERENCE(S)

JUNE 2022 IMAGERY PROVIDED BY VICTORIA GOLD MINE. BATHYMETRIC DATA COLLECTED BY WSP GOLDER INC. 26 AND 27 SEPTEMBER, 2022.
PROJECTION: UTM ZONE 8 HORIZONTAL DATUM: NAD 83 VERTICAL DATUM: CGVD2013

CLIENT
VICTORIA GOLD MINE

PROJECT
EAGLE GOLD MINE POND BATHYMETRIC SURVEY

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-11-15
DESIGNED	JF
PREPARED	PT
REVIEWED	
APPROVED	

TITLE
CONTROL POND – SEPTEMBER 26 / 27, 2022
COMBINED BATHYMETRY AND TOPOGRAPHY

PROJECT NO.	CONTROL	REV.	FIGURE
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25mm

0

LEGEND

- 0.1m THICKNESS CONTOUR
- WATER SURFACE BOUNDARY

SEDIMENT THICKNESS (m)

- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- 0.9 - 1
- 1 - 1.1
- 1.1 - 1.2
- 1.2 - 1.3
- 1.3 - 1.4
- > 1.4

NOTE(S)

REFERENCE(S)

JUNE 2022 IMAGERY PROVIDED BY VICTORIA GOLD MINE. BATHYMETRIC DATA COLLECTED BY WSP GOLDER INC. 26 AND 27 SEPTEMBER, 2022. ASBUILT SURFACE USED FOR ISOPACH FROM CAD FILE "20171206_CONTOL POND AB.DWG" PROVIDED BY EGM ON 28 SEPTEMBER 2022.
PROJECTION: UTM ZONE 8 HORIZONTAL DATUM: NAD 83 VERTICAL DATUM: CGVD2013

DRAFT

0 50 100

1:1,200 METRES

CLIENT
VICTORIA GOLD MINE

PROJECT
EAGLE GOLD MINE POND BATHYMETRIC SURVEY

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-11-15
DESIGNED	JF
PREPARED	PT
REVIEWED	
APPROVED	

TITLE
CONTROL POND – SEPTEMBER 26 / 27, 2022
SEDIMENT BUILDUP ISOPACH

PROJECT NO.	CONTROL	REV.	FIGURE
22537365	03	A	5

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25mm

0

LEGEND

- SURVEY BENCHMARK
- ECHOSOUNDER SURVEY POINT
- RTK SURVEY POINT

DRAFT

0 50 100

1:1,200 METRES

NOTE(S)

REFERENCE(S)

JUNE 2022 IMAGERY PROVIDED BY VICTORIA GOLD MINE. BATHYMETRIC DATA COLLECTED BY WSP GOLDER INC. 27 AND 28 SEPTEMBER, 2022.
PROJECTION: UTM ZONE 8 HORIZONTAL DATUM: NAD 83 VERTICAL DATUM: CGVD2013

CLIENT
VICTORIA GOLD MINE

PROJECT
EAGLE GOLD MINE POND BATHYMETRIC SURVEY

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-11-15
DESIGNED	JF
PREPARED	PT
REVIEWED	
APPROVED	

TITLE
EVENT POND – SEPTEMBER 27 / 28, 2022
BATHYMETRIC SURVEY POINTS

PROJECT NO.	CONTROL	REV.	FIGURE
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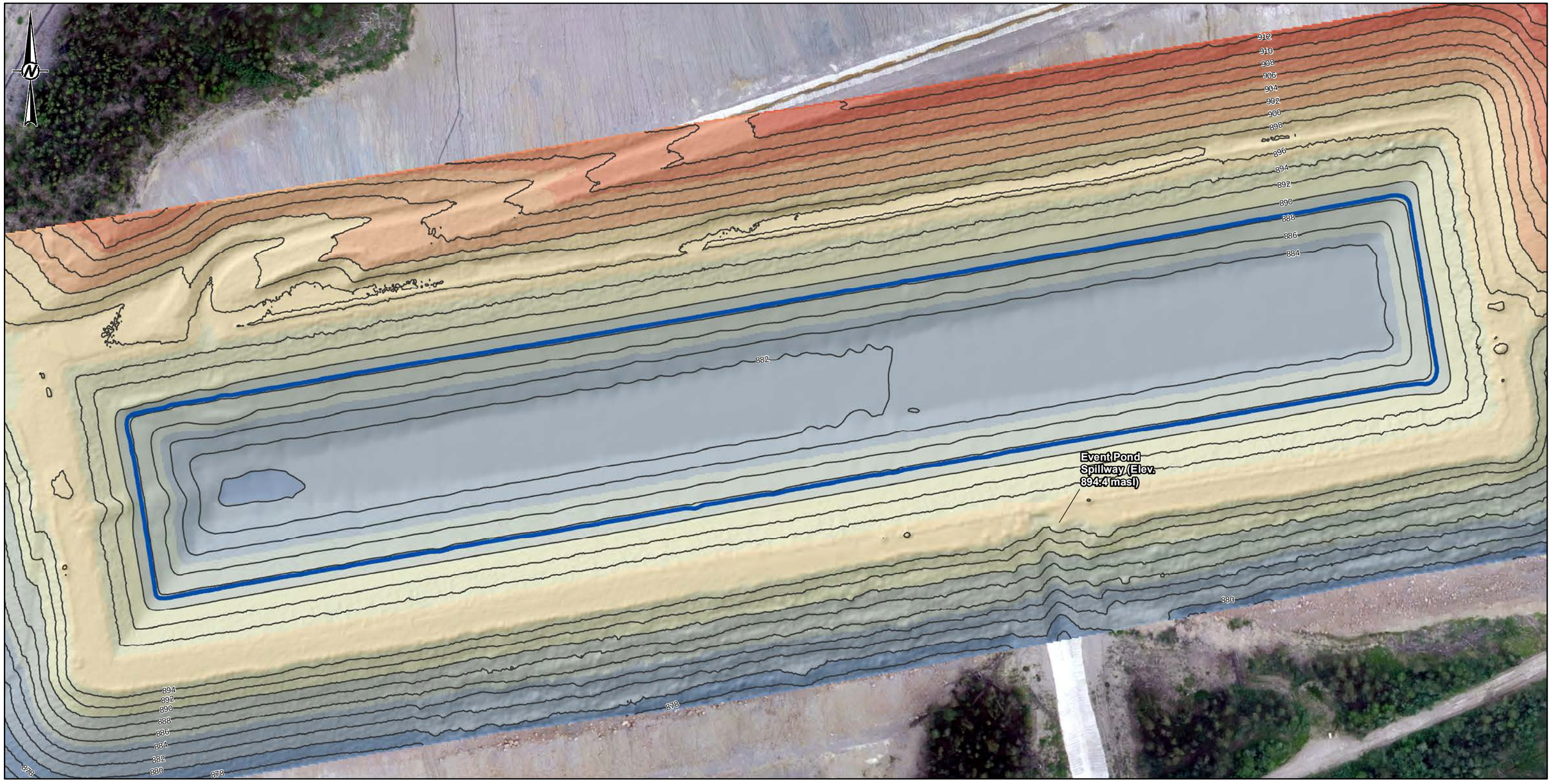

LEGEND

- 2m ELEVATION CONTOUR
- WATER SURFACE BOUNDARY (ELEVATION 888.42 MASL, SEPTEMBER 27, 2022)

ELEVATION (m)

- < 875
- 875 - 880
- 880 - 885
- 885 - 890
- 890 - 895
- 895 - 900
- 900 - 905
- 905 - 910
- 910 - 915
- > 915

NOTE(S)

REFERENCE(S)

JUNE 2022 IMAGERY PROVIDED BY VICTORIA GOLD MINE. BATHYMETRIC DATA COLLECTED BY WSP GOLDER INC. 27 AND 28 SEPTEMBER, 2022.
PROJECTION: UTM ZONE 8 HORIZONTAL DATUM: NAD 83 VERTICAL DATUM: CGVD2013

DRAFT

0 50 100
1:1,200 METRES

CLIENT
VICTORIA GOLD MINE

PROJECT
EAGLE GOLD MINE POND BATHYMETRIC SURVEY

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-11-15
DESIGNED	JF
PREPARED	PT
REVIEWED	
APPROVED	

TITLE
EVENT POND – SEPTEMBER 27 / 28, 2022
COMBINED BATHYMETRY AND TOPOGRAPHY

PROJECT NO.	CONTROL	REV.	FIGURE
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25mm

0

LEGEND

- 0.1m THICKNESS CONTOUR
- WATER SURFACE BOUNDARY

SEDIMENT THICKNESS (m)

- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.6
- 0.6 - 0.7
- 0.7 - 0.8
- 0.8 - 0.9
- 0.9 - 1
- 1 - 1.1
- 1.1 - 1.2
- 1.2 - 1.3
- 1.3 - 1.4
- > 1.4

NOTE(S)

REFERENCE(S)

JUNE 2022 IMAGERY PROVIDED BY VICTORIA GOLD MINE. BATHYMETRIC DATA COLLECTED BY WSP GOLDER INC. 27 AND 28 SEPTEMBER, 2022. ASBUILT SURFACE USED FOR ISOPACH FROM CAD FILE "100-309-ASB-EVENT_POND_ES_MS.DWG" PROVIDED BY EGM ON 28 SEPTEMBER 2022."
PROJECTION: UTM ZONE 8 HORIZONTAL DATUM: NAD 83 VERTICAL DATUM: CGVD2013

DRAFT

0 50 100
1:1,200 METRES

CLIENT
VICTORIA GOLD MINE

PROJECT
EAGLE GOLD MINE POND BATHYMETRIC SURVEY

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-11-15
DESIGNED	JF
PREPARED	PT
REVIEWED	
APPROVED	

TITLE
EVENT POND – SEPTEMBER 27 / 28, 2022
SEDIMENT BUILDUP ISOPACH

PROJECT NO.	CONTROL	REV.	FIGURE
22537365	03	A	8

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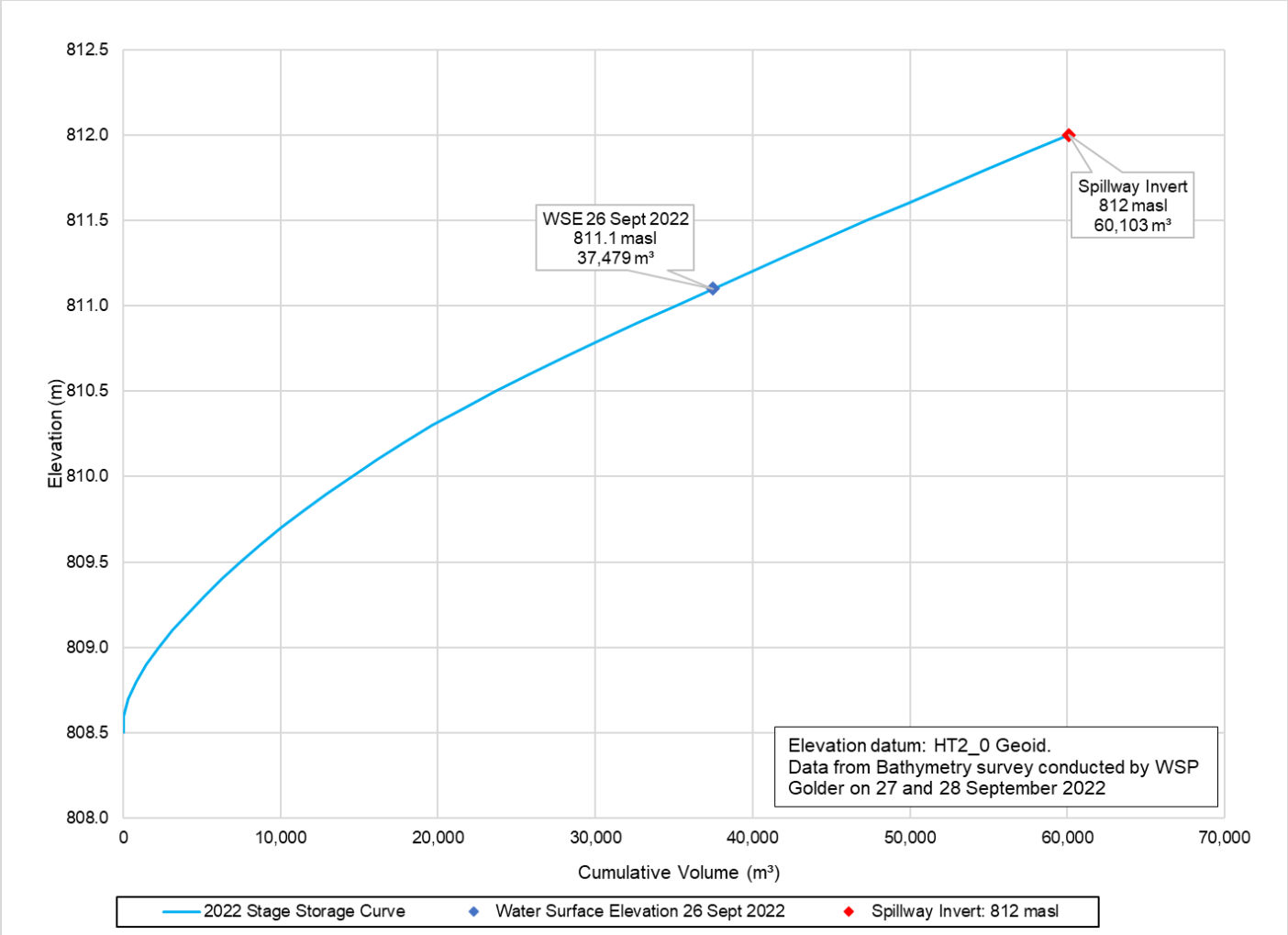

Figure 9 : Stage-Storage Curve of the Control Pond

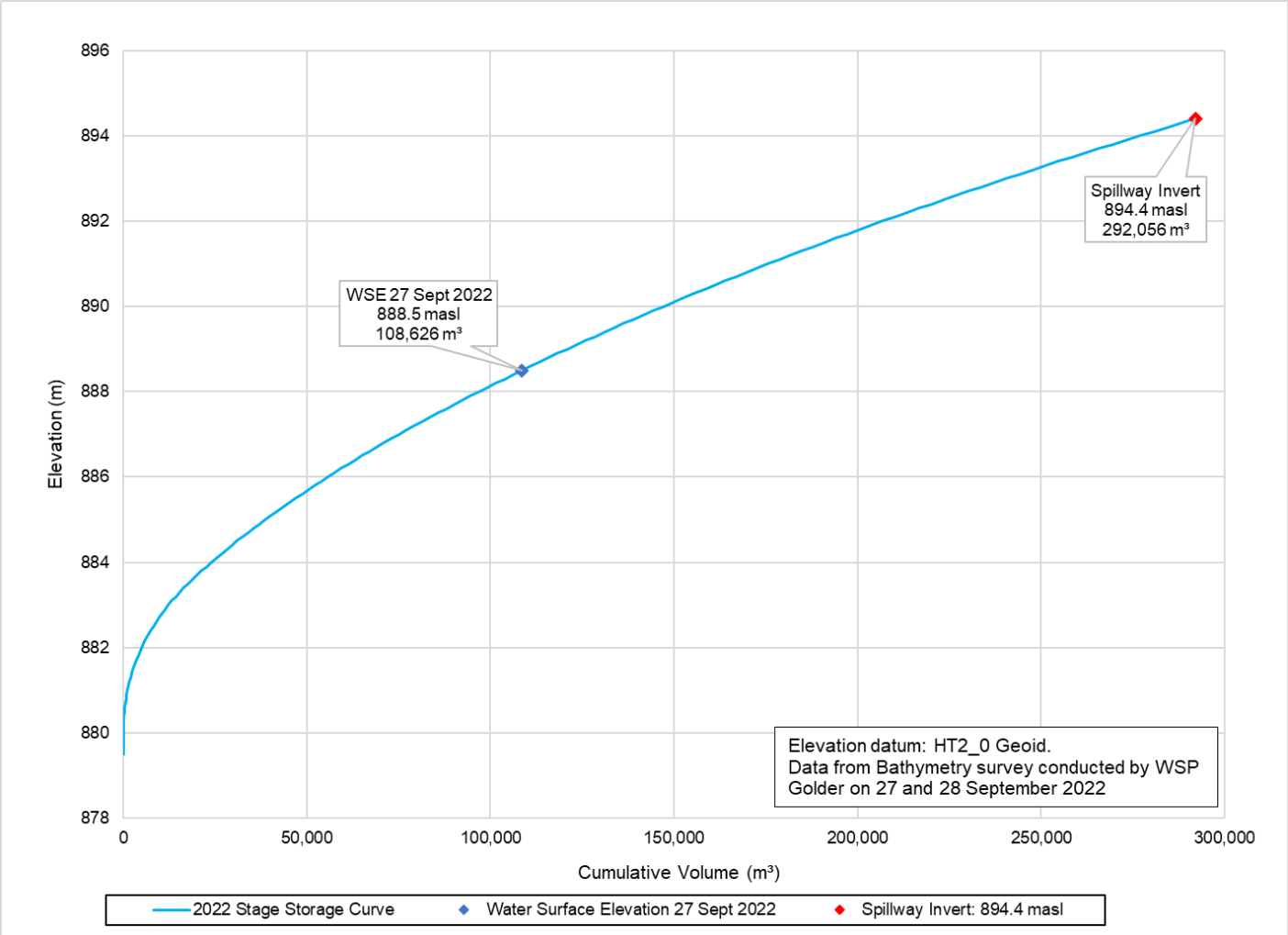

Figure 10 : Stage-Storage Curve for the Event Pond

4.0 DIGITAL DELIVERABLES

The following deliverables are provided for both the Event Pond and Control Pond:

- 0.5 m resolution elevation (m) raster surface (.tif format) of the merged surface from the bathymetric survey data and June 2022 topography.
- 0.5 m interval elevation (m) contours (.shp and dxf format) of the merged surface from the bathymetric survey data and June 2022 topography.

All data are provided in UTM NAD 83 Zone 8N. All elevations are provided in the HT2_0 geoid.

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5.0 CLOSURE

The reader is referred to the Study Limitations section, which follows the text and forms an integral part of this memorandum.

If you have any questions, please contact the undersigned.

Golder Associates Ltd.

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DRAFT

https://golderassociates.sharepoint.com/sites/165816/project files/6 deliverables/1 - survey and stage-storage memorandum/22537365 - vgcx_egm bathymetry survey and storage curves reva.docx

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BGC Engineering Inc. (BGC). 2019. Event Pond As-built Drawing dated 04 November 2019. PDF provided by EGM on September 28, 2022. CAD file *"100-309-ASB-EVENT_POND_ES_MS.dwg"* provided by EGM on 28 September 2022.

Tetra Tech. 2018. Lower Dublin South Pond As-built Drawing dated 29 January 2018. PDF provided by EGM on September 28, 2022. CAD file *"20171206_Contol Pond AB.dwg"* provided by EGM on 28 September 2022.

Victoria Gold Corp. (VGCX). 2022a. Pond Imagery. File Name: *2022-06-09 Site Flight – Ponds ORTHO 10cm.tif* Provided September 6, 2022. Survey completed June 29, 2022.

Victoria Gold Corp. (VGCX). 2022b. Pond topography. File Names: "*2022-06-29 Control Pond.xml", "2022-06-29 Event Pond.xml", "2022-06-29 Pond Contour.las"*. Provided September 6, 2022. Survey completed June 29, 2022.

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VICTORIA GOLD CORP

EAGLE GOLD PROJECT

WATER LICENCE QZ14-041-01

QUARTZ MINING LICENSE QML-0011

2022 ANNUAL REPORT

GROUNDWATER AND REMAINING APPENDICES

APRIL 2023

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Appendix BB	2022 Groundwater Quality Data Gold
Appendix CC	Eagle Gold Mine WRSA and Pit EOR Sign Off
Appendix U	1370 Cover Trial Monitoring Report

1 INTRODUCTION

This document is intended to provide the information required by the Type A Water Use Licence QZ14-041-1 and the Quartz Mining Licence QML-0011 for the 2022 groundwater monitoring program and other supporting third-party reports that were unavailable at the time of the initial submission. All other program information required by QZ14-041-1 and QML-0011 have been provided under separate cover on April 1, 2023.

2 SITE ACTIVITIES

2.1 Overview of Construction and Maintenance

2.1.1 Summary of Construction Activities

2.1.1.3 Heap Leach Facility

The discussion provided in the 2022 Annual Report submitted on April 1, 2023 includes relevant details for the construction activities related to the HLF in 2022. This document provides the referenced Appendix only (Appendix A).

3 ENVIRONMENTAL MONITORING

3.4 Groundwater

The Dublin Gulch basin, which is part of the Haggart Creek basin, contains the majority of the Mine footprint. Several hydrogeologic zones, such as Eagle Pup, Ann, Suttles, Olive, Bawn Boy, Platinum, and Dublin Gulches, are used to characterize the groundwater in the area. To monitor potential effects on the groundwater flow system resulting from the operation of facilities, a groundwater monitoring program was initiated during the baseline monitoring and continue through the construction phase into operations. In 2022, the program continued with a focus on specific spatial zones where facilities were constructed and operated. The monitoring program involved quarterly sampling and water level measurements at various locations, as detailed in Table 3.4-1 and shown in Figure 3.4-1. Additionally, all wells where water level and/or water quality data are presented in Appendix AA or depicted in Figures 3.4-2 to 3.4-9 are also listed in Table 3.4-1.

The wells monitored during 2022 include the following hydrogeologic zones:

- Heap Leach Facility (Ann Gulch catchment) and the Events Pond,
- Eagle Pup WRSA (Eagle Pup catchment),
- Platinum Gulch WRSA (Platinum Gulch catchment),
- Olive and Bawn Boy Gulches (Upper Dublin Gulch catchment), and
- Lower Dublin South Pond Area (Lower Dublin Gulch valley).

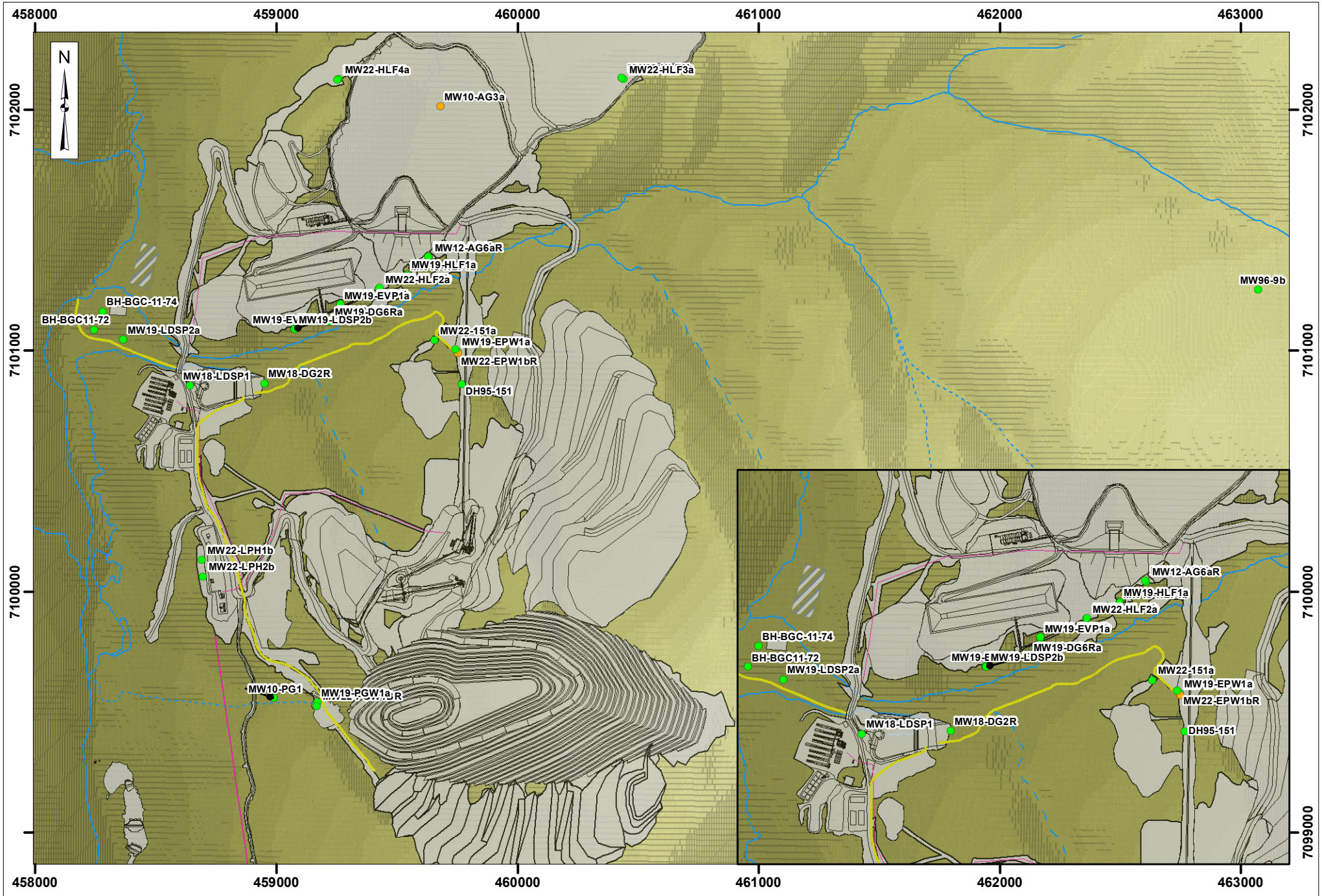
In October 2022, additional wells were installed near major facilities such as the HLF, Eagle Pit, the Platinum Gulch WRSA and the MWTP solids disposal cell area. The well development process was completed by December 2022, with some wells being installed as replacements for damaged or decommissioned wells during the development phase. No groundwater wells were decommissioned during the reporting period in 2022.

Table 3.4-1: Groundwater Well Monitoring 2022

Well ID	Suite	Quarter				Comments
		Q1	Q2	Q3	Q4	
Heap Leach Facility (Ann Gulch Valley) and Events Pond						
MW10-AG3a	WL1, EGW, FGW	X	X	X	X	Decommissioned in 2019 (not in BGC 2023)
MW10-AG6	WL2, EGW, FGW	X	X	X	X	Replaced by MW22-AG6aR in 2022 (not in BGC 2023)
MW22-AG6aR	WL2	X	X	X	No	Still in development (not in BGC 2023
MW22-AG6b	WL2	X	X	X	No	Not enough water to sample
MW19-EVP1a	WL2, EGW, FGW	Dry	Dry	Dry	Dry	
MW19-EVP1b	WL2, EGW, FGW	Yes	Yes	Dry	Dry	Not enough water to sample
MW19-EVP2a	WL2, EGW, FGW	Dry	Dry	Yes	Dry	Not enough water to sample
MW19-EVP2b	WL2, EGW, FGW	Yes	Yes	Yes	Yes	
MW10-DG6	EGW, FGW	No	No	No	No	Replaced by MW19-DG6a/bR in 2019 (not in BGC 2023)
MW19-DG6aR	WL1, EGW, FGW	Yes	Yes	Yes	Yes	
MW19-DG6bR	WL2, EGW, FGW	Yes	No	Yes	Yes	Q2 Well frozen

Well ID	Suite	Quarter				Comments
		Q1	Q2	Q3	Q4	
MW19-HLF1a	WL2, EGW, FGW	Dry	Dry	Dry	Dry	
MW19-HLF1b	WL1, EGW, FGW	Yes	Yes	Yes	Yes	
MW22-HLF2a	WL2, EGW, FGW	X	X	X	Yes	
MW22-HLF2b	WL2, EGW, FGW	X	X	X	Yes	
MW22-HLF3a	WL2, EGW, FGW	X	X	X	Dry	
MW22-HLF3b	WL2, EGW, FGW	X	X	X	Yes	
MW22-HLF4a	WL1	X	X	X	Yes	
MW22-HLF4b	WL2, EGW, FGW	X	X	X	Yes	Still in development
Lower Dublin South Pond Area (Dublin Gulch Valley)						
BH-BGC11-72	WL1, EGW, FGW	Yes	Yes	Yes	Yes	
BH-BGC11-74	WL2	No	Yes	Yes	Yes	Q1 well unavailable due to construction of MWTP
MW18-LDSP1	WL1, EGW, FGW	Yes	Yes	Yes	Yes	Not enough water to sample
MW18-DG2R	WL, EGW, FGW	Yes	Yes	Yes	Yes	
MW19-LDSP2a	WL2, EGW, FGW	Yes	No	Yes	Yes	
MW19-LDSP2b	WL1, EGW, FGW	No	No	Yes	No	Not enough water to sample
FD-BH22-02	WL2	X	Yes	Yes	Yes	
FD-BH22-13B	WL2	X	Yes	Yes	Yes	
Eagle Pup WRSA (Eagle Pup Valley)						
MW95-151	WL2, EGW, FGW	Yes	Yes	Yes	Yes	
MW22-151A	WL2, EGW, FGW	X	X	X	Yes	
MW19-EPW1a	WL1, EGW, FGW	Yes	Yes	Yes	Yes	
MW19-EPW1b	WL1, EGW, FGW	No	No	No	No	Well damaged/decommissioned in 2022. Replaced by MW22-EPW1bR in 2022
MW22-EPW1bR	WL1, EGW, FGW	X	X	X	Yes	Replaced damaged well
Platinum Gulch WRSA (Platinum Gulch Valley)						
MW10-PG1	WL1, EGW, FGW	Yes	Yes	Yes	Yes	
MW19-PGW1a	WL2, EGW, FGW	Yes	Yes	Yes	Yes	
MW22-PWW1bR	WL2, EGW, FGW	X	X	X	Yes	
Land Treatment Facility/Incinerator/Low pH Sludge Storage						
MW22-LPH1b	WL2, EGW, FGW	X	X	X	Yes	
MW22-LPH2b	WL2, EGW, FGW	X	X	X	Yes	
Upper Dublin Gulch Basin (Bawn Boy Gulch Valley)						
MW96-9B	WL1, EGW, FGW	Yes	Yes	Yes	Yes	

Notes:
WL1 - water level manual
WL2 - water level, automated data logger
EGW - external lab analyses, full suite (dissolved metals)
FGW - in field: pH, conductivity, temperature;
X – well not established or decommissioned; MW95-151 previously recorded as MW96-15b; The following wells listed in QZ14-041-1 have been decommissioned, were reported on in previous Annual Reports but are not reported on herein: BH-BGC11-73/a/b/c, PW-BGC11-02, MW96-13a/b and MW96-14.



Legend:

- Facility
- Site Power
- Major Ditch
- Reserved
- 2022 Monitoring Wells
- Decommissioned Wells
- Watercourse - Perennial
- Watercourse - Ephemeral
- Watercouse - Intermittent

VICTORIA GOLD CORP

0 125 250 500
Metres

Projection:	Drawn By:
NAD 83 UTM Zone 8N	HC
Date:	Figure:
2023/04/14	3.4-1

EAGLE GOLD MINE
YUKON TERRITORY

Groundwater Monitoring Locations

3.4.1 Groundwater Quantity Monitoring

The primary objective of the groundwater quantity monitoring program is to provide continuous and spot level groundwater level measurements, which help to monitor potential effects of the Project on the occurrence and quantity of groundwater. Since 2009, groundwater level data have been collected from the wells and piezometers installed throughout the project footprint. To gain a better understanding of seasonal variability in areas of current and planned infrastructure, continuous recording data loggers have been used at various locations on site.

In 2022, instantaneous groundwater level and continuous water level data logger information were collected and compiled by BGC (2023). This data is depicted in hydrograph plots of groundwater elevations measured for each monitoring well since their respective installation. The data compilation and analytical methods used to process the groundwater level data are described in BGC 2023 and provided as Appendix AA.

As described in previous reports (Stantec 2012, BGC 2013, and BGC 2014), and for the 2018-2022 Annual Reports the well network hydrographs have demonstrated some range in seasonal variability (since 2009), with fluctuating water elevation generally being less than 2m throughout the year. The available data indicate that the groundwater table generally mimics the surface topography, with recharge along topographic highs, and discharge along creeks and gullies. Seasonal groundwater level fluctuations typically peak in the spring (e.g., MW96-9B) and the groundwater levels recorded in 2022 generally reflect similar trends to previous years. In 2020 precipitation gauges were updated and rain gauges were replaced with all season precipitation gauges. These changes should be noted when reading the BGC hydrographs in Appendix AA. The hydrographic data presented in Appendix AA do not indicate any increasing or decreasing trends or measurable effects from mining activities on groundwater levels.

3.4.2 Groundwater Quality Monitoring

The groundwater quality monitoring program is conducted in conjunction with the groundwater quantity monitoring program. Water quality samples are taken on a quarterly basis, as summarized in Table 3.4-1. This allows for the tracking of changes in groundwater quality over time and for the identification of any potential impacts resulting from Project activities.

The discussion on groundwater quality in this report has been broken into four spatial areas to align with the major facility footprints that include: HLF and Events Pond (Ann Gulch valley), the LDSP area (or lower Dublin Gulch valley), the Platinum Gulch WRSA (or Platinum Gulch valley) and the Eagle Pup WRSA (or Eagle Pup valley). Parameters discussed herein were previously identified as parameters of concern based on prior environmental characterization work (Stantec 2010; Stantec 2011, CoreGeo 2017), were also considered in the 2020 and 2021 annual reports, and include: pH, aluminum, arsenic, cadmium, copper, lead, iron and selenium. Lab results reported as less than MDL have been reported in the figures below as half the less-than-value. Detailed results are available in Appendix BB.

3.4.2.1 Heap Leach Facility and the Events Pond (Ann Gulch valley)

Groundwater quality data for wells within the Ann Gulch drainage (which is the location for the HLF and Event Pond) are provided in Figure 3.4-2 and Figure 3.4-3 for the period of 2010 through 2022. The active wells monitored for groundwater quality in Ann Gulch include: MW19-DG6bR, MW19-DG6aR, MW19-EVP2b and MW19-HLF1B. Historic wells MW10-AG6, MW10AG3A, MW10-DG6 have been included as a reference to baseline conditions. Due to construction activities, MW10-DG6 was decommissioned and replaced with the couplet wells MW19-DG6a/bR. MW10-AG3A and MW10-AG6 were decommissioned due to the construction of

the HLF. The other wells in this basin (MW22-HLF2a/b, MW22-HLF3a/b, and MW22-HLF4a/b) were recently installed and have only one data point, so are not depicted in the Figures at this time.

Parameter observations include the following:

- While there are lots of fluctuations of values for all parameters, at this time there are no meaningful long-term increasing or decreasing trends in values for any of the parameters, although in some instances (e.g., Cd and Pb concentrations decreasing in MW19-DG6aR perhaps due to a longer period to fully develop the wells, and Se concentrations increasing in MW19-HLF1b) there appear to be some minor short-term trends, which require additional years of monitoring to validate.
- pH has remained neutral to slightly basic for the duration of the monitoring program except MW19-EVP2b, which at times was slightly acidic. MW19-EVP2b and MW19-DG6RA show the greatest variability.
- Aluminum levels across all wells ranged almost four orders of magnitude. However, for each well, fluctuations generally remained within one or two orders of magnitude.
- Arsenic levels are relatively stable with the wells being split between two general concentrations; MW10-DG6, MW19-DG6R and MW19-DG6RB are all over 1mg/L arsenic. While MW10-AG6, MW10-AG3A and MW19-HLF1B have much lower concentrations (0.01 – 0.1 mg/L) in comparison. Concentrations in MW19-EVP2b are between these two groups. There is a slight decreasing trend for MW19-HLF1b.
- For all the wells cadmium concentrations fluctuate between two and three orders of magnitude, while some of the individual wells exhibit less overall fluctuation. Cadmium was often reported at less than the detection limit for some of the wells. MW19-HLF1B and MW19-EVP2b have exhibited a decreasing trend (to the method detection limit) over time.
- Copper concentrations at all wells have a variability of approximately two to three orders of magnitude over time, with some wells with only one order of magnitude variability, while many samples were at or near the method detection limit (0.00020 mg/L).
- Iron has overall high variability among all well locations (between four and five orders of magnitude), but individual wells have very consistent results over time.
- Except for MW19-EVP2b (with almost three orders of magnitude variability), for each well lead concentrations generally fluctuate only one order of magnitude and concentrations are often close to or at the MDL. MW19-EVP2b appears to demonstrate a decreasing trend since well installation, which may reflect that it took a couple years to become fully developed.
- For all the wells, selenium concentrations fluctuate within two orders of magnitude. Most of the wells exhibit fairly stable conditions, some recording values at the method detection limit. MW19-HLF1B appears to show an increasing trend over time.

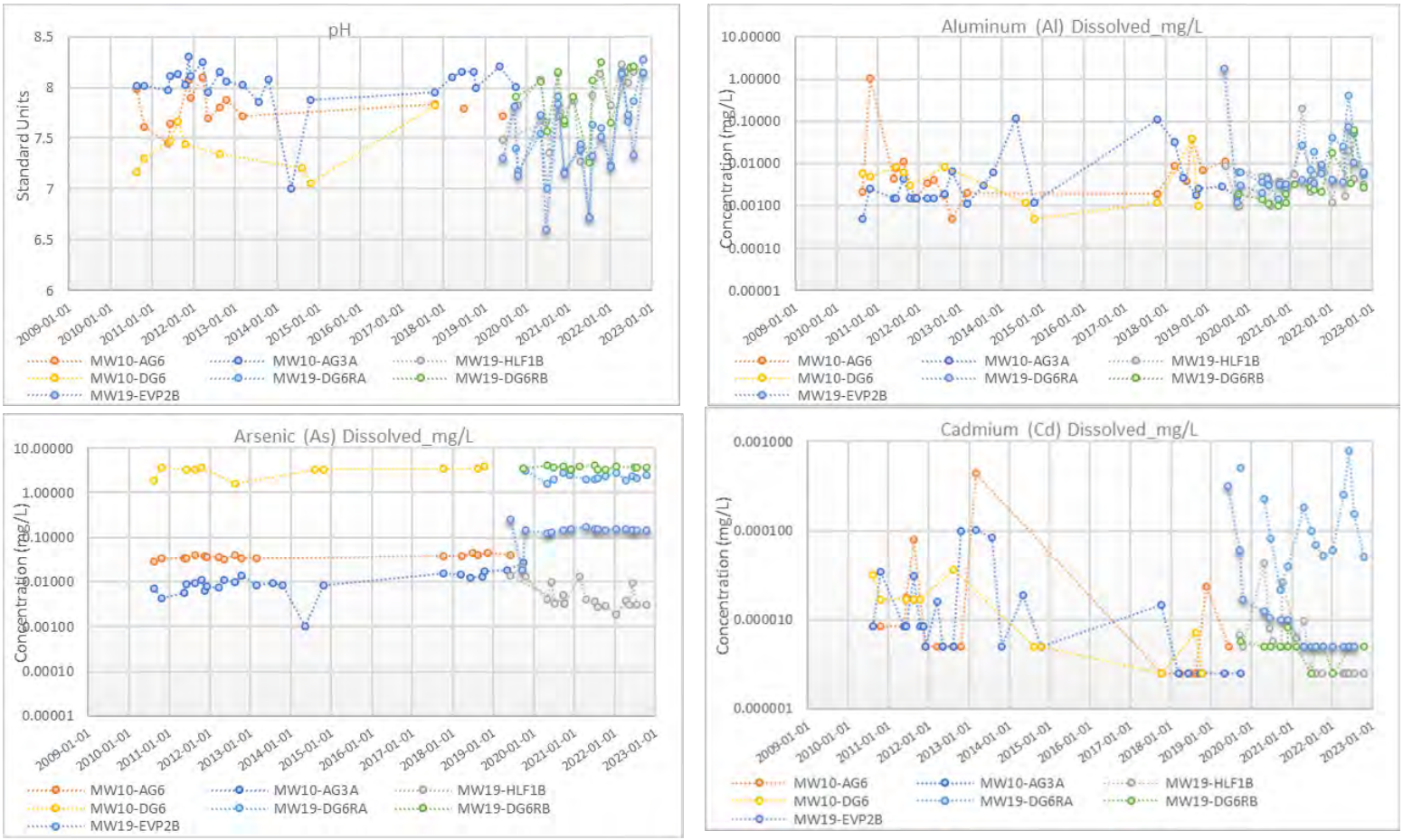


Figure 3.4-2: Heap Leach Facility (Ann Gulch valley) and Events Pond Groundwater Quality Data for pH, Aluminum, Arsenic and Cadmium

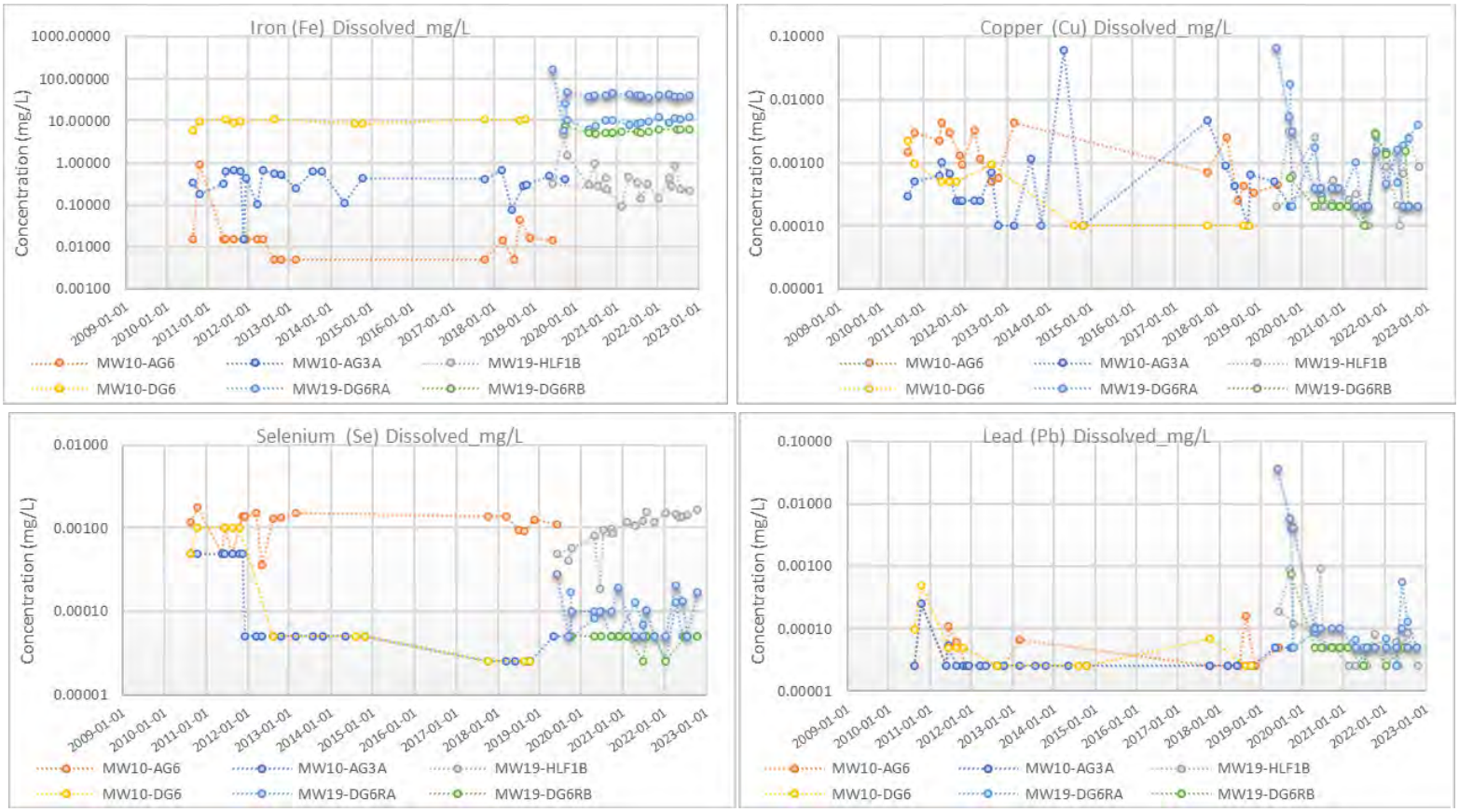


Figure 3.4-3: Heap Leach Facility (Ann Gulch valley) and Events Pond Groundwater Quality Data for Copper, Iron, Selenium and Lead

3.4.2.2 Lower Dublin South Pond Area (Lower Dublin Gulch Valley)

Groundwater data for the well network in the area of the LDSP is provided in Figure 3.4.4 and Figure 3.4.5. The wells considered include BH-BGC11-72, BH-BGC11-74 MW10-OBS1, MW19-LDSP2A, MW19-LDSP2B and MW18 DG2R. The data set for this area consists of groundwater quality data from 2017 through 2022. MW10-OBS1 was replaced with MW19-LDSP2A in 2019 and is no longer monitored on a quarterly schedule. MW18-LDSP1 has been monitored regularly but has had insufficient water in the well to collect samples.

Parameter observations include the following:

- pH is consistently neutral to slightly basic across all wells. BH-BGC11-72, BH-BGC11-74 and MW19-LDSP2A all had similar ranges of pH values throughout 2022.
- MW19-LDSP2b and BH-BGC11-72 had anomalously high concentrations in 2019. Except for 2019, all wells have exhibited a low variability of aluminum concentrations (within 0.001 to 0.1 or one to two orders of magnitude) throughout 2022. Stations show similar trends through each quarterly sampling event.
- Arsenic concentrations range over four orders of magnitude for the LDSP area wells. However, from 2020-2022, concentrations have been very consistent at or near MDL (0.010 to 0.020mg/L) for BH-BGC11-72, BH-BGC11-74 and MW19-LDSP2A.

- Cadmium concentrations range from 0.00001 mg/L to 0.001 mg/L across all stations. Over the data collection period, there appears to be a downward trend to the MDL in cadmium concentrations for all stations.
- Taken collectively, copper concentrations have ranged over three orders of magnitude but show an apparent downward trend for most of the stations with concentrations near or at 0.0002mg/L (MDL)..
- Iron concentrations have ranged over four orders of magnitude for the sx wells in this area. However, since 2020, iron concentrations at BH-BGC11-72, BH-BGC11-74 and MW19-LDSP2A have had very consistent values over the monitoring period, with no discernable upwards or downward trends.
- Lead concentrations have displayed a large variability over the entire dataset but appear to have an overall downward trend since 2019. 2022 samples for the three sampled wells were close to or at MDL (0.0000050mg/L)
- Selenium concentrations have exhibited between one and two orders of magnitude variability for wells in this area. Concentrations are stable with 2022 samples being at MDL throughout the year (0.000050mg/L).

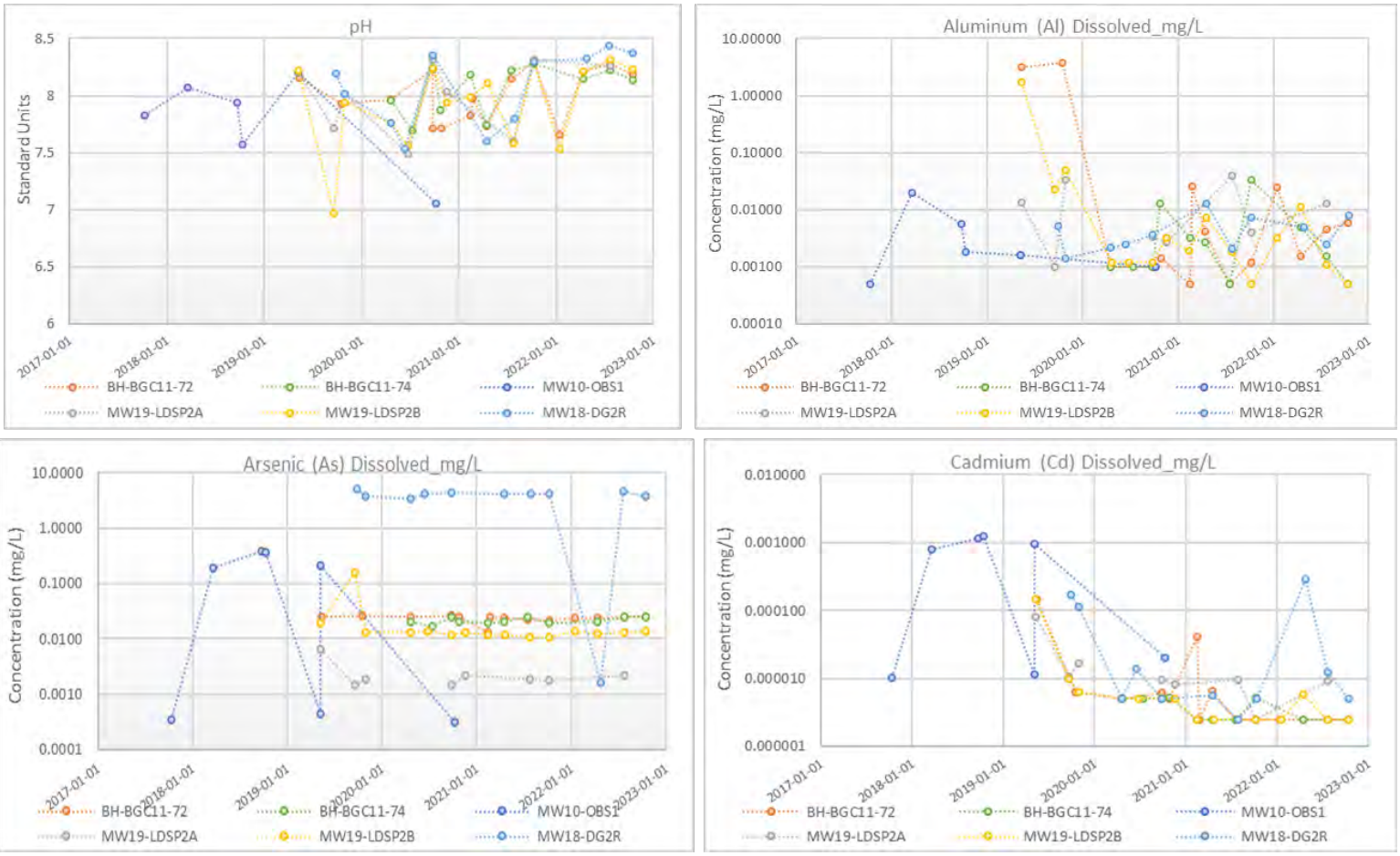


Figure 3.4-4: LDSP Area (Lower Dublin Gulch Valley) Groundwater Quality Data for pH, Aluminum, Arsenic and Cadmium

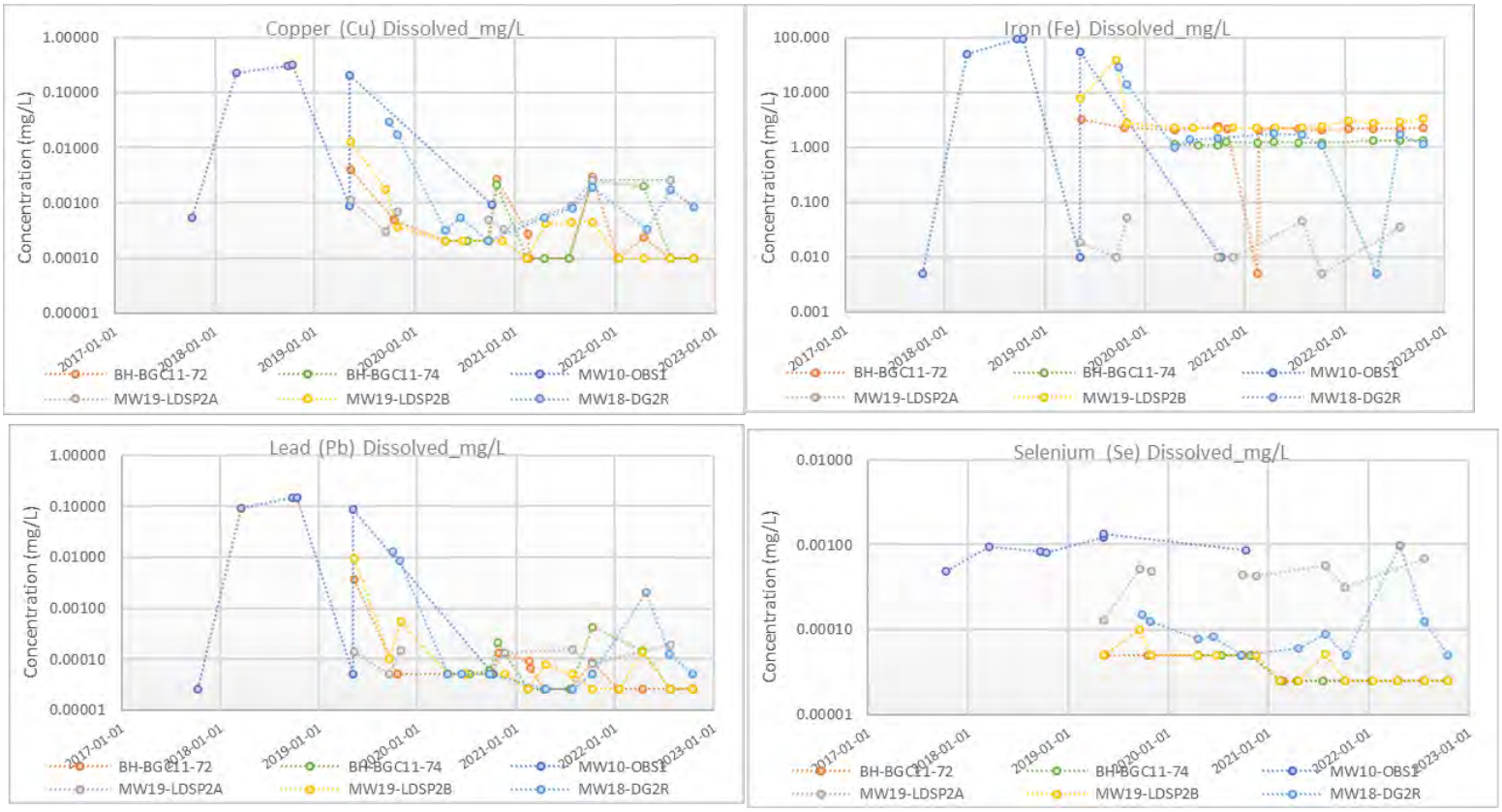


Figure 3.4-5: LDSP Area (Lower Dublin Gulch Valley) Groundwater Quality Data for Copper, Iron, Lead and Selenium

3.4.2.3 Platinum Gulch WRSA (Platinum Gulch Valley)

The 2022 drill program included a redrill of MW19-PGW1B that was damaged in 2019. The new well (MW22-PGW1Br) was developed in Q4 2022 and will be included in the 2023 groundwater monitoring program. The two functional wells in the Platinum Gulch valley (MW10-PG1 and MW19-PGW1A) were monitored quarterly in 2022. Water quality results are outline in Figures 3.4.6 and Figure 3.4.7.

Parameter observations include the following:

- pH has remained neutral to slightly basic over the three years of data collected. Both stations have similar trendlines over the collection period.
- Aluminum concentrations at MW10-PG1 and MW19-PG1A have a range of approximately one order of magnitude from 2019 to present with no increasing or decreasing trends.
- Arsenic concentrations at both well appears to be relatively stable with one spike in recorded in Q2 2022 at MW19-PG1A. MW10-PG1 continues to exhibit the highest arsenic concentrations of all the wells monitored since 2009, fluctuating from 8-9 mg/L throughout the period.
- Cadmium concentrations at both stations show an apparent overall downward trend over the 3 years with MW10-PG1 being at MDL for all samples collected in 2022.

- Copper concentrations at both stations showed stable concentration throughout 2022, with MW19-PGW1A being one order of magnitude below MW10-PG1.
- Iron concentrations have remained relatively stable over two years with the exception of a spike in a MW19-PGW1A sample collected on April 26, 2022 (coinciding with the arsenic spike). This was two orders of magnitude greater than the previous four samples.
- Lead concentrations for both MW10-PG1 and MW19-PG1A stations displayed a downward trend since 2019, while being at or near the MDL in the last two years.
- Selenium concentrations at MW19-PG1A display a relatively flat trend (except for an anomalously low value in April 2022, coinciding with the spikes in As and Al). Both wells exhibit sample results that are within two orders of magnitude of each other.

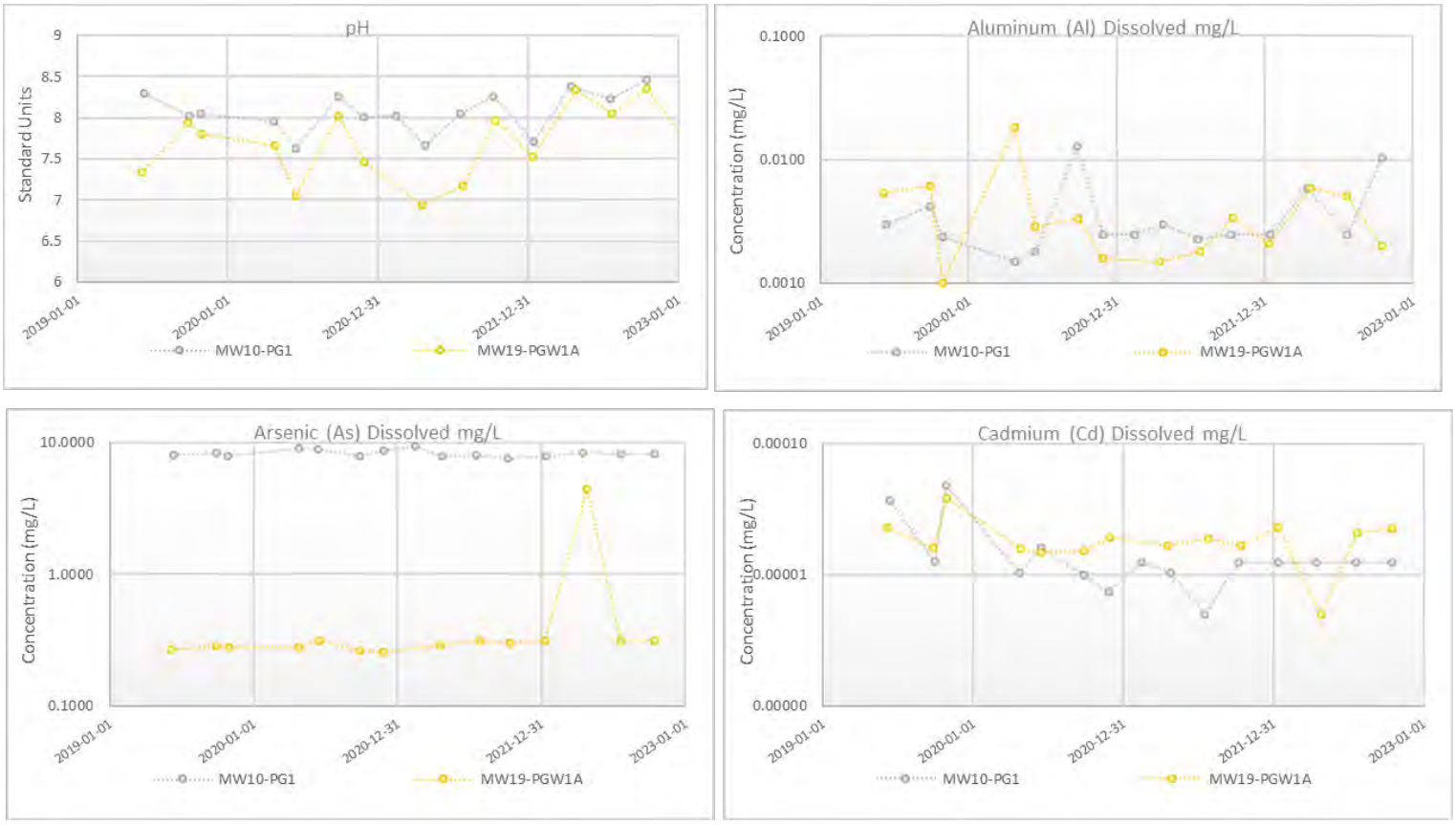


Figure 3.4-6: PG WRSA Area (Platinum Gulch Valley) Groundwater Quality Data for pH, Aluminum, Arsenic and Cadmium

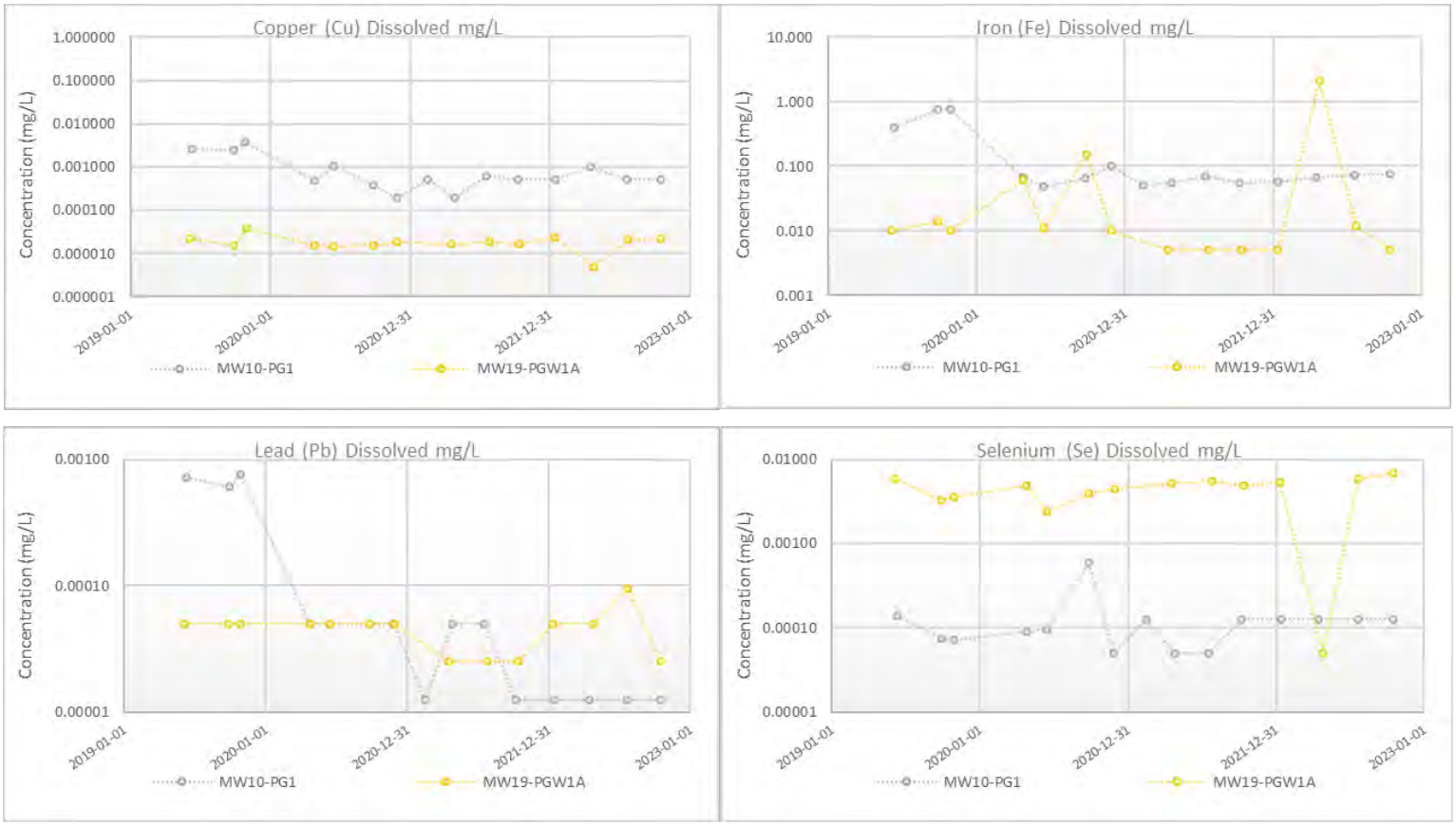


Figure 3.4-7: PG WRSA Area (Platinum Gulch Valley) Groundwater Quality Data for Copper, Iron, Lead and Selenium

3.4.2.4 Eagle Pup WRSA (Eagle Pup Valley)

Groundwater quality information has been gathered in the Eagle Pup drainage area at three locations since 2009 (MW96-13A, MW95-15[1] and MW96-13a). MW19-EPW1b and MW19-EPW1b was installed in 2019. MW19-EPW1b was damaged and decommissioned in 2020, and then replaced by MW22-EPW1bR in O4 2022.

- pH in the Eagle Pup drainage is neutral to slightly basic, with field measurement being within one standard unit of each other.
- Aluminum concentrations seem to have a variability fluctuation of one order of magnitude from 2009-2022, except for one anomalous spike in MW93-13a.
- Arsenic concentrations at MW95-151 shows a slightly increasing trend over 2022 and the background since 2009, while MW19-EPW1A shows a slight decreasing trend.
- Cadmium concentrations for the majority of the samples are within one order of magnitude, with an apparent decreasing trend since 2009 for MW95-151, and since 2014 for MW96-13a. MW96-13A has the highest variability over the dataset. Most samples taken in 2022 are close to or at MDL.

[1] MW95-151 was incorrectly labeled MW96-15b in previous reports

- Copper concentrations for all three wells are within two orders of magnitude, MW95-151 shows an apparent upward trend since 2009.
- Iron concentrations vary over three orders of magnitude for all the wells, while MW95-151 shows an upward trend in 2022. MW19-EPW1A has shown downward trends over the last three years
- Lead concentrations display a historic concentration range close to detection limits for MW95-151 and MW96-13A. MW19-EPW1A shows a decreasing trend from 0.00785 and 0.0005mg/L in 2022.
- Selenium concentrations at the three wells vary less than two orders of magnitude. Concentrations at MW96-13A have been measured at or near to the detection limit most of the time from 2009 to 2022. Concentrations of selenium in active sites remain around one order of magnitude from one another and each site have a very narrow range recorded over 3 years. There is an apparent decreasing trend since 2019 in MW95-151.

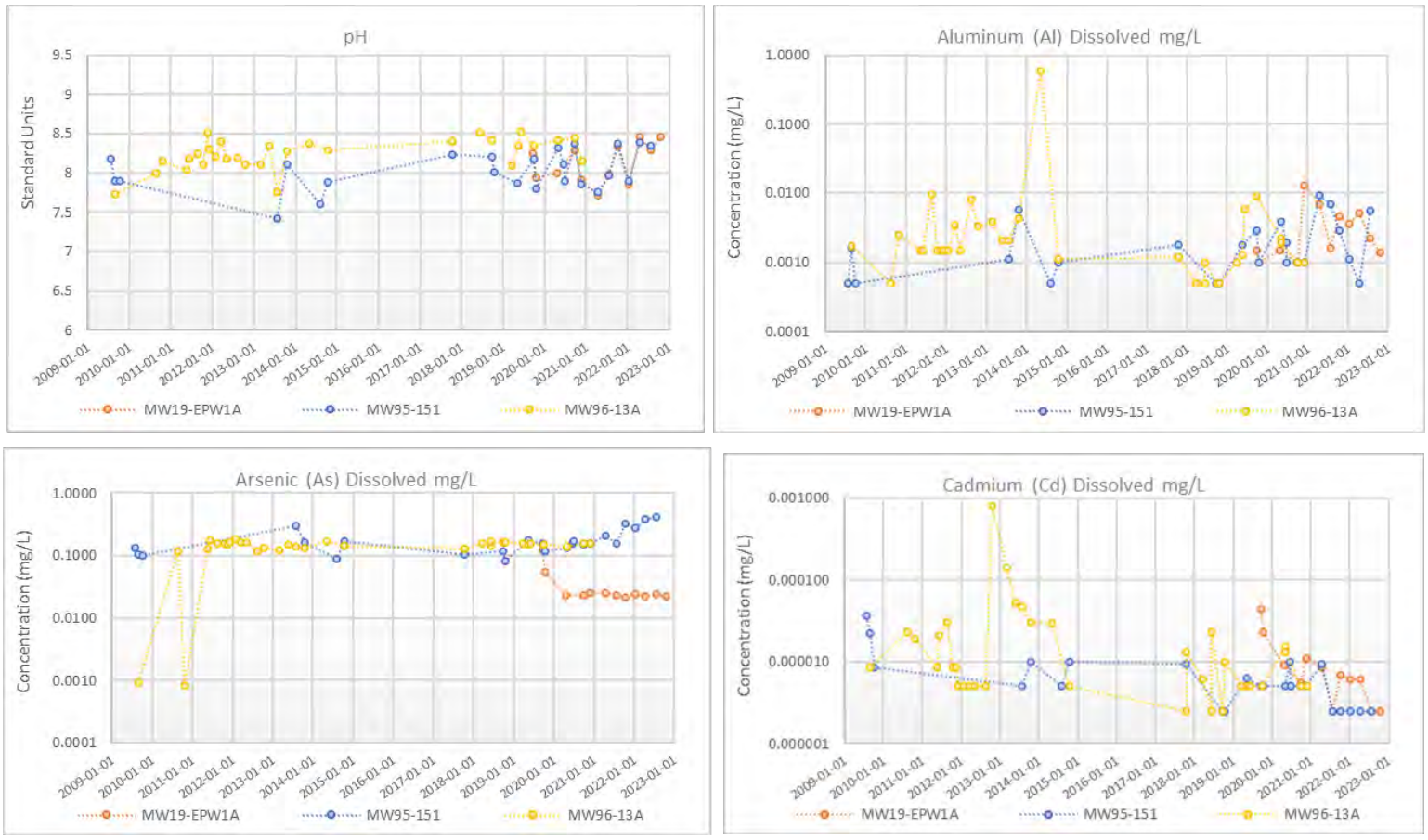


Figure 3.4-8: EP WRSA Area (Eagle Pup Valley) Groundwater Quality Data for pH, Aluminum, Arsenic and Cadmium

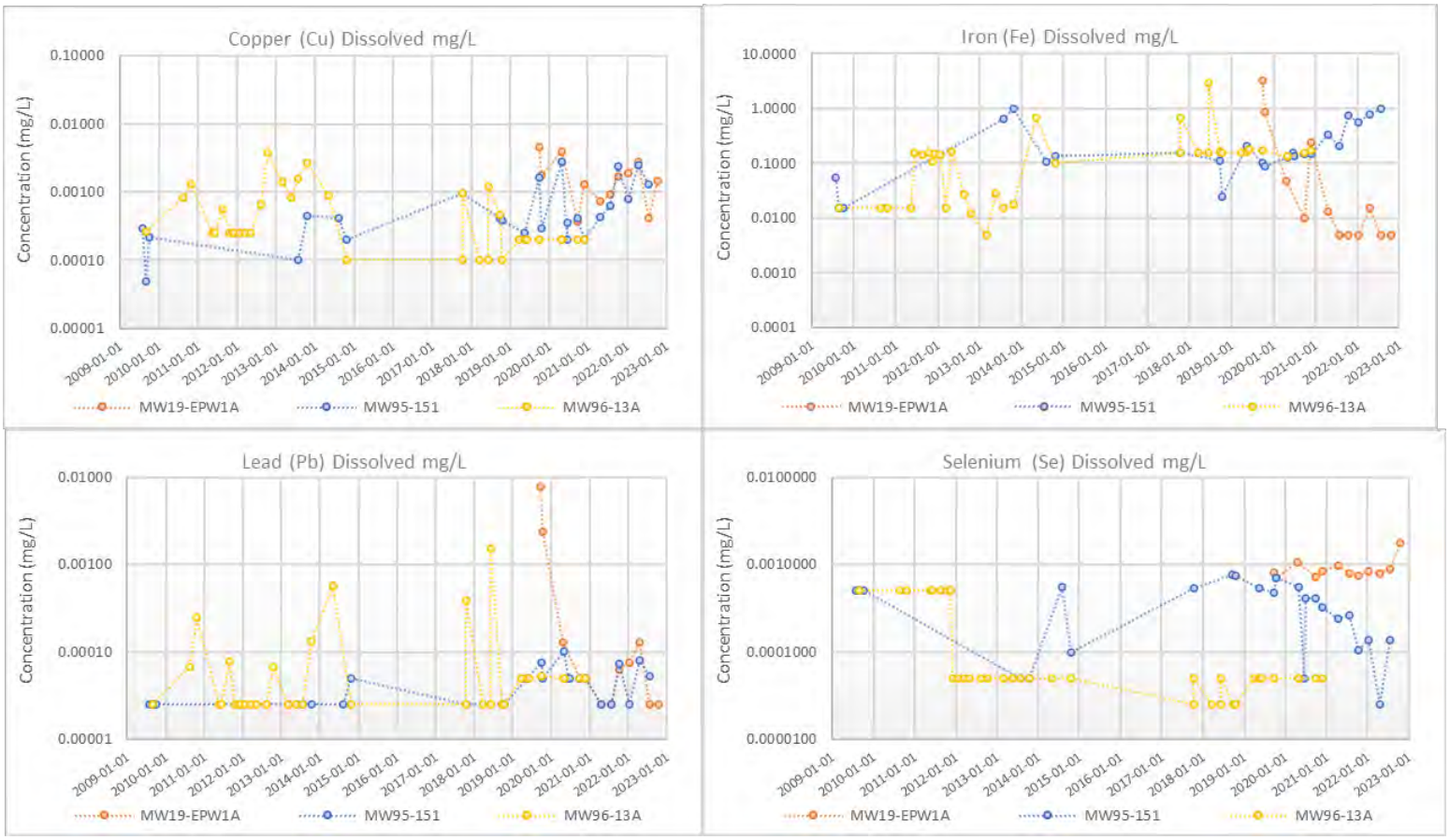


Figure 3.4-9: EP WRSA Area (Eagle Puo Valley) Groundwater Quality Data for Copper, Iron, Lead and Selenium

3.4.2.5 Bawn Boy Gulch (Upper Dublin Gulch Headwaters Area)

Beginning in 2019, efforts to gather information on groundwater quality have focused on the Bawn Boy Gulch drainage area, where a single monitoring well (MW96-9b) has been in operation since its installation in 1996. This well has been periodically monitored since its installation, with continuous water level recording beginning in 2011 (except for a brief period in 2017-2018). The pH level in MW96-9b is consistently neutral to slightly basic, as confirmed by field measurements that show consistency within one standard unit.

- Aluminum concentrations have varied within two orders of magnitude since 2019, with an apparent upward trend in the last two quarters of 2022.
- Arsenic concentrations at MW96-9b shows have been remarkably consistent ranging between 0.06 to 0.16 since 2019, with a possible slightly decreasing trend.
- Except for the first sample in early 2019, cadmium concentrations are within one order of magnitude.
- Copper concentrations appear to have steadily declined within two orders of magnitude since Q2 2019.
- Iron concentrations were initially relatively high (> 1 mg/L) in 2019, but since then have stayed much lower, between the MDL at 0.005 mg/L upwards to 0/05 mg/L.

- Similarly to iron, lead concentrations were initially relatively high (upwards to 0.004 mg/L), but since then have stayed between the MDL at 0.000025 mg/L upwards to 0.00016 mg/L.
- Selenium concentrations have remained relatively constant near or at the MDL since 2019.

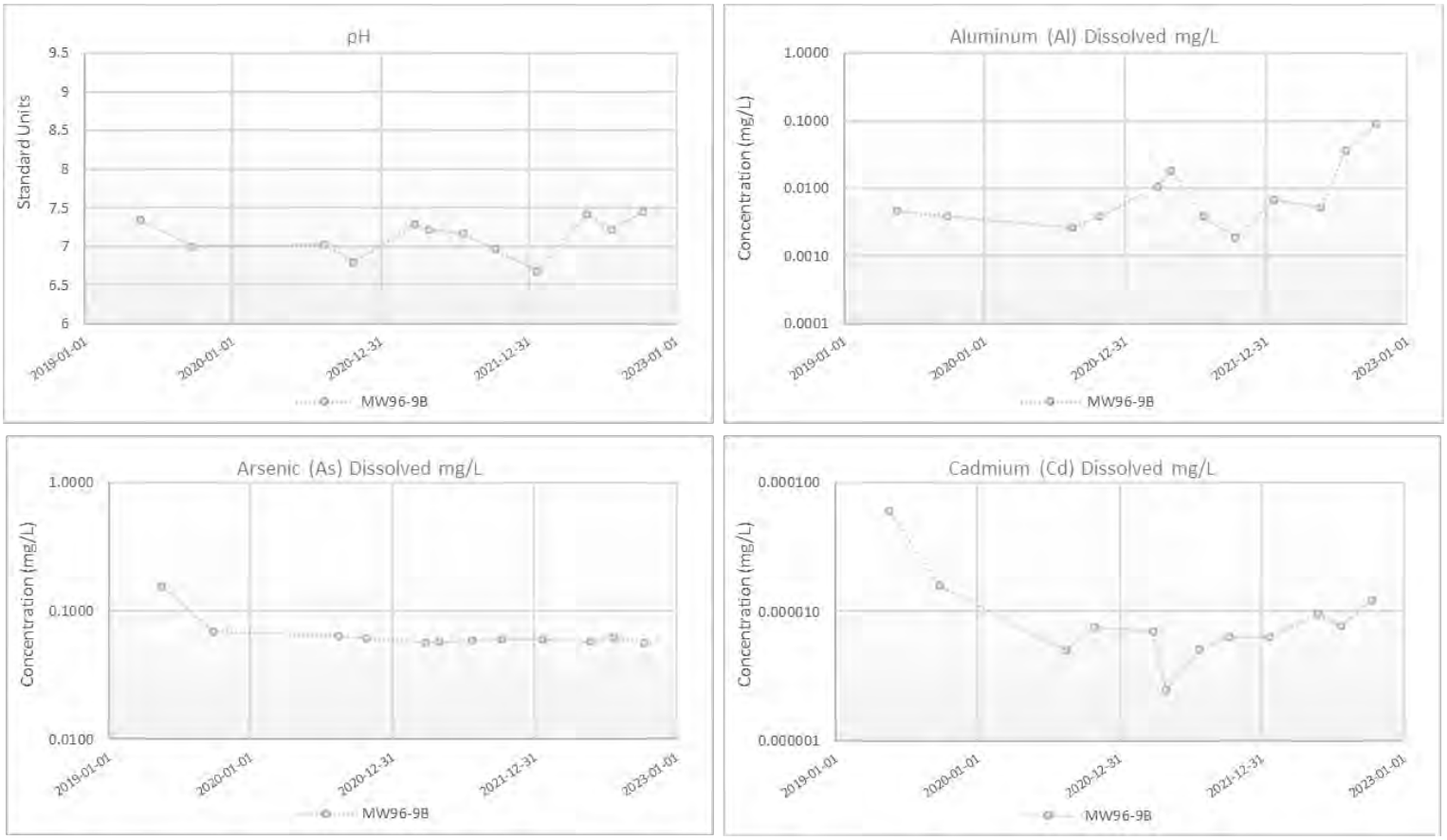


Figure 3.4-10: Bawn Boy Area Groundwater Quality Data for pH, Aluminum, Arsenic and Cadmium

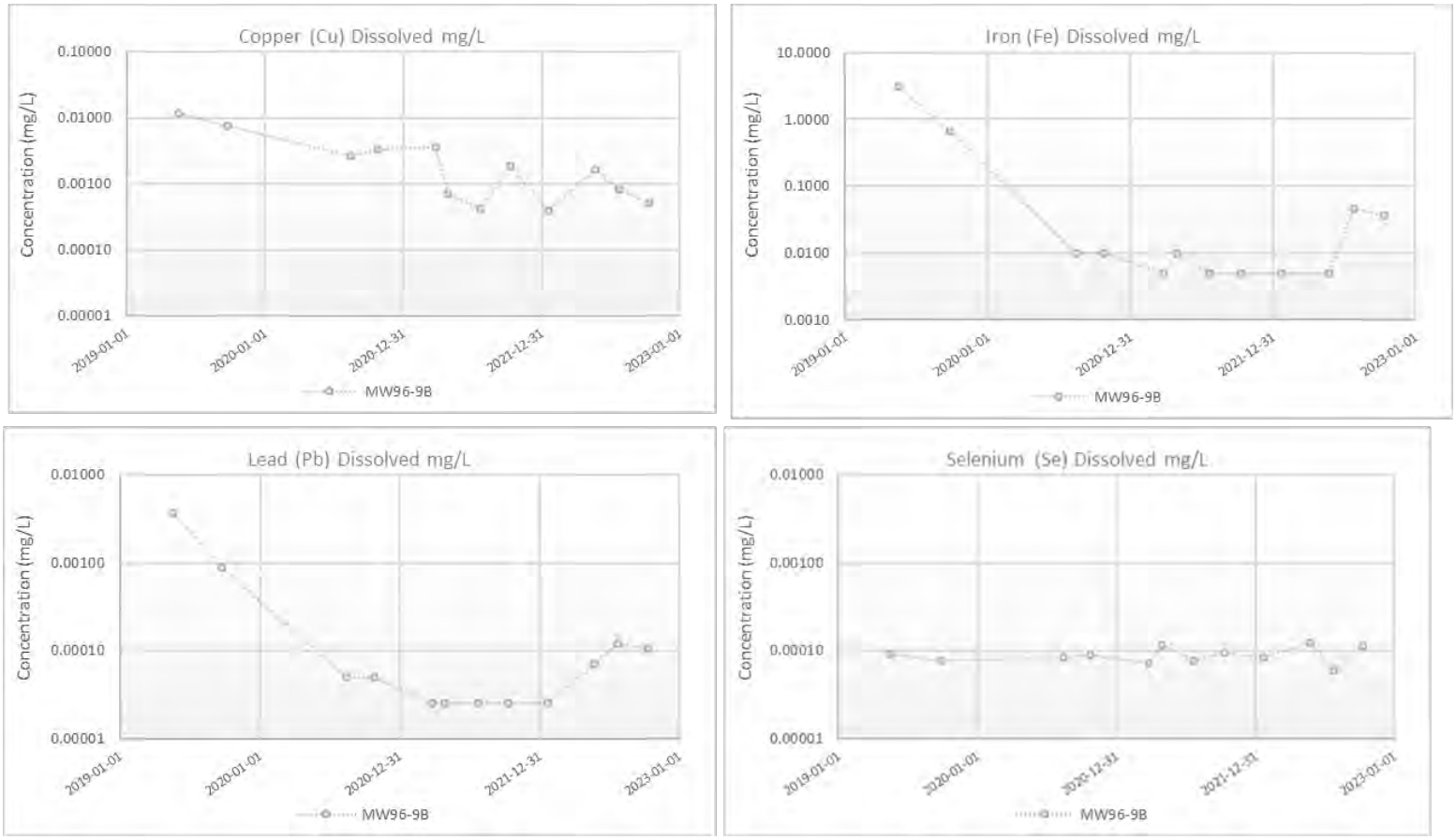


Figure 3.4-11: Bawn Boy Area Groundwater Quality data for Copper, Iron, Lead and Selenium

3.4.2.6 Groundwater Quality QA/QC

Additional samples were collected as part of VGC's QA/QC program. Additional samples can include duplicates (01), field blanks (02), and travel blanks (03)). The British Columbia Field Sampling Manual (Clark 2013) specifies that a relative percent difference (RPD) greater than 20 percent indicates a possible sample contamination. An RPD greater than 50 percent indicates a definite sample integrity problem; however, it is not unusual to find high variability for field duplicates, especially if the water is turbid, such as those typical of groundwater samples. Duplicate samples above 20% RPD are flagged in red. Field staff only collected duplicate samples in 2022 and no field blank information is available for 2022. This issue has been flagged and updated policies should mitigate this oversight in 2023.

3.4.3 Adaptive Management

3.4.3.1 Groundwater Quantity

As of 2022, the Mine site has completed its third year of production. Analysis of groundwater levels observed thus far indicates that the mine's construction and operation have had no significant impact on groundwater levels in the hydrogeologic basins located downstream of the major facilities, with the exception of the Eagle Pit area. This area is being actively depressurized to facilitate ongoing mining operations, and there have been some measurable changes in groundwater levels as a result. Additionally, some localized changes in groundwater levels

have been observed in areas where active production well pumping is taking place. However, there have been no discernible effects on groundwater levels within the mine's footprint that have required any adaptive management response to date.

3.4.3.2 Groundwater Quality

When considering dissolved concentrations for all eight parameters in each facility area, it is evident that there is a wide range of concentrations for most parameters, some exhibiting ranges over three to four orders of magnitude (i.e., arsenic ranges from 0.0003 in LDSP area wells to 9.5 mg/L in Platinum Gulch wells), and some hydrogeologic areas exhibit more variability than others (the LDSP area wells exhibit very high variability while the Eagle Pup valley wells exhibit substantially less variability. Nevertheless, except for the observation that dissolved metal concentrations are generally higher in bedrock wells (in both metasediments and granitic zones), there does not appear to be any obvious or consistent spatial connection to explain these characteristics. Further, aside from a few wells that exhibit either slightly increasing or decreasing trends over time for some parameters there are no discernible changes associated with the 2022 production phase of the operation. All observed increasing or decreasing trends were apparent before construction and operations began. It is expected that there will be seasonal changes to groundwater quality. VGC acknowledges that adaptive management thresholds still need further development.

4 PHYSICAL MONITORING

4.1 Eagle Pit

The discussion provided in the 2022 Annual Report submitted on April 1, 2023 includes relevant details for the monitoring and performance of the Eagle Pit in 2022. This document provides the annual certification of the Engineer of Record for the Eagle Pit only (Appendix CC).

4.2 Waste Rock Storage Areas

The discussion provided in the 2022 Annual Report submitted on April 1, 2023 includes relevant details for the monitoring and performance of the WRSAs in 2022. This document provides the annual certification of the Engineer of Record for the WRSAs only (Appendix CC).

6 RECLAMATION & CLOSURE

6.1 Reclamation Research

6.1.1 Waste Rock Cover Trials

The discussion provided in the 2022 Annual Report submitted on April 1, 2023 includes relevant details for the monitoring and performance of the 1370 Waste Rock Cover trial in 2022. This document provides the referenced Appendix only (Appendix U).

7 REFERENCES

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Victoria Gold Corp

Eagle Gold Mine

Eagle HLF Phase 2A Record of Construction Report

Project No. 109005E

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Revision	Date	Status	Prepared By	Checked By	Approved By
REV A	4/14/2023	Issued for Review	R. Morlan	C. Green	B. Carlson
REV 0	4/21/2023	Final	R. Morlan	C. Green	B. Carlson

STATEMENT OF REPORT

The report enclosed entitled “Eagle HLF Phase 2A Record of Construction Report” has been prepared for the exclusive use of Victoria Gold Corp (VGC). No third party shall be entitled to use this report without written consent of VGC and Forte Dynamics, Inc (Forte). The use of any and all information contained herein shall be at the sole risk of the user regardless of any fault or negligence of VGC or Forte.

This report has been prepared under the direct supervision of Clint Green, P.E. of Forte, with the assistance of Roy Morlan, P.G. and Jackson Burke of Forte, with input from Cody Roberts of JDS Mining Inc (JDS).

PERMIT TO PRACTICE
FORTE DYNAMICS, INC.
SIGNATURE
Date 4-21-2023
PERMIT NUMBER PP626
Association of Professional
Engineers of Yukon

Barry L. Carlson, PE

NV PE# 11251

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1. INTRODUCTION

This report provides the record of construction (ROC) for 2022 construction activities for the Heap Leach Facility (HLF) at the Eagle Gold Mine, located in Yukon Territory, Canada, owned and operated by Victoria Gold Corp. (VGC). The HLF is located approximately 1.2 km north of the Eagle Zone orebody. The HLF is located in the Ann Gulch catchment, a small ephemeral tributary to Dublin Gulch. The base of the HLF confining embankment is located just upstream of the confluence of Ann Gulch and Dublin Gulch at an elevation of 880 meters above sea level (masl). At full height in Phase 3, the HLF extends up Ann Gulch to an elevation of approximately 1225 masl (at the top of the planned ore stack) and will accommodate approximately 86 Mt of ore. The 2022 expansion consisted of a newly lined pad extension 105,367m^2 in surface area (Phase 2A) between elevation 1045m and 1105m.

The Phase 2A expansion was constructed in 2022 between March and October. Construction activities were completed under the supervise of JDS Energy and Mining (JDS). Earthworks were completed by Ewing Construction (Ewing) and geosynthetics were supplied and installed by Layfield Group Ltd. (Layfield). Layfield also performed and documented quality control (QC) for the liner installation. Construction quality assurance (QA) of the earthworks and liner system was performed by Tetra Tech. Surveying services were provided by Underhill Geomatics Ltd (Underhill). Forte's scope did not include construction and QA oversight of the PLS pipework and overliner drain fill (ODF) placement on the Phase 2 pad as this responsibility was with VGC personnel. However, these activities were performed and documented by VGC and JDS and are discussed in this report.

2. SCOPE OF WORK

The objective of the construction services for the 2022 HLF construction was to monitor the contractor's activities for compliance with the design criteria and project construction documentation requirements (Design Drawings, Specifications, QA and QC planning, site instructions, etc.). To meet these requirements, VGC employed several construction and engineering contractors, which is further discussed in this report. The purpose of this report is to provide a record of the construction activities, monitoring, and QA/QC activities performed. This report specifically documents:

- Construction Activities Performed
- Construction Criteria for Each Project Feature
- Site Organization and Responsibilities
- Overall QA/QC Plan Objectives and Requirements
- Construction Management Responsibilities and Structure
- QA/QC Test Results and Interpretation
- Record Drawings
- Construction Schedule
- Requests for Information (RFIs) and Their Responses
- Design Changes
- Daily Reports and Progress Photos

3. GENERAL PROJECT DESCRIPTION

3.1 Facility Location

The Eagle Gold Mine Site is in the center of the Yukon Territory about 350 kilometers north of the capital, Whitehorse, and approximately 45 kilometers north of Mayo, a small village on the Stewart River. The proposed project site is located within the Dublin Gulch/Eagle Creek watershed.

The currently operating heap leach facility (HLF) with a heap leaching pad footprint (HLP) of approximately 930,000 m^2 can accommodate 46,000,000 m^3 of ore and is located approximately 1.2 km north of the Eagle Zone orebody. Operation of the HLF began in 2019.

3.2 Major Project Features

3.2.1 Underdrain System

The HLF underdrain system provides for the collection and conveyance of subsurface water flows beneath the lined HLF Pad and Confining Embankment to limit upward pressure on the liner system and prevent the buildup of phreatic levels in the embankment fills. The HLF underdrain system consists of a network of lateral drains below the Pad area, finger drains below the In-Heap Pond and Confining Embankment, and an underdrain header pipe trench that extends from the toe of the Confining Embankment to the upper limit of the Phase 2A Pad. Flows in the underdrain system are conveyed to collector pipes that discharge to a monitoring vault at the downstream toe of the Confining Embankment. The vault is configured to allow for sampling of seepage flows for water quantity and is equipped with a system that can either pump return flows to the HLF for use as make up water or allow seepage to flow to the environment if discharge criteria are met.

3.2.2 HLF Pad Expansion

The Phase 2A Pad area was constructed for ore storage and leaching between elevations 1045m and 1105m. The design includes a composite liner system comprised of a geomembrane over geosynthetic clay liner (GCL), ODF and PLS recovery piping. The overall HLF design allows for future expansion of the Pad up the Ann Gulch drainage basin.

3.2.3 HLF Liner System

The HLF liner system was designed to contain PLS for recovery and to prevent the release of process solutions to the environment. The HLF single composite liner system within the Phase 2A footprint (and for the Phase 1B footprint above elevation 990m) consists of a geomembrane over a GCL. Within the In-heap Pond portion of the HLF, a mesh geogrid was placed between two geomembrane layers to act as a leak detection and recovery system all of which is also over a GCL layer. Leaks in the geomembrane would travel through this layer to the Leak Detection and Recovery Sump (LDRS) which is located at the bottom of the In-Heap Pond.

3.3 Site Conditions

3.3.1 Topography and Elevation

The HLF site topography is described as moderate to high relief, with ground elevation varying from approximately 880 to 1400 masl. The HLF is situated in the Ann Gulch drainage which is a first-order tributary to Dublin Gulch.

3.3.2 Climate and Hydrology

The property lies within the Mayo Lake–Ross River Eco-region in central Yukon. The area is characterized by a “continental” type climate, with moderate annual precipitation and a large temperature range. Summers are short and can be hot, while winters are long and cold with moderate snowfall. Rainstorms can occur frequently during the summer and may contribute 30% to 40% of the annual precipitation. Higher elevations are generally snow-free by mid-June. Freezing temperatures may occur at any time during the year, including summer or fall.

The mean annual temperature for the area is approximately -3°C, with an annual range of 63.5°C for the period of record. The estimated mean annual precipitation at the Eagle Gold site ranges from 350 mm to over 600 mm, depending on elevation. This climate description has been summarized from Stantec (2012b), Knight Piesold (2013) and Lorax (2017).

The hydrology of the region is generally characterized by large snowmelt runoff during the spring freshet, which quickly tapers off to low summer stream flows interspersed with periodic increases in flow associated with intense rainfall events (Stantec 2012).

3.3.3 Geology

Geologic conditions in the Dublin Gulch area have been strongly influenced by the geotectonic forces that produced the Eagle Zone deposit. The folding, faulting and plutonic activities have resulted in relatively weak rock mass with relatively poor mechanical properties. Further, with frost fracturing and permafrost common at the latitude of the project site, shallow subsurface processes and rock/soil characteristics are more complex (BGC 2019).

Overburden soils encountered on the sloping ground at the HLF site typically consist of a veneer of organic soils overlying a blanket of colluvium, which overlies weathered bedrock. Placer tailings (fill remainders of previous dredge mining operations) cover most of the valley bottom of Dublin Gulch, which is outside the footprint of the HLF (BGC 2019).

The bedrock encountered in the area is generally classified as metamorphosed sedimentary rock, with a variably deep weathering profile (BGC 2018). The intact rock strength of the encountered rock types is highly variable, ranging between R0 class (i.e., corresponding to < 1 MPa Unconfined Compressive Strength, UCS) and R4 (50-100 MPa UCS). The average intact strength is estimated to be approximately R2 (5-25 MPa UCS) in the metasedimentary rock, depending upon the degree of weathering, but with significant variability across the site (BGC 2019).

4. CONSTRUCTION MANAGEMENT STRUCTURE

JDS Energy and Mining (JDS) was retained to provide construction management services for Phase 2A. Layfield of Edmonton, Alberta was retained to provide the geosynthetics for the liner system, as well as install the geosynthetics and provide QC inspection of deployed liner. Ewing was retained as the earthworks construction contractor for Phase 2A. Their activities included installing the lateral and header drains, preparing the subgrade for geosynthetics placement, and assisting with liner deployment activities. Tetra Tech was retained to provide inspection services for header and lateral drain installation and to provide QA monitoring for the entire geosynthetics portion of the project. An organization chart is included as Figure 4-1.

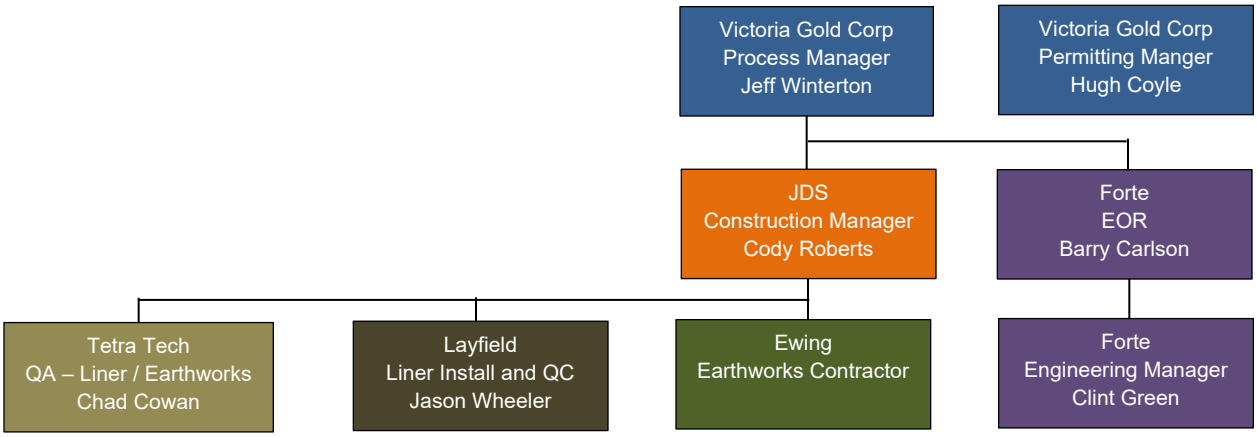


Figure 4-1: Organizational Chart

The project construction schedule is included in Appendix 1. JDS Monthly Progress Reports are included in Appendix 2.

5. REQUEST FOR INFORMATION

A list of RFIs and Field memorandums generated for this construction are included in Table 5-1. Copies of these documents are included in Appendix 3.

Table 5-1: List of RFIs and Field Memorandums

Document ID	Document Type	Description
VITGOLD-RFI-001	RFI	Direction to remove 28” HDPE culvert under the wester perimeter berm.
VITGOLD-RFI-002	RFI	Direction for use Select Drain Fill in lateral drains.
VITGOLD-RFI-003	RFI	Realignment of a lateral drain above elevation 1065m.
VITGOLD-RFI-004	RFI	Forte provide the design for a drain to capture a spring found within the center drainage of Phase 2A.
VITGOLD-RFI-005	RFI	Clarification on the connection between Phase 2A and Phase 1B.
VITGOLD-RFI-006	RFI	Modification of the alignment of a lateral drain to collect seepage from a spring in the Phase 2A area.
VITGOLD-RFI-007	RFI	Modification of the alignment of a lateral drain to accommodate topography.
VITGOLD-RFI-008	RFI	Modification of the alignment of a lateral drain to better catch seepage.
VITGOLD-RFI-009	RFI	General update on construction provided by JDS to Forte.
VITGOLD-RFI-010	RFI	Modification of the northwest corner to bring it to elevation 1255m.

Document ID	Document Type	Description
VITGOLD-RFI-011	RFI	General update on construction provided by JDS to Forte.
VITGOLD-RFI-012	RFI	Plan to remove frozen material under a portion of the Phase 2A perimeter berm footprint.
VITGOLD-RFI-013	RFI	Realignment of the header drain.
VITGOLD-RFI-014	RFI	Modification of the alignment of a lateral drains near elevation 1096m to allow for better constructability.
VITGOLD-RFI-015	RFI	Transmittal of Phase 2A construction material.

6. CONSTRUCTION OBSERVATIONS, DESIGN CHANGES, AND QA/QC TEST RESULTS

6.1 Earthworks and Foundation Preparation

Structural Fill: Structural Fill consists of material that when compacted is suitable for use in construction of the perimeter berms and grading lifts under the HLF. The borrow material used as Site Grading Fill was primarily Compacted Rock Fill that was blasted, excavated and hauled directly from the borrow source. No further processing was performed.

Grading and Foundation Preparation: The foundation was prepared as required in the Detailed Design and Technical Specifications. Unsuitable material (i.e. loose material, overly wet, frozen, or material high in organics) was removed. Design grade was achieved by backfilling areas that were over excavated with structural fill. Monitoring of the ground surface conditions and proof rolling of the foundation was performed continuously by Tetra Tech and JDS and documented in JDS's daily reports and Tetra Tech foundation approvals.

Perimeter Berm and Interceptor Ditch: The Phase 2 perimeter berm and interceptor ditch, which provide protection to the Phase 2A and Phase 2B areas, was completed. Prior to construction of the perimeter berms the foundation was prepared as discussed above. Material placement was completed per the requirements for Structural Fill placement. The Phase 2 interceptor ditch was excavated and constructed per the Detailed Design. The ditch was lined with rip-rap with a layer of geotextile below the rip-rap.

Phase 1B Interceptor Ditch Backfill: The Phase 1B interceptor ditch was backfilled in order to connect the Phase 1B lined area to the Phase 2A lined area. Rip-rap and geotextile was removed from the interceptor ditch. The ditch was backfilled using Structural Fill material per the method specification discussed in Section 6.1.1.

A summary of material production and haulage volumes are included in Appendix 1**.** The perimeter berm record of construction drawings (CV-F003) is included in Appendix 8**.**

6.1.1 Construction Criteria

Structural Fill: The requirements for Structural Fill were developed during the original Detailed Design for the HLF. Since then the requirements have been modified based on test fills and material observations. These changes have been documented in ROC reports for previous phases of construction. The most recent criteria for Structural Fill were determined during Phase 1A construction. A test fill was performed on June 30, 2018, to determine the best compaction method and to replace the QC testing requirements for Structural Fill. The results from the test fill are discussed in Technical Field Memorandum CTFM-01 which was included in the Phase 1A ROC report. The results of the test fill indicated that >95% maximum dry density was achieved at >6% moisture and a minimum of 3 passes with 6,000 kg vibratory compactor. This method was used and tracked for placement of Structural Fill throughout the construction of the HLF and replaced the field density testing requirements. Loose lifts remained a maximum of 1m thick. The gradation requirements for Structural Fill remained the same. The material should be well graded with a maximum particle size of <2/3 the loose lift thickness.

Subgrade Approvals: Per the technical specification the subgrade should be prepared prior to installation of the liner system. This preparation includes visually inspecting the subgrade for pockets of loose or otherwise unsuitable material, jagged surface that may pose a puncture risk to the liner system, and significant variations in hardness of the subgrade that can result in differential settlement. Where needed bedding sand should be used to prevent jagged and hard surfaces from causing punctures in the liner. Liner subgrade should be inspected by the Engineer and acceptance of the subgrade should be documented.

6.1.2 QA/QC Results

Excavation and Fill: Excavation and fill limits were regularly (mostly daily) measured by Underhill to assist in determining cut and fill requirements. The final measurements were used in developing the as-built drawing set. Final subgrade design lines were generally achieved. Where slight variations may exist they did not interfere with the performance objectives of the HLF, which in general requires that the surface drain towards in the in-heap pond. Structural fill was inspected by Tetra Tech for suitability for use in backfilling, where required. Tetra Tech documented these inspections in approvals. All fill used met the design criteria.

Subgrade Approvals: Subgrade approvals were completed by Tetra Tech. Subgrade preparation and approvals met the requirements in the design criteria and technical specifications. Subgrade approvals and compaction testing results are included in Appendix 4**.**

Perimeter Berm and Interceptor Ditch: Quality assurance for construction of the perimeter berms and interceptor ditch was performed by Tetra Tech and documented in approvals (Appendix 4). Material placement was completed per the method specification developed for Structural Fill Placement.

6.1.3 Observations and Design Modifications

An area of soft, wet, and yielding material was encountered on near the south perimeters berm. This areas was over excavated and backfilled to achieve the design grade and provide adequate drainage. The aeras was inspected by Tetra Tech for groundwater seeps and firmness prior to deployment of liner. This inspection was documented and included in the Tetra Tech's foundation approvals in Appendix 4**.**

A portion of the perimeter berm foundation was over excavated to remove frozen ground. This area was backfilled with Structural Fill to achieve proper grade. The changes were approved by Forte per VITGOLD-RFI-012.

6.2 Underdrain System

The HLF underdrain system provides for the collection and conveyance of subsurface water flows beneath the lined HLF Pad and Confining Embankment to limit upward pressure on the liner system and prevent the buildup of phreatic levels in the embankment fills. The HLF underdrain system consists of a network of lateral drains below the Phase 1 and 2A Pad areas, finger drains below the In-Heap Pond and Confining Embankment, and an underdrain header pipe trench that extends from the toe of the Confining Embankment to the upper limit of the Phase 2A Pad. Flows in the underdrain system are conveyed to collector pipes that discharge to a monitoring vault at the downstream toe of the Confining Embankment. The vault is configured to allow for sampling of seepage flows for water quantity and is equipped with a system that can either pump return flows to the HLF for use as make up water or allow seepage to flow to the environment if discharge criteria are met.

The underdrain system within the Phase 2A area was designed and their orientation are included in the Detailed Design. As with all other phases when areas of unsuitable material or groundwater seeps were encountered during construction of the underdrains these designs were modified in the field by JDS and Tetra Tech with input from Forte.

Underdrain system components include:

- Underdrain Trench.
- Geotextile.
- Select Drain Fill.
- PE Pipe.

6.2.1 Construction Criteria

Construction criteria for the underdrain system are included in the Detailed Design and Technical Specifications. These also include the methodology used for construction. Major components tracked during construction include:

Underdrain Trench Excavation: All underdrain trenches should conform with the requirements in the technical specifications. As with the subgrade, this preparation includes visually inspecting the subgrade for pockets of loose or otherwise unsuitable material and significant variations in hardness of the subgrade that can result in differential settlement. Inspections and approvals for the subgrade were documented by Tetra Tech.

Geotextile: Geotextile should be of the type 405 gr/sq m, 12-oz, non-woven type. Geotextile is placed in the trenches prior to placement of the drain rock. The material is to be placed with panel overlap in the downstream direction.

Select Drain Fill: Select Drain Fill was placed in the drain trenches after geotextile has been installed. Select drain fill gradation requirements state that the material should be 100% passing 12mm and have less than 5% material passing the #200 sieve.

PE Pipe: Various types of HDPE pipe are required for construction of the underdrain system. This includes:

- 100mm Corrugated, Perforated ADS N-12 PE Pipe used in the Underdrain Laterals.
- 150mm Solid Walled SDR 11 or 17 HDPE Pipe for the Extension of the Header Pipe System.

All corrugated pipe is connected using split couplers. Solid walled pipe is connected using butt welding system or electrofusion.

6.2.2 QA/QC Results

Select Drain Fill: Select Drain Fill gradations met the requirements of the Technical Specifications and Detailed Design. Three samples were analyzed for grain size analysis on the material. Percent fines for all three samples were reported as less than 2.9%. Laboratory results are included in Appendix 5**.**

Purchased Material: Manufacture specification sheets for piping and geotextile were provided to Forte by JDS. Geotextile and piping materials met the requirements of the Technical Specification and Detailed Design.

Installation: Tetra Tech provided QA during the construction of the underdrains. All installation was performed in accordance with the requirements in the Technical Specifications. Installation was documented in Tetra Tech's approvals, included in Appendix 4**.** Header drain fusion logs are included in Appendix 7**.**

6.2.3 Observations and Design Modifications

There were no modifications to the design of the underdrain system's typical construction. However, the alignment of select underdrains were modified due to the removal or excess unsuitable material and to capture groundwater seeps. These modifications are discussed in the following RFIs:

- VITGOLD-RFI-003
- VITGOLD-RFI-004
- VITGOLD-RFI-005
- VITGOLD-RFI-006
- VITGOLD-RFI-007
- VITGOLD-RFI-008
- VITGOLD-RFI-014

Additionally, the alignment of the header drain system was revised to avoid a hard bedrock knob. The realignment was approved by Forte and is detailed in VITGOLD-RFI-013.

6.3 Liner System

The HLF liner system was designed to contain PLS for recovery and to prevent the release of process solutions to the environment. The HLF single composite liner system within the Phase 2A footprint. The liner panel layout as-built drawing developed by Layfield is included in Appendix 8**.**

6.3.1 Construction Criteria

Design criteria for the liner system are included in the Technical Specifications. The liner system was installed by Layfield. Panel layouts were provided by Layfield and approved by Forte prior to construction.

6.3.2 QA/QC Results

Quality control for the liner installation was performed by Layfield and the results are included in Appendix 9. QA was performed by Tetra Tech and the results are also included in Appendix 5**.** Based on review of the QA and QC documentation installation was performed in accordance with the Technical Specifications and Detailed Design.

6.3.3 Observations and Design Modifications

The original planned Phase 2A area consisted of a 117,867m^2 lined area. However, this area was reduced to 105,367 m^2 due to the unavailability of liner during installation. This changed was approved by Forte and tracked in VITGOLD-RFI-010.

7. RECORD DRAWINGS

Record drawings can be found in Appendix 8 and are based on as-built survey data provided by Underhill. Electronic files of the record drawings are available upon request from Forte and files of raw survey data are available through JDS.

8. DAILY REPORTS AND PHOTOGRAPHS

Daily reports were completed by the project EPCM, JDS. These daily reports provide a summary of all construction activities completed for Phase 2A HLF expansion as well as other mine projects overseen by JDS. Photographs taken during construction are included in Appendix 10**.**

9. CLOSURE

Forte Dynamics Inc. (Forte) prepared this document for the account of Victoria Gold Corp. The material in it reflects the judgment of Forte staff in light of the information available to Forte at the time of document preparation. Any use which a third party makes of this document or any reliance on decisions to be based on it is the responsibility of such third parties. Forte accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this document.

As a mutual protection to our client, the public, and ourselves, all documents and drawings are submitted for the confidential information of our client for a specific project. Authorization for any use and/or publication of this document or any data, statements, conclusions or abstracts from or regarding our documents and drawings, through any form of print or electronic media, including without limitation, posting or reproduction of same on any website, is reserved pending Forte's written approval. A record copy of this document is on file at Forte. That copy takes precedence over any other copy or reproduction of this document.

Note the conclusions provided herein will change as the recommended maintenance measures are undertaken.

We trust the above satisfies your requirements at this time. Should you have any questions or comments, please do not hesitate to contact us.

Yours sincerely,

Forte Dynamics Inc.

Per:

Barry Carlson, P.Eng.

Principal Engineer

Reviewed By:

Clint Green, P.E.

Principal Engineer

10. REFERENCES

Lorax, (2017), Eagle Gold Hydrometeorology Report, 13 March 2017.

BGC, (2019), Eagle Gold Project Heap Leach Facility Construction Summary Report for Phase 1A, September 24, 2019

Tetra Tech, (2020), Construction Quality Assurance Report Heap Leach Facility Phase 1B, October 19, 2020

Stantec (2012a), Eagle Gold Project, Environmental Baseline Report: Climate, prepared for Victoria Gold Corp., March 2012.

Stantec (2012b), Eagle Gold Project, Environmental Baseline Data Report: Hydrology 2011 Update, prepared for Victoria Gold Corp., June 2012

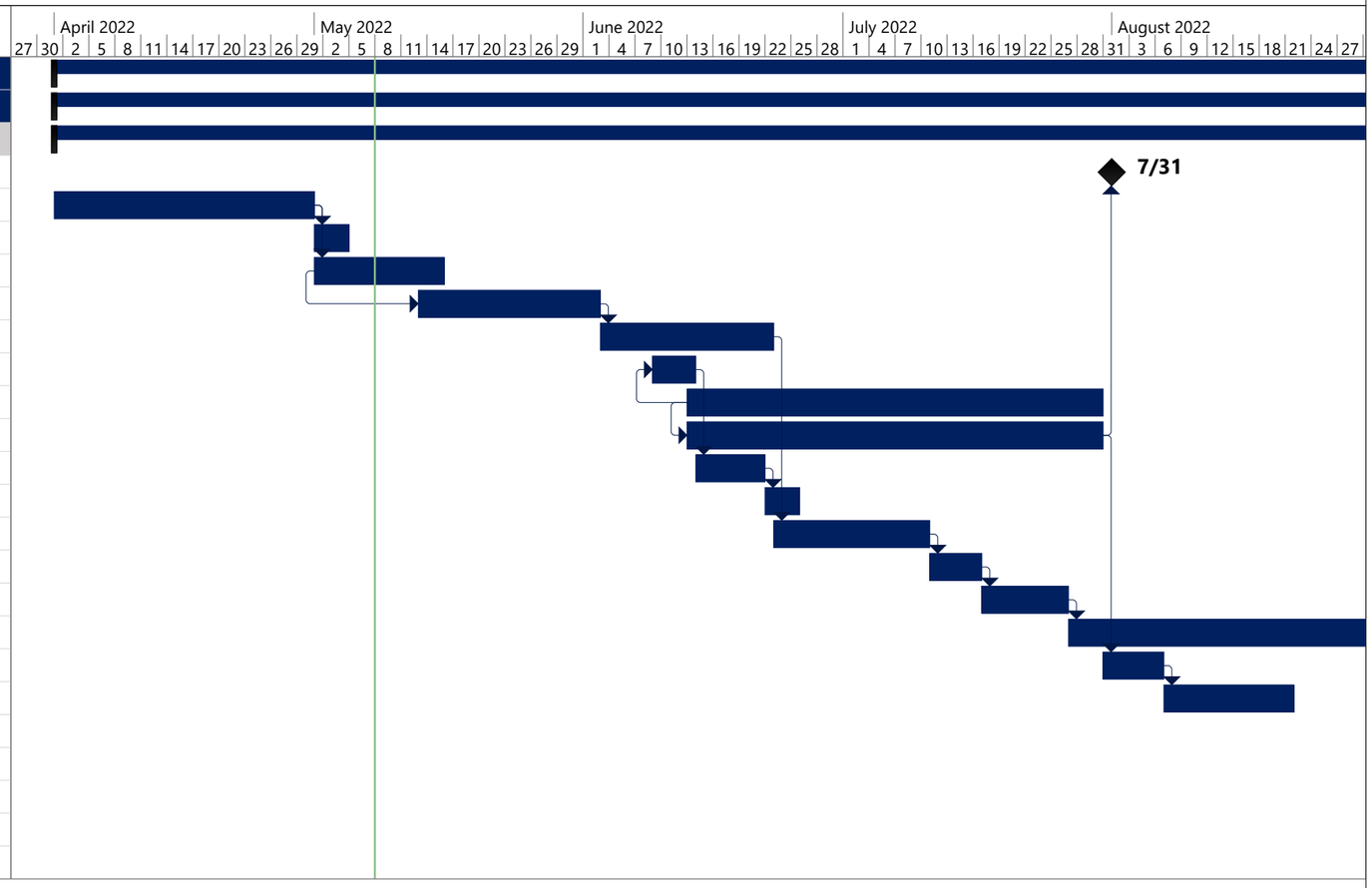
Forte Dynamics, (2021), Detail Design Report for Eagle HLF Phase 2A, January 6, 2021

Strata Gold Corporation (2017), Eagle Gold Project Heap Leach Facility Foundation Improvement Plan, June 2017

APPENDIX 1: WORK PLANS AND PRODUCTION TRACKING

JDS ENERGY & MINING INC

ID	Task Name	Start	Finish	Duration
1	**EAGLE GOLD PROJECT**	**Fri 4/1/22**	**Sun 9/4/22**	**157 days**
2	**PHASE 2 HEAP LEAP EXPANSION**	**Fri 4/1/22**	**Sun 9/4/22**	**157 days**
3	**2022**	**Fri 4/1/22**	**Sun 9/4/22**	**157 days**
4	**Phase 2A ready for stacking**	Sun 7/31/22	Sun 7/31/22	0 days
8	Spring lateral drain - material removal and backfill	Fri 4/1/22	Sat 4/30/22	30 days
9	Spring lateral drain - Final excavation & finger drain extens	Sun 5/1/22	Wed 5/4/22	4 days
10	Slope shaping phase 2 (east)	Sun 5/1/22	Sun 5/15/22	15 days
5	Lateral drains 1 & 2 EAST	Fri 5/13/22	Thu 6/2/22	21 days
13	Slope bedding and packing phase 2A - East	Fri 6/3/22	Wed 6/22/22	20 days
11	Removal of Phase 1 interceptor rip rap & geotextile	Thu 6/9/22	Mon 6/13/22	5 days
16	Layfield Phase 2A ewing support	Mon 6/13/22	Sat 7/30/22	48 days
17	Layfield Liner installation	Mon 6/13/22	Sat 7/30/22	48 days
12	Backfilling of Phase 1 interceptor	Tue 6/14/22	Tue 6/21/22	8 days
7	Header connection to phase 1B	Wed 6/22/22	Sat 6/25/22	4 days
15	Slope bedding and packing phase 2A - West	Thu 6/23/22	Sun 7/10/22	18 days
20	Removal of phase 1b culverts on the west side & shape slc	Mon 7/11/22	Sat 7/16/22	6 days
14	Phase 2 perimeter road over 1065m	Sun 7/17/22	Tue 7/26/22	10 days
18	Phase 2B Lateral drains (Lateral 3 & 4)	Wed 7/27/22	Sun 9/4/22	40 days
19	Phase 2 interceptor ditch geotextile and rip rap install	Sun 7/31/22	Sat 8/6/22	7 days
6	Extension of the underdrain headers to station 13+75	Sun 8/7/22	Sun 8/21/22	15 days
21				
22				
23				
24				
25				



EAGLE GOLD PROJECT
Heap Leach Phase 2

Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone

Time					Equipment								Haul Information		
Year	Month	Period (Wk End)	Date	Shift	Haul Unit	Haul Desc	Load Unit	Load m3	Op Hours	Operator	Material	From (General Area)	To (General Area)	# Loads	Volume (ECM)
2022		27-Mar-22	26-Mar-22				730	14			Common	nuway	lateral	7	98
2022		16-Apr-22	15-Apr-22				730	14			Common	nuway	lateral drain	83	1162
2022		16-Apr-22	16-Apr-22				730	14			Common	nuway	lateral drain	70	980
2022		23-Apr-22	17-Apr-22				730	14			Common	nuway	lateral drain	100	1400
2022		23-Apr-22	18-Apr-22				730	14			Common	nuway	lateral drain	97	1358
2022		23-Apr-22	19-Apr-22				730	14			common	nuway	lateral drain	93	1302
2022		23-Apr-22	20-Apr-22				730	14			common	nuway	lateral drain	68	952
2022		23-Apr-22	21-Apr-22				730	14			common	nuway	lateral drain	84	1176
2022		23-Apr-22	22-Apr-22				730	14			common	nuway	lateral drain	87	1218
2022		23-Apr-22	23-Apr-22				730	14			Common	nuway	lateral drain	95	1330
2022		30-Apr-22	24-Apr-22				730	14			Common	nuway	lateral drain	83	1162
2022		30-Apr-22	25-Apr-22				730	14			Common	nuway	lateral drain	74	1036
2022		22-Apr-02	26-Apr-22				730	14			Common	nuway	lateral drain	90	1260
2022		30-Apr-22	27-Apr-22				730	14			Common	nuway	lateral drain	78	1092
2022		30-Apr-22	28-Apr-22				730	14			Common	nuway	lateral drain	90	1260
2022		30-Apr-22	29-Apr-22				730	14			Common	nuway	lateral drain	79	1106
2022		30-Apr-22	30-Apr-22				730	14			Common	nuway	lateral drain	8	112
2022		30-Apr-22	30-Apr-22				730	14			common	nuway	lateral drain	19	266
2022		30-Apr-22	30-Apr-22				730	14			common	nuway	lateral drain	10	140
TOTAL														**1315**	**18410**

Time					Equipment								Haul Information		
Year	Month	Period (Wk End)	Date	Shift	Haul Unit	Haul Desc	Load Unit	Load m3	Op Hours	Operator	Material	From (General Area)	To (General Area)	# Loads	Volume (ECM)
2022		2-Apr-22	2-Apr-22				730	14			Snow	Lateral drain	Nuway dump	38	532
2022		2-Apr-22	2-Apr-22				730	14			Waste	Lateral drain	Nuway dump	21	294
2022		9-Apr-22	3-Apr-22				730	14			Waste	Lateral drain	Nuway dump	47	658
2022		9-Apr-22	4-Apr-22				730	14			Waste	Lateral drain	Nuway dump	58	812
2022		9-Apr-22	5-Apr-22				730	14			Waste	Lateral drain	Nuway dump	63	882
2022		9-Apr-22	6-Apr-22				730	14			Waste	Lateral drain	Nuway dump	71	994
2022		9-Apr-22	7-Apr-22				730	14			Waste	Lateral drain	Nuway dump	77	1078
2022		9-Apr-22	8-Apr-22				730	14			Waste	Lateral drain	Nuway dump	57	798
2022		9-Apr-22	9-Apr-22				730	14			Waste	Lateral drain	Nuway dump	75	1050
2022		16-Apr-22	10-Apr-22				730	14			Waste	Lateral drain	Nuway dump	98	1372
2022		16-Apr-22	11-Apr-22				730	14			Waste	Lateral drain	Nuway dump	76	1064
2022		16-Apr-22	12-Apr-22				730	14			Waste	Lateral drain	Nuway dump	77	1078
2022		16-Apr-22	13-Apr-22				730	14			waste	Lateral drain	Nuway dump	71	994
2022		16-Apr-22	14-Apr-22				730	14			waste	Lateral drain	Nuway dump	73	1022
2022		16-Apr-22	15-Apr-22				730	14			waste	Lateral drain	Nuway dump	10	140
Total														**912**	**12,768**

APPENDIX 2: JDS MONTHLY PROGRESS REPORTS

TETRA TECH

FIELD REPORT

ISSUED FOR USE

Project:	VGCX HLF Phase 2 Subgrade Inspection	**Date:**	May 15, 2022
Location:	Eagle Gold Mine, Yukon	**Contractor:**	Ewing Transport Ltd.
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing
Contact:	Cody Roberts, P.Eng.	**Contractor's Email:**	NA
Weather:	Variable	**Tetra Tech Representative:**	Jacob Swartz, EIT
File:	704-ENG.WARC03235-23	**Status:**	Issued for Use

1.0 INTRODUCTION

1.1 General

NND-EBA Land Protection Corp, operating as NELPCo Limited Partnership (NELPCo), was retained by Victoria Gold Corp. (VGCX) to provide geotechnical support for Phase 2 of the heap leach facility expansion (HLF Phase 2) at the Eagle Gold Mine located in Dublin Gulch north of Mayo, Yukon. Tetra Tech Canada Inc. (Tetra Tech) has prepared this report on behalf of NELPCo as their engineering service provider. Tetra Tech's role includes inspection of earthworks, header underdrain and lateral drain installation, compaction testing of berms, and testpitting to support the ground improvement plan.

VGCX retains JDS Energy and Mining Inc. (JDS) to oversee various Eagle Gold Mine construction works and coordinate Tetra Tech's site visits. As there are various ongoing construction activities at the mine, JDS has requested that Tetra Tech make periodic site visits to inspect the subgrade for HLF Phase 2.

This field report details Tetra Tech's inspection from May 12 to 15, 2022. All photos and test logs recorded during the site visit are attached below.

2.0 DAILY SUMMARY - FIELD INVESTIGATION

2.1 May 12, 2022

- Weather: Sunny, 10 °C
- Tetra Tech's field representative, Mr. Jacob Swartz, EIT, mobilized to the Eagle Gold Mine.
- Prior to arriving, the Spring Lateral Drain (SLD) area that was inspected April 14, 2022, was backfilled with rock fill. The SLD was completed from the Lateral #1 W to the bottom of the spring source (08V 459,770E 7,102,332N Ele: 1048.041 m.a.s.l.).
- Ewing continued SLD excavation to the source of the spring.
- JDS determined that the best method of action was to complete the excavation in phases due to accessibility. The phases consisted of the following:

    1. Ewing will excavate towards the water source to the maximum reach of the excavator.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

2. Ewing will backfill with the rock fill after Tetra Tech has approved the subgrade and the excavator will move forward.

3. Steps one and two will be repeated until the spring source is reached.

4. The SLD trench will then be excavated within the rockfill, and the pipe installed.

- Survey is on-site, full time, providing support for the excavation.

- Tetra Tech encountered surficial ice lenses and thaw unstable soil within the top 1 meter of material. All ice rich and thaw unstable soil was removed.

2.2 May 13, 2022

- Weather: Sunny, 10°C

- Ewing continued excavating the SLD until the seepage source was reached. All the ice-rich and thaw unstable soils were removed from the trench excavation. The excavation subgrade consisted of a matrix of finer-grained soils mixed with coarse-grained colluvium. As the spring source was reached, the material became coarser with bedrock presenting along the sidewalls and bottom of the trench.

  - Tetra Tech observed frozen conditions at the bottom of the excavation.

- Ewing backfilled the final section of the excavation with rock fill. The area is ready for the trench to be excavated and the pipe installed.

- Water from the spring was accumulating and flowing through the excavation/rock fill.

2.3 May 14, 2022

- Weather: Sunny, 10°C

- Ewing excavated the trench and completed the installation of the SLD (placement of the geotextile, drain rock, and perforated pipe). From approximately 08V 459,771E 7,102,330N Ele:1048.12 m.a.s.l. to 08V 459,799E 7,102,397N Ele:1050.58 m.a.s.l.

  - The trench was cut within the rock fill material.

- Ewing started to push, place, and pack the material into the Phase 1 interceptor ditch.

  - The material was pushed from above the ditch using a D10 dozer, and the excavator spread out the material in 350 mm lifts.

  - Tetra Tech's site representative, Jacob Swartz, tested the material to see if the compaction method spec would be sufficient for the material.

    - As per the Compaction Method Spec RFI, eight passes with the vibratory compactor were completed to see if the material would compact to the specified 95% Standard Proctor Maximum Dry Density (SPMDD). Compaction was not met until ten passes were made. Therefore, Tetra Tech recommended to Ewing/JDS that 10 passes must be completed to reach the density spec (95%).

    - Two test spots were conducted to confirm the required compaction effort for the material. The results are shown below in Table 1

Table 1: Compaction Results from Method Spec Check

Test #	Test Spot #1 08V 459971 E 7101827 N	Test Spot #2 08V 459966 E 7101844 N
1	▪ # Passes: 8 ▪ Probe Depth: 0.3 m ▪ WD: 2170 kg/m^3 ▪ DD: 2063 kg/m^3 ▪ MC: 5.2% ▪ 91.7% @ 2250 kg/m^3	▪ # Passes: 8 ▪ Probe Depth: 0.3 m ▪ WD: 2254 kg/m^3 ▪ DD: 2117 kg/m^3 ▪ MC: 6.5% ▪ 94.1% @ 2250 kg/m^3
2	▪ # Passes: 10 ▪ Probe Depth: 0.3 m ▪ WD: 2307 kg/m^3 ▪ DD: 2168 kg/m^3 ▪ MC: 6.4% ▪ 96.3% @ 2250 kg/m^3	▪ # Passes: 10 ▪ Probe Depth: 0.3 m ▪ WD: 2274 kg/m^3 ▪ DD: 2154 kg/m^3 ▪ MC: 5.6% ▪ 95.9% @ 2250 kg/m^3

2.4 May 15, 2022

- Weather: Cloudy, Fresh snow on the ground from overnight, 5°C
- Tetra Tech's field representative, Mr. Jacob Swartz, EIT, demobilized to Whitehorse.

3.0 PHOTOGRAPHS

Figure 1: SLD Tie Into the Spring Source Area (May 12, 2022)

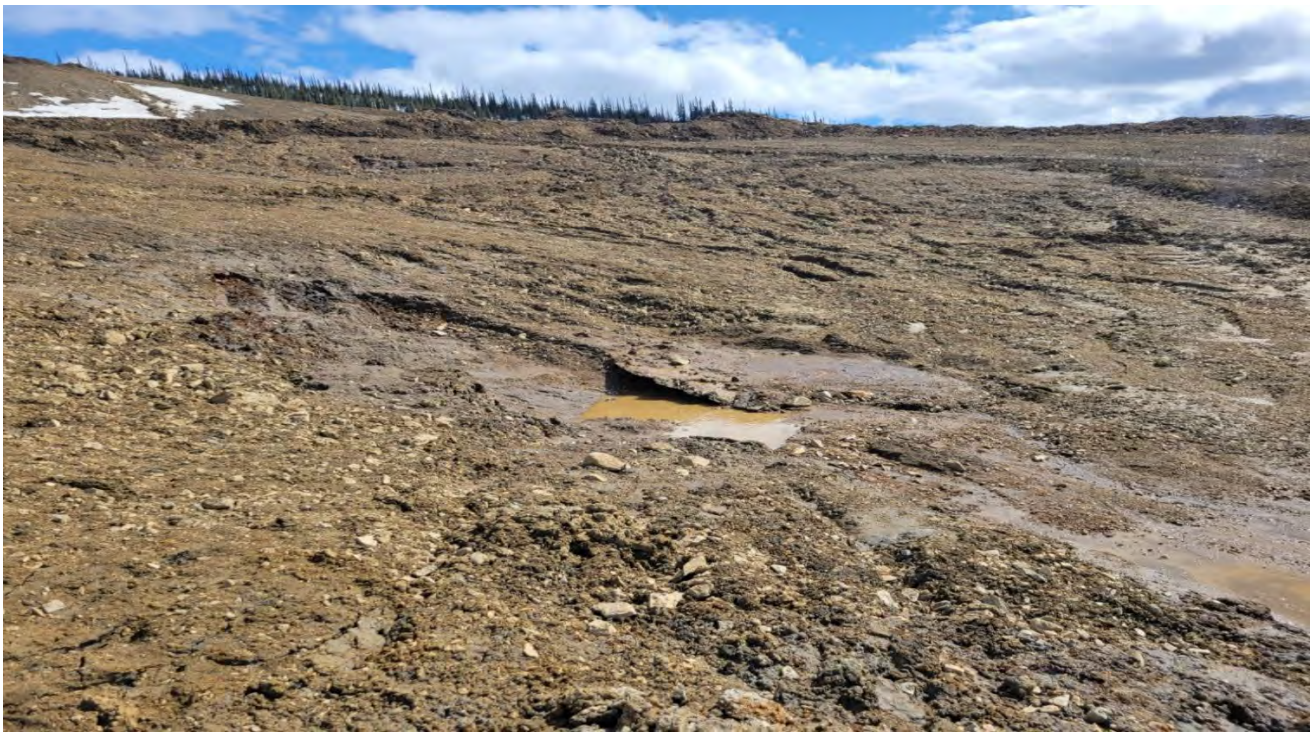


Figure 2: Spring Source Area (May 12, 2022)

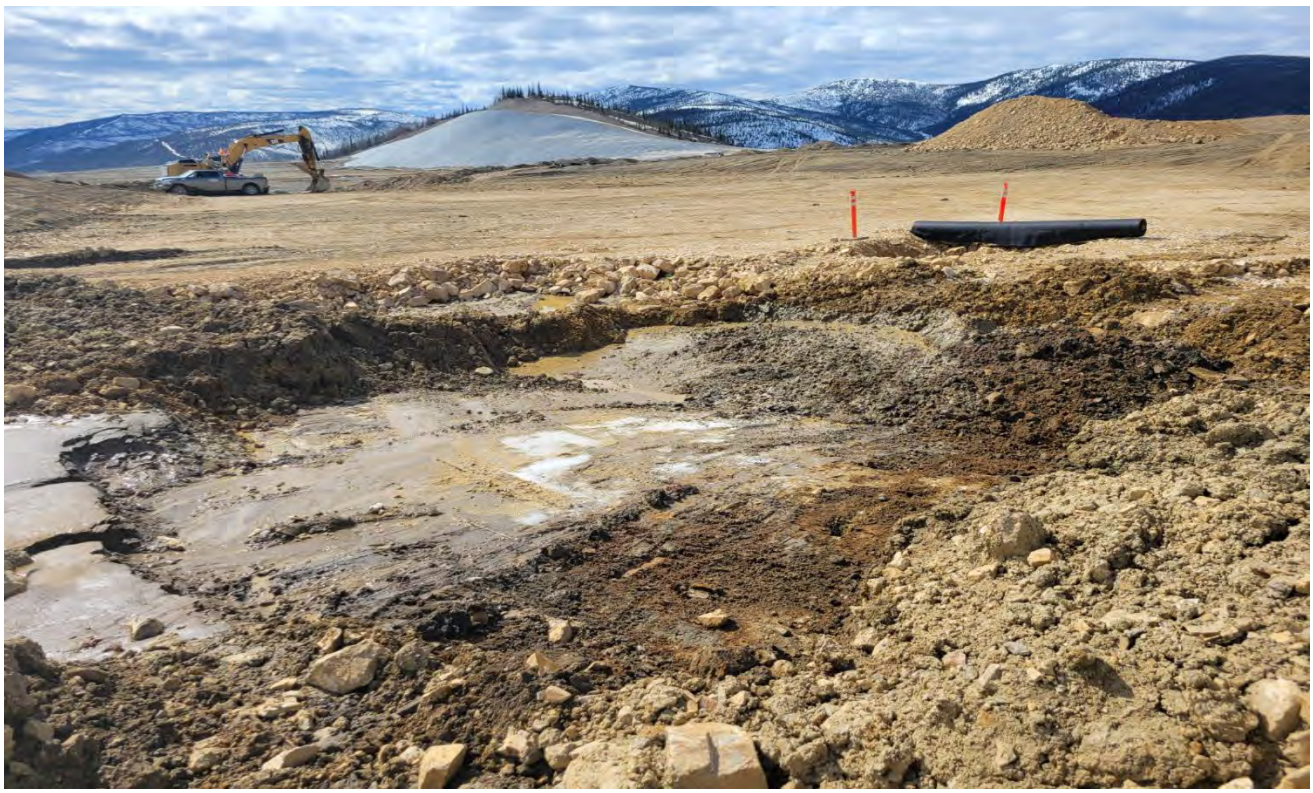


Figure 3: SLD Excavation: Removal of Deleterious Material (May 12, 2022)

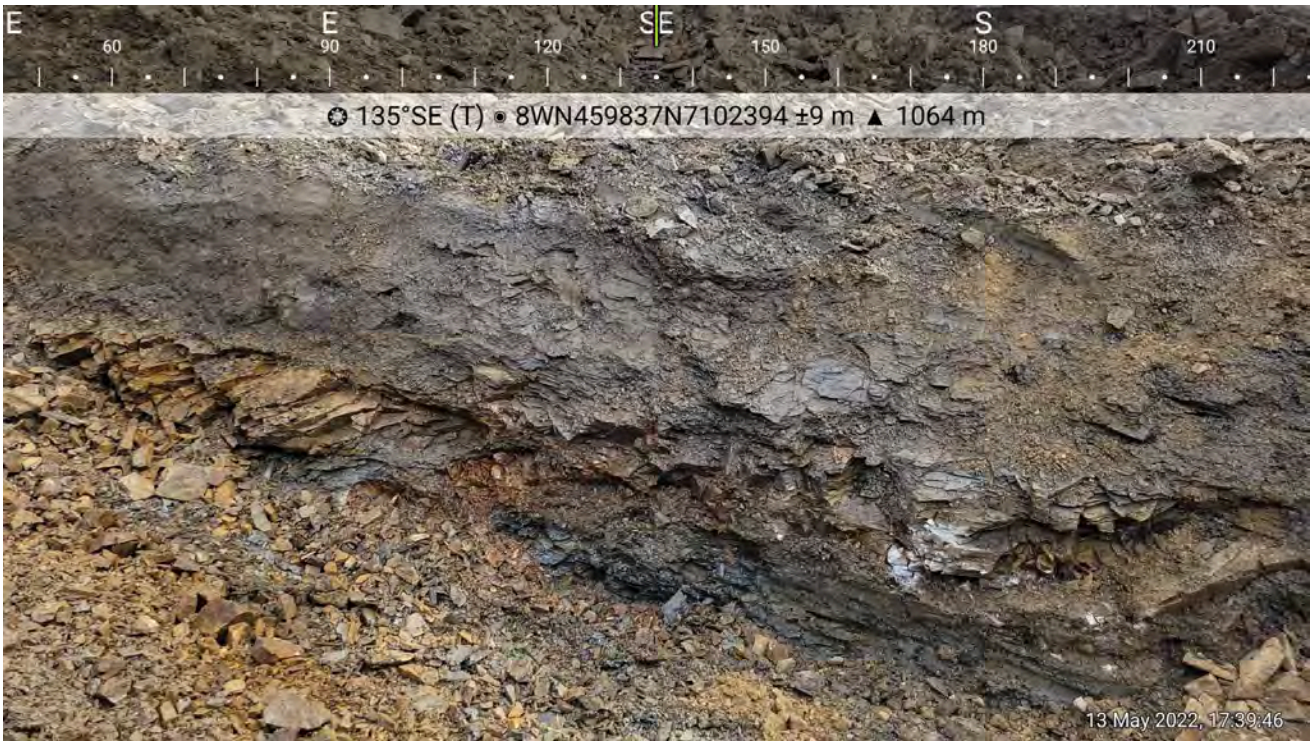


Figure 4: SLD Subgrade (May 13, 2022)

Figure 5: SLD Subgrade (May 13, 2022)

Figure 6: Water Flowing Through SLD Excavation (May 13, 2022)

Figure 7: End of SLD Excavation:
Water Seeping from Bedrock Interface Near Bottom of Excavation (May 13, 2022)

Figure 8: SLD Excavation/Backfill (May 13, 2022)

Figure 9: SLD Excavation/Backfill (May 13, 2022)

Figure 10: SLD Backfill Material Being Packed (May 13, 2022)

Figure 11: SLD Trench Being Excavated in Rockfill (May 14, 2022)

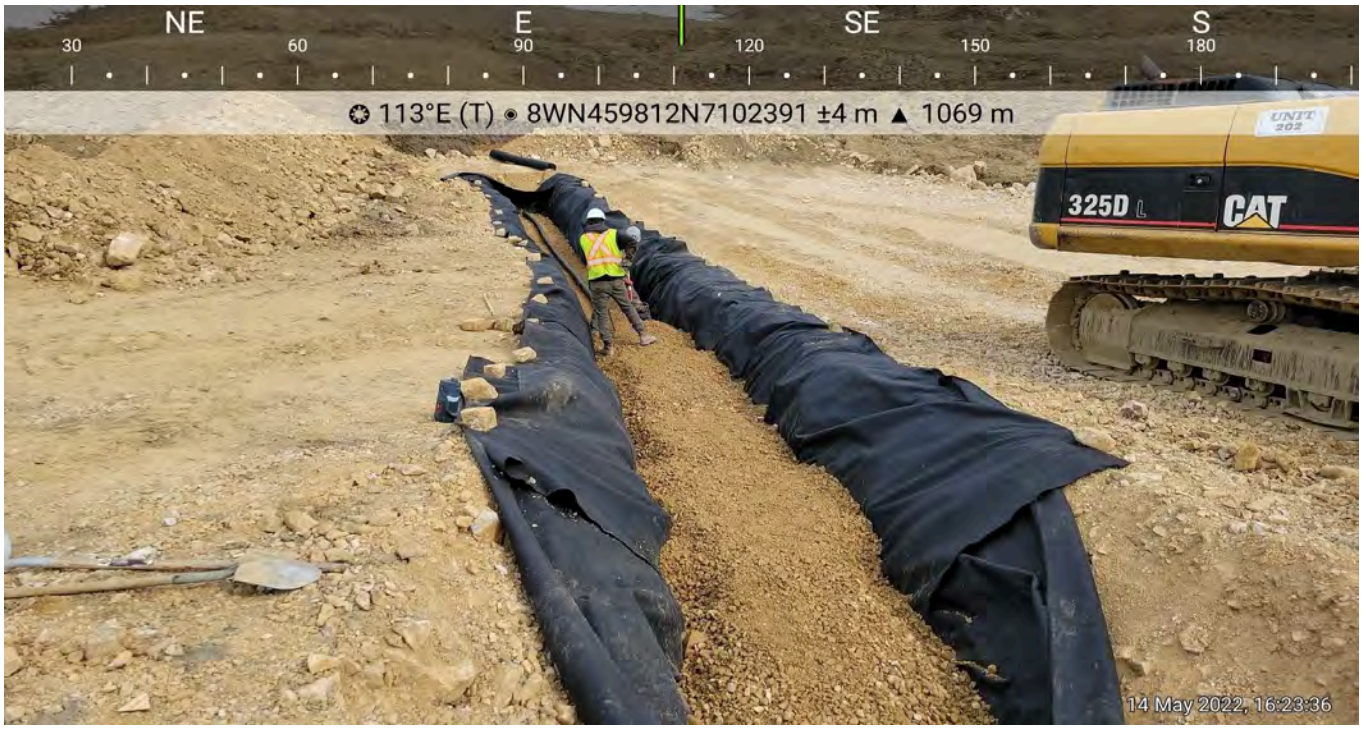


Figure 12: Installation Of The SLD (May 14, 2022)

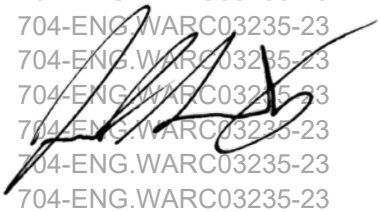
Figure 13: Interceptor Ditch Control Strip for Method Spec Confirmation (May 14, 2022)

4.0 CLOSURE

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

704-ENG.WARC03235-23



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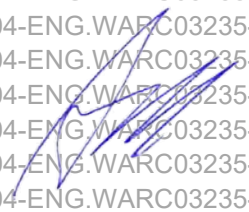

704-ENG.WARC03235-23

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Engineering Practice
Direct Line: 867.668.9242
Adam.Mickey@tetratech.com

/cr

FIELD REPORT

ISSUED FOR REVIEW

Project:	VGCX HLF Phase 2 Subgrade Inspection	**Date:**	May 22, 2022
Location:	Eagle Gold Mine, Yukon	**Contractor:**	Ewing Transport Ltd.
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing
Contact:	Cody Roberts, P.Eng.	**Contractor's Email:**	NA
Weather:	Clear	**Victoria Gold Representative:**	Reanna Roberts
Status:	Issued for Review		

1.0 INTRODUCTION

Lateral drain #2 East was started in November of 2021. Approximately 30% of the trench was excavated and inspected by Tetra Tech. The subgrade was approved, and the lateral detail was installed as per the drawings. Due to cold weather conditions the lateral was stopped in December 2021. The tie in location was bermed off and delineated; to be continued with better conditions in spring of 2022.

2.0 FIELD INVESTIGATION

Lateral drain #2 East was excavated and graded between May 18-May 21, 2022. JDS, Ewing and Victoria Gold representatives were on site for a field investigation to inspect and approve the subgrade conditions on May 22, 2022.

Lateral #2 East had previously been completed at the end of 2021 up to 459,967.520 m E, 7,102,102.043 m N, Elevation: 1066.685 m. The remainder of this lateral was considered from the previous point to 460, 063.978 m E, 7,101, 884.557 m N, Elevation: 1070.385 m. (Coordinates provided by Underhill May 21, 2022); The area being inspected was ~244m.

The entire trench was open and free of debris prior to arriving. The trench varied in depth from approximately 1.2m to 1.7m. A sand/gravel colluvium was observed in the top 0.2-0.4m of the trench walls, which overlay 0.4 to 1.7m of weathered Metasediment bedrock (Phyllitic), which typically ranged from very weak (R1), highly weathered (W4), friable bedrock to more competent weak (R2), moderately weathered (W3) bedrock with small zones of medium strong (R3), moderately weathered (W3) material. Narrow, localized, intermittent zones of sandy clay, and/or clayey sand, was observed within about a half meter of the trench bottom for an extent of about 3 to 5m over an estimated percentage of 15-20% of trench length. This was interpreted as completely weathered Phyllite bedrock, which has weathered insitu due to presence of rock mass fabric. A few damp and wet areas were visible on trench floor and trench walls from seasonal thaw conditions, with the only pooled water (very minor) noted at ~100 m from South End of trench and approximately 40 m from the North End where very minor seepage was observed from lower half of wall (dripping, estimated volume of 25 l/min/10m).No visible ice or frozen material was observed in the trench excavation.

3.0 ACTION ITEMS

The trench subgrade was accepted under the foundation improvement plan and technical specifications

4.0 PHOTOGRAPHS

Photo 1: Tie in location to the existing lateral #2 East

Photo 2: Trench walls /floors looking south east from the tie in location

Photo 3: minor moisture observed in the trench from thawing

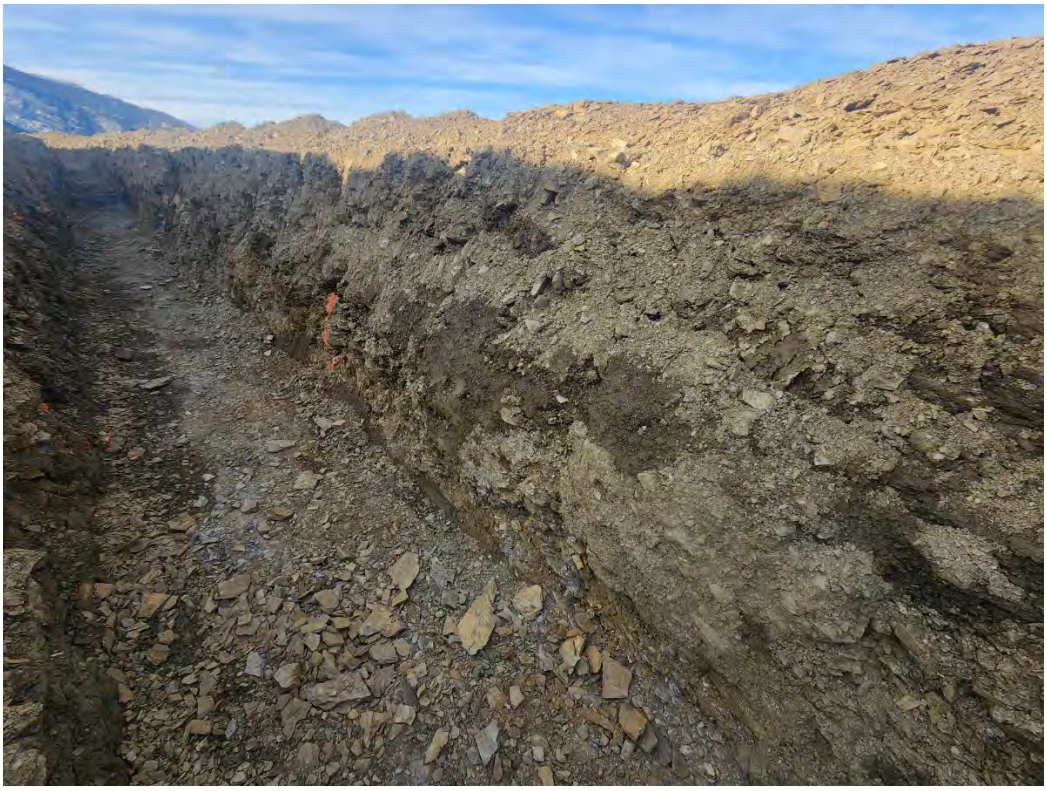

Photo 4: primarily fractured bedrock with a top layer of sand/silty colluvium

Photo 5: localized clay content on the trench wall

Photo 6: localized clay content on the trench walls

5.0 Closure

Name: Cody Roberts
Company: JDS Energy & Mining
Position: Construction Superintendent
Signature: Cody Roberts Digitally signed by Cody Roberts DN: C=CA, E=codyr@jdsmining.ca, O=JDS Mining and Energy, OU=Construction Division, CN=Cody Roberts Date: 2022.05.24 07:05:20-07'00'

Name: Reanna Roberts
Company: Victoria Gold Corp.
Position: Senior Engineering Geologist, Technical Services Group
Signature:

TETRA TECH

FIELD REPORT

ISSUED FOR USE

Project:	VGCX HLF Phase 2 Subgrade Inspection	**Date:**	May 29, 2022
Location:	Eagle Gold Mine, Yukon	**Contractor:**	Ewing Transport Ltd.
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing
Contact:	Cody Roberts, P.Eng.	**Contractor's Email:**	NA
Weather:	Partly cloudy, 15°C	**Tetra Tech Representative:**	Shawn Matthies, EIT
File:	704-ENG.WARC03235-23	**Status:**	Issued for Use

1.0 INTRODUCTION

1.1 General

NND-EBA Land Protection Corp, operating as NELPCo Limited Partnership (NELPCo), was retained by Victoria Gold Corp. (VGCX) to provide geotechnical support for Phase 2 of the heap leach facility expansion (HLF Phase 2) at the Eagle Gold Mine located in Dublin Gulch north of Mayo, Yukon. Tetra Tech Canada Inc. (Tetra Tech) has prepared this report on behalf of NELPCo as their engineering service provider. Tetra Tech's role includes inspection of earthworks, header underdrain and lateral drain installation, compaction testing of berms, and testpitting to support the ground improvement plan.

VGCX retains JDS Energy and Mining Inc. (JDS) to oversee various Eagle Gold Mine construction works and coordinate Tetra Tech's site visits. As there are various ongoing construction activities at the mine, JDS has requested that Tetra Tech make periodic site visits to inspect the subgrade for HLF Phase 2.

This field report details Tetra Tech's inspection on May 29, 2022. Selected photos and test logs recorded during the site visit are attached below.

2.0 DAILY SUMMARY – FIELD INVESTIGATION

2.1 May 29, 2022

- Tetra Tech's field representative, Shawn Matthies, mobilized to the Eagle Gold Mine to inspect the excavation for a segment of Lateral Drain #1 E.
- GPS coordinates of the lateral drain segment and testpit locations were taken using a handheld GPS by Tetra Tech. Some coordinates appear to be tens of metres from actual locations. Underhill advised that survey pickups of the trench segments inspected by Tetra Tech were completed. Coordinates taken by Underhill should be referred to for locations.
- Site surveyor (Underhill) advised that they had GPS coordinates of the trench segment inspected during this site visit which would be provided to JDS and Tetra Tech.
- The trench segment inspected was mostly unfrozen. Trench walls in some areas were moist to wet, indicating that frozen ground had melted following excavation. Excess moisture and/or significant sloughing were not observed, and previous excess ice was not inferred.

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- One 10 mm-thick ice lens in moderately weathered bedrock was observed at 459,842 m E; 7,102,217 m N; 8W (Photo 6). Ewing excavated the sidewall of the trench in this area and additional ice was not observed by Tetra Tech.
- Tetra Tech advised JDS that the section of trench inspected was considered compliant with Forte Dynamics' earthworks specifications.

3.0 PHOTOGRAPHS

Photo 1: TT-TP22-03 Sidewall

Photo 2: TT-TP22-04 Sidewall

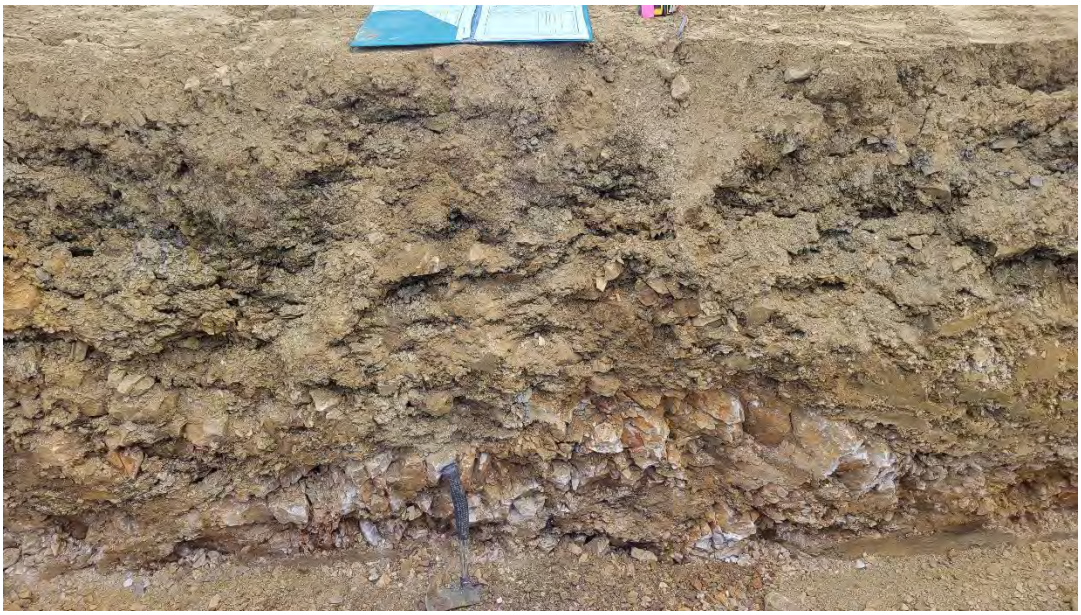


Photo 3: TT-TP22-05 Sidewall

Photo 4: TT-TP22-06 Sidewall

Photo 5: Ongoing lateral drain excavation beyond TP04. Considered approved to painted mark surveyed by Underhill.

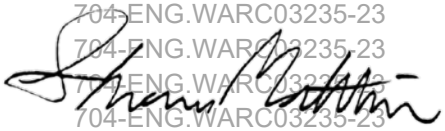
Photo 6: 10 mm-thick ice lens observed at 459,842 m E; 7,102,217 m N; 8W in moderately weathered bedrock.

4.0 CLOSURE

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

704-ENG.WARC03235-23



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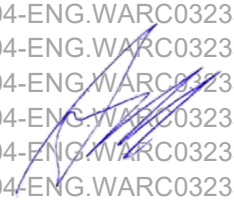

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/cr

Testpit No: **TT-TP22-03**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	SAND AND SILT (COLLUVIUM) - some gravel, angular gravel to 50 mm diameter, friable, damp, orangish brown, (200 mm thick)	Unfrozen			0.2
0.2		BEDROCK - highly weathered, highly fractured, grey and reddish brown, silt and sand between fractures				0.4
0.4						0.6
						0.8
						1.0
						1.2
0.6						1.4
						1.6
						1.8
0.8						2.0
						2.2
						2.4
						2.6
						2.8
1.0		- slightly weathered				3.0
						3.2
						3.4
		END OF BOREHOLE (1.1 metres) Note: Stopped at trench depth				3.6
1.2						3.8
						4.0
						4.2
						4.4
1.4						4.6
						4.8
						5.0
						5.2
1.6						5.4
						5.6
						5.8
1.8						6.0
						6.2
						6.4
2						

TETRA TECH

Contractor: Ewing	Completion Depth: 1.1 m
Equipment Type: Excavator	Start Date: 2022 May 29
Logged By: SAM	Completion Date: 2022 May 29
Reviewed By: AMM	Page 1 of 1

Testpit No: **TT-TP22-04**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	BEDROCK - moderately weathered, moderately fractured, moist, light reddish brown, sand and silt in fractures	Unfrozen			
0.2						0.2 / 0.4 / 0.6 / 0.8 / 1.0 / 1.2 / 1.4
0.4						1.6 / 1.8 / 2.0 / 2.2 / 2.4 / 2.6 / 2.8
0.6						3.0 / 3.2 / 3.4 / 3.6 / 3.8 / 4.0 / 4.2
		- slightly weathered				
0.8						4.4 / 4.6 / 4.8 / 5.0 / 5.2 / 5.4 / 5.6
1.0						5.8 / 6.0 / 6.2 / 6.4
		END OF BOREHOLE (1.1 metres) Note: Stopped at trench depth				
1.2						
1.4						
1.6						
1.8						
2						

TETRA TECH

Contractor: Ewing	Completion Depth: 1.1 m
Equipment Type: Excavator	Start Date: 2022 May 29
Logged By: SAM	Completion Date: 2022 May 29
Reviewed By: AMM	Page 1 of 1

Testpit No: **TT-TP22-05**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	SAND (COLLUVIUM) - silty, some gravel, fine to coarse grained sand, angular gravel to 100 mm diameter, damp, brown	Unfrozen			
0.2						0.2
						0.4
0.4		- moist				0.6
						0.8
0.6						1.0
						1.2
						1.4
						1.6
						1.8
						2.0
						2.2
						2.4
0.8		BEDROCK - moderately weathered, moderately fractures, damp, brownish grey, orange oxidized areas, sand and silt in fractures				2.6
						2.8
		- slightly weathered				3.0
1.0						3.2
						3.4
						3.6
						3.8
1.2		END OF BOREHOLE (1.2 metres) Note: Stopped at trench depth				4.0
						4.2
						4.4
1.4						4.6
						4.8
						5.0
1.6						5.2
						5.4
						5.6
						5.8
1.8						6.0
						6.2
						6.4
2						

TETRA TECH

Contractor: Ewing	Completion Depth: 1.2 m
Equipment Type: Excavator	Start Date: 2022 May 29
Logged By: SAM	Completion Date: 2022 May 29
Reviewed By: AMM	Page 1 of 1

Testpit No: **TT-TP22-06**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	SAND (COLLUVIUM) - silty, gravelly, angular gravel to 100 mm diameter, damp, brown	Unfrozen			
0.2						0.2
						0.4
						0.6
						0.8
						1.0
						1.2
0.4		BEDROCK - highly weathered, highly fractured, damp, brown and blue grey, sand and silt in fractures				1.4
						1.6
0.6		- moist				1.8
						2.0
						2.2
						2.4
0.8		- moderately weathered, damp				2.6
						2.8
						3.0
1.0						3.2
		END OF BOREHOLE (1.0 metre) Note: Stopped at trench depth				3.4
						3.6
1.2						3.8
						4.0
						4.2
						4.4
1.4						4.6
						4.8
						5.0
1.6						5.2
						5.4
						5.6
1.8						5.8
						6.0
						6.2
2						6.4

TETRA TECH

Contractor: Ewing	Completion Depth: 1 m
Equipment Type: Excavator	Start Date: 2022 May 29
Logged By: SAM	Completion Date: 2022 May 29
Reviewed By: AMM	Page 1 of 1

TETRA TECH

FIELD REPORT

ISSUED FOR USE

Project:	VGCX HLF Phase 2 Subgrade Inspection	**Date:**	June 6, 2022
Location:	Eagle Gold Mine, Yukon	**Contractor:**	Ewing Transport Ltd.
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing
Contact:	Cody Roberts, P.Eng.	**Contractor's Email:**	NA
Weather:	Variable	**Tetra Tech Representative:**	Jacob Swartz, EIT
File:	704-ENG.WARC03235-23	**Status:**	Issued for Use

1.0 INTRODUCTION

1.1 General

NND-EBA Land Protection Corp, operating as NELPCo Limited Partnership (NELPCo), was retained by Victoria Gold Corp. (VGCX) to provide geotechnical support for Phase 2 of the heap leach facility expansion (HLF Phase 2) at the Eagle Gold Mine located in Dublin Gulch north of Mayo, Yukon. Tetra Tech Canada Inc. (Tetra Tech) has prepared this report on behalf of NELPCo as their engineering service provider. Tetra Tech's role includes inspection of earthworks, header underdrain and lateral drain installation, compaction testing of berms, and testpitting to support the ground improvement plan.

VGCX retains JDS Energy and Mining Inc. (JDS) to oversee various Eagle Gold Mine construction works and coordinate Tetra Tech's site visits. As there are various ongoing construction activities at the mine, JDS has requested that Tetra Tech make periodic site visits to inspect the subgrade for HLF Phase 2.

This field report details Tetra Tech's inspection on June 2, 2022. All photos and test logs recorded during the site visit are attached below.

2.0 DAILY SUMMARY - FIELD INVESTIGATION

2.1 June 2, 2022

- Weather: Sunny, 10 °C
- Tetra Tech's field representative, Mr. Jacob Swartz, EIT, mobilized to the Eagle Gold Mine to inspect the last section of the Lateral #1 E.
- Upon arrival, the trench for the Lateral #1 E was open from approximately 459,919E 7,102,098N Ele:1050.32 m.a.s.l. to 460,014E 7,101,824N Ele:1053.94 m.a.s.l. (Coordinates provided by JDS June 4, 2022).
  - Soft spots were present throughout the trench because the material was saturated and loose due to higher silt content and water runoff from above the trench.
  - Ewing excavated the soft spots, which were found to be surficial. Tetra Tech observed coarse colluvium material or bedrock under the saturated material.
- Prior to leaving Tetra Tech informed JDS that the inspected subgrade for Lateral #1 E is considered suitable and is ready for the placement of corrugated pipe and backfill.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

3.0 PHOTOGRAPHS

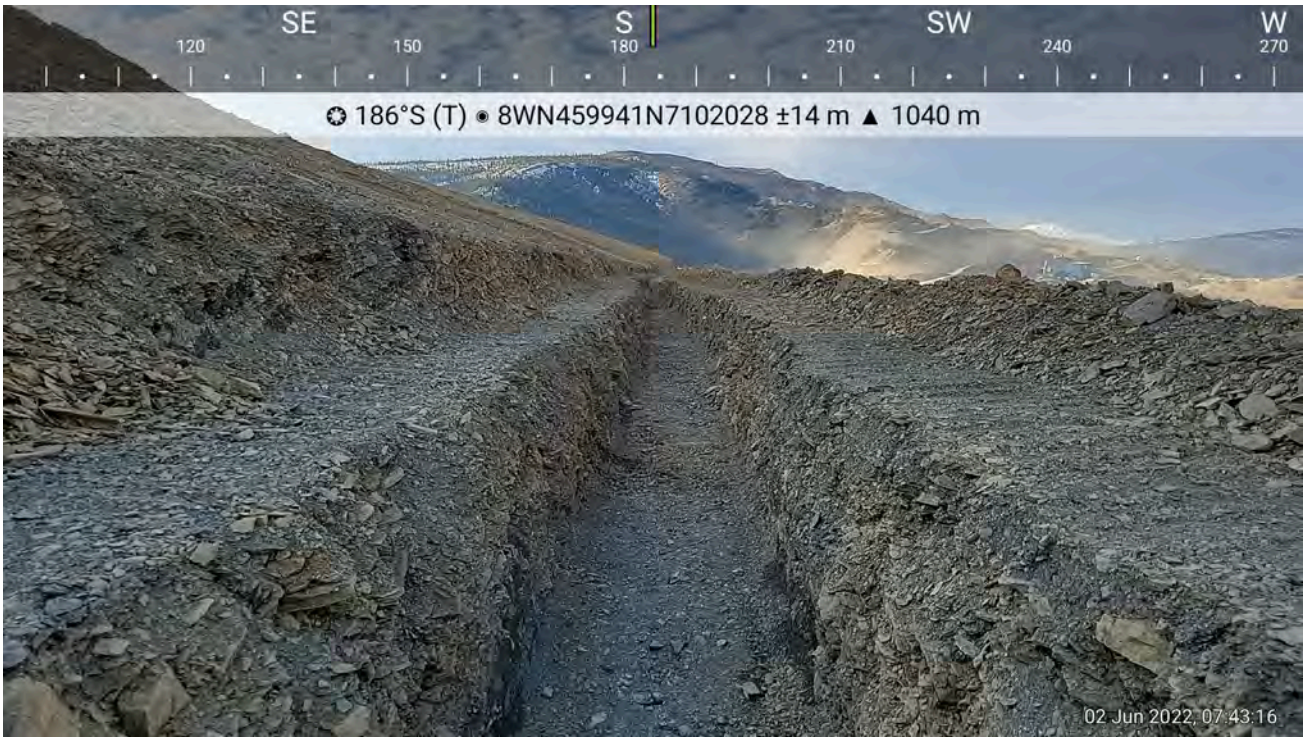


Figure 1: Lateral #1 E Subgrade (June 2, 2022)

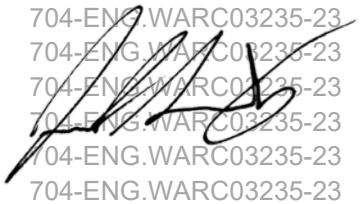
Figure 2: Completed Lateral #1 E (May 12, 2022)

4.0 CLOSURE

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

704-ENG.WARC03235-23



Prepared by:
Jacob Swartz, EIT
Geotechnical Engineer, Arctic Group
Engineering Practice
Direct Line: 867.668.9241
Jacob.Swartz@tetratech.com

704-ENG.WARC03235-23

Reviewed by:
Adam Mickey, M.Eng., EIT
Geotechnical Engineer, Arctic Group
Engineering Practice
Direct Line: 867.668.9242
Adam.Mickey@tetratech.com

/cr

Victoria Gold
Project: Heap Leach Phase 2 Expansion
Project Progress Report
July 10, 2022

Site Location: Eagle Gold

Key milestone dates:

Activity	Expected start date	Expected completion date
Slope Shaping – East slope	*01-May*	*Completed June 15*
Lateral #2 E	*13-May*	*Completed ~25-May*
Lateral #1 E	*25-May*	*Completed ~ 02-June*
Header drain extension above 1065m & 1B connection	*22-June*	*Completed 10-June*
Lay field mobilization	*14-June*	*Completed June 15*
Slope Shaping & bedding – North/west Slope	*10-June*	*Completed 31-June*
Liner installation on the East slope	*16-June*	*4- July*
Liner completion date		*24-July*
Phase 2B west perimeter Berm	*27-June*	
Phase 2B Laterals	*1-Aug*	
Phase 2B header drain extension	*25-Aug*	

- Additional Spring lateral drain (SLD)
  - The final spring area excavation was completed between May 12th to May 15th. Unsuitable wet and silty material was removed and replaced with a rock fill. The subgrade was inspected and approved by Tetra tech prior to placing the rockfill. (FR_WARC03235-23_HLF Subgrade Inspection_Spring Lateral Drain_May 12 - 15, 2022)
  - After the area was excavated out and backfilled; an extension of the finger drain was installed right up to the area where the main seep was observed.
  - The area was monitored for wet spots and settlement with no issues arising. A rock truck was run up and down the slope 3 weeks after completion and no deflection or punching out was observed.

- Lateral #2E
  - Lateral #2E tie in location was exposed from where it was completed in 2021.
  - The remainder of the alignment was ripped/excavated out to the east perimeter berm
  - Subgrade Inspection completed on May 22 by Victoria gold Technical Services & JDS (HLF Lateral #2E Subgrade Inspection_May22 2022)
  - The lateral drain was then installed as per the specification and backfilled up to grade. (Filter cloth> 10cm drain rock> 4" underdrain piping>30cm drain rock wrapped in the filter cloth> minimum 30cm of drain rock on top)

- Lateral #1E
  - Lateral #1E tie in location at the header drain was exposed at the Y connection
  - The first ~200m was excavated and graded.
  - The first Subgrade inspection by Tetra Tech was on May29 (FR_WARC03235-23_HLF Subgrade Inspection_Lateral Drain_May 29 2022)
  - A small section of ice was found and after further removal of material no other evidence of continuation was found
  - The lateral drain was then installed as per the specification and backfilled up to grade. (Filter cloth> 10cm drain rock> 4" underdrain piping>30cm drain rock wrapped in the filter cloth> minimum 30cm of drain rock on top)
  - The remainder of the lateral was excavated and graded. 4 soft & moist locations were excavated out to for further investigation which resulted in no concerns from Tetra Tech
  - The second Subgrade inspection by Tetra Tech was on June 2 (FR_WARC03235-23_HLF Subgrade Inspection_Lateral Drain_June 2, 2022)

- Phase 1B Interceptor backfill
  - Rip rap was removed and hauled out to be reused on the phase 2 interceptor ditch
  - Residual rip rap, geotextile and silt was removed from the ditch and hauled up to the waste dump.
  - As discussed with Roy (Forte), the method spec was used as installation methodology for the phase 1B interceptor backfill. Jake with Tetra Tech was up to site to verify compaction numbers using the method spec "RFI_WARC03235-17_HLF Phase 2_Compaction Method Spec_R1".
  - It was determined that we would use 10 passes with the CAT CS54B in leu of the 8 passes to ensure compaction criteria was met

- Phase 1B Header connection to Phase 2
  - The header connection from Phase 1B to Phase 2 was exposed at the phase 1B interceptor ditch
  - The existing 90-degree elbows were removed to establish the straight length pipe
  - We cleaned out all the silt and unsuitable material that drained into the header detail and the grade was re-established
  - The geotextile was exposed on both sides and new geotextile was installed with overlap on both sides; 10cm bedding lift of drain rock installed
  - The 6-inch header lines were connected using electrofusion couplings (work completed with Victoria Gold)
  - The 20cm of 38mm drain rock was placed on top of the header pipes, geotextile was closed, 30cm drain rock was placed over the geotextile
  - The remainder of the header drain was backfilled up to grade with rockfill and packed

- Lateral #2W extension
  - Lateral #2W was started in 2021. It was completed to just above the 1065m elevation (to extend it past the phase 2A extents)
  - The end point just above the 1065m was a low point that could collect surface run off, so we wanted to extend this approximately 40m for us to fill in this area and allow the area to drain down to the 1065 bench
  - The end point was exposed and approximately 40m of lateral was excavated and graded out
  - Tetra Tech was on site to complete the subgrade inspection; no issues were identified (Subgrade report to be submitted once received from Tetra Tech)

- Phase 2A West Perimeter berm
  - The phase 2A perimeter berm was substantially completed in 2021.
  - The Phase 1B culverts were removed from the perimeter berm extents (these were used to discharge the Phase 1B interceptor ditch)
  - Rockfill was utilized in this area to bring up the berm to design elevation with the method spec for compaction
  - Survey was out to check the berm in June and a few low spots were discovered.
  - Site grading fill was placed on the 2A berm to bring this up to grade; Tetra Tech was on site to verify compaction.

- Phase 2B West Perimeter berm
  - The Phase 2B perimeter berm subgrade prep was started in early July
  - We have currently cleared the extents of the Phase 2B perimeter berm with 2 subgrade approvals provided from Tetra Tech
  - 1 more subgrade approval will be required to complete subgrade preparation on the entire length of the perimeter berm.
  - Site grading fill is being utilized for placement; Tetra Tech is on site to verify compaction.
  - The upper section is currently being sub excavated out due to frozen / ice rich soil found within the extents

- Slope Shaping and surface preparation
  - Slope shaping and surface preparation continued through June and completed in substantially complete on July 6.
  - Soft spots identified ahead of Tetra Tech mobilizing was sub excavated out and backfilled with rockfill.
  - The slope was contoured, packed and approximately 10cm of sand was spread and packed onto the subgrade. (Subgrade approvals to be included in Tetra Tech package for the liner install QA/QC).
  - Any issues that arise is identified by Layfield & Tetra Tech and the small deficiencies are corrected before Layfield proceeds. (ie; minor erosion from rainfall).

- Layfield Liner installation
  - Layfield mobilized on June 15 and commenced installation of GCL and liner on June 17.
  - Layfield is currently approximately 75% complete the installation based on the 105,000m2 of total coverage.
  - The prepared area ended up being approximately 12,500m2 larger than the original forecasted area that drove procurement. RFI-010 details the issues arose from liner shortages that were discovered after a lidar scan from Underhill.
  - One small section of GCL was hydrated over the course of an evening rainfall event. Tetra Tech and Forte confirmed the repair procedure on the area. (Removal of hydrated portion)
  - A lot of rainfall in the current forecast; small diversion ditches, sandbag diversions and water control are currently being implemented

- Phase 2 Interceptor ditch
  - The phase 2 interceptor ditch was lined with geotextile and riprap was placed as per details on the drawings
  - There is currently about 80m of the interceptor ditch without riprap. Currently working on sourcing rip rap to complete this

Victoria Gold
Project: Heap Leach Phase 2 Expansion
Project Progress Report
July 10, 2022

Site Location: Eagle Gold

Key milestone dates:

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Header drain extension above 1065m & 1B connection	*22-June*	*Completed 10-June*
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Liner installation on the East slope	*16-June*	*4- July*
Liner completion date		*24-July*
Phase 2B west perimeter Berm	*27-June*	
Phase 2B Laterals	*1-Aug*	
Phase 2B header drain extension	*25-Aug*	

- Additional Spring lateral drain (SLD)
  - The final spring area excavation was completed between May 12th to May 15th. Unsuitable wet and silty material was removed and replaced with a rock fill. The subgrade was inspected and approved by Tetra tech prior to placing the rockfill. (FR_WARC03235-23_HLF Subgrade Inspection_Spring Lateral Drain_May 12 - 15, 2022)
  - After the area was excavated out and backfilled; an extension of the finger drain was installed right up to the area where the main seep was observed.
  - The area was monitored for wet spots and settlement with no issues arising. A rock truck was run up and down the slope 3 weeks after completion and no deflection or punching out was observed.

- Lateral #2E
  - Lateral #2E tie in location was exposed from where it was completed in 2021.
  - The remainder of the alignment was ripped/excavated out to the east perimeter berm
  - Subgrade Inspection completed on May 22 by Victoria gold Technical Services & JDS (HLF Lateral #2E Subgrade Inspection_May22 2022)
  - The lateral drain was then installed as per the specification and backfilled up to grade. (Filter cloth> 10cm drain rock> 4" underdrain piping>30cm drain rock wrapped in the filter cloth> minimum 30cm of drain rock on top)

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  - The remainder of the lateral was excavated and graded. 4 soft & moist locations were excavated out to for further investigation which resulted in no concerns from Tetra Tech
  - The second Subgrade inspection by Tetra Tech was on June 2 (FR_WARC03235-23_HLF Subgrade Inspection_Lateral Drain_June 2, 2022)

- Phase 1B Interceptor backfill
  - Rip rap was removed and hauled out to be reused on the phase 2 interceptor ditch
  - Residual rip rap, geotextile and silt was removed from the ditch and hauled up to the waste dump.
  - As discussed with Roy (Forte), the method spec was used as installation methodology for the phase 1B interceptor backfill. Jake with Tetra Tech was up to site to verify compaction numbers using the method spec "RFI_WARC03235-17_HLF Phase 2_Compaction Method Spec_R1".
  - It was determined that we would use 10 passes with the CAT CS54B in leu of the 8 passes to ensure compaction criteria was met

- Phase 1B Header connection to Phase 2
  - The header connection from Phase 1B to Phase 2 was exposed at the phase 1B interceptor ditch
  - The existing 90-degree elbows were removed to establish the straight length pipe
  - We cleaned out all the silt and unsuitable material that drained into the header detail and the grade was re-established
  - The geotextile was exposed on both sides and new geotextile was installed with overlap on both sides; 10cm bedding lift of drain rock installed
  - The 6-inch header lines were connected using electrofusion couplings (work completed with Victoria Gold)
  - The 20cm of 38mm drain rock was placed on top of the header pipes, geotextile was closed, 30cm drain rock was placed over the geotextile
  - The remainder of the header drain was backfilled up to grade with rockfill and packed

- Lateral #2W extension
  - Lateral #2W was started in 2021. It was completed to just above the 1065m elevation (to extend it past the phase 2A extents)
  - The end point just above the 1065m was a low point that could collect surface run off, so we wanted to extend this approximately 40m for us to fill in this area and allow the area to drain down to the 1065 bench
  - The end point was exposed and approximately 40m of lateral was excavated and graded out
  - Tetra Tech was on site to complete the subgrade inspection; no issues were identified (Subgrade report to be submitted once received from Tetra Tech)

- Phase 2A West Perimeter berm
  - The phase 2A perimeter berm was substantially completed in 2021.
  - The Phase 1B culverts were removed from the perimeter berm extents (these were used to discharge the Phase 1B interceptor ditch)
  - Rockfill was utilized in this area to bring up the berm to design elevation with the method spec for compaction
  - Survey was out to check the berm in June and a few low spots were discovered.
  - Site grading fill was placed on the 2A berm to bring this up to grade; Tetra Tech was on site to verify compaction.

- Phase 2B West Perimeter berm
  - The Phase 2B perimeter berm subgrade prep was started in early July
  - We have currently cleared the extents of the Phase 2B perimeter berm with 2 subgrade approvals provided from Tetra Tech
  - 1 more subgrade approval will be required to complete subgrade preparation on the entire length of the perimeter berm.
  - Site grading fill is being utilized for placement; Tetra Tech is on site to verify compaction.
  - The upper section is currently being sub excavated out due to frozen / ice rich soil found within the extents

- Slope Shaping and surface preparation
  - Slope shaping and surface preparation continued through June and completed in substantially complete on July 6.
  - Soft spots identified ahead of Tetra Tech mobilizing was sub excavated out and backfilled with rockfill.
  - The slope was contoured, packed and approximately 10cm of sand was spread and packed onto the subgrade. (Subgrade approvals to be included in Tetra Tech package for the liner install QA/QC).
  - Any issues that arise is identified by Layfield & Tetra Tech and the small deficiencies are corrected before Layfield proceeds. (ie; minor erosion from rainfall).

- Layfield Liner installation
  - Layfield mobilized on June 15 and commenced installation of GCL and liner on June 17.
  - Layfield is currently approximately 75% complete the installation based on the 105,000m2 of total coverage.
  - The prepared area ended up being approximately 12,500m2 larger than the original forecasted area that drove procurement. RFI-010 details the issues arose from liner shortages that were discovered after a lidar scan from Underhill.
  - One small section of GCL was hydrated over the course of an evening rainfall event. Tetra Tech and Forte confirmed the repair procedure on the area. (Removal of hydrated portion)
  - A lot of rainfall in the current forecast; small diversion ditches, sandbag diversions and water control are currently being implemented

- Phase 2 Interceptor ditch
  - The phase 2 interceptor ditch was lined with geotextile and riprap was placed as per details on the drawings
  - There is currently about 80m of the interceptor ditch without riprap. Currently working on sourcing rip rap to complete this

APPENDIX 3: RFIS

REQUEST FOR INFORMATION

JDS RFI:	**VITGOLD-RFI-001**
Contractor RFI:	
Site Location: EAGLEGOLD	
Date Submitted: June 30, 2021	

Subject: 28" Culvert Under Perimeter Berm (1B Interceptor ditch outlet)	**Project Zone/Area: Heap Leach Phase 2**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green	**Discipline: Civil**

REQUEST

Related Drawings: **Forte Drawing CV-F002**	**Other Related Documents:**

Information Request/Description of Issue:

Requesting information on what we could do about leaving a 28" HDPE Phase 1B culvert under the western perimeter berm? This would allow us to complete the construction of the north western perimeter berm and continue utilize until 2022 freshet is over.

Proposed Corrective Action

Liner could be utilized to block any water from entering the 28" culvert when backfill the Phase 1B interceptor ditch? The outlet end would also be cut off and covered when no longer in service.

Type of Change:	☐	Owner Change	☒	Clarification/Info	☒ Field Change
	☐	Vendor Change	☐	Design Change	☐ Other

Cost Impact:	
Schedule Impact:	

Requested by: Clint Abel		**June 30, 2021**
Name	Signature	Date

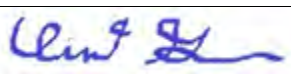
RESPONSE

☐ Approved ☐ Approved as noted ☒ Rejected as noted

Response:

Culvert to be removed and backfilled per specification as to assure no pathways from liner or under liner to environment. If left in place at a minimum the culvert would require monitoring until final closure.

Answered by:

NameClint Green	Date7/19/21
Signature 	

Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.

REQUEST FOR INFORMATION

JDS RFI:	**VITGOLD-RFI-002**
Contractor RFI:	
Site Location: EAGLEGOLD	
Date Submitted: August 31, 2021	

Subject: Header Underdrain & Laterals	**Project Zone/Area: Heap Leach Phase 2**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green	**Discipline: Civil**

REQUEST

Related Drawings: **DTL-F003**	**Other Related Documents:**

Information Request/Description of Issue:

Requesting clarification on the spec of the material that can be utilized for the underdrain system. The only suitable materials on site for the underdrain is the 38mm ODF in Phase 3 and stemming. There is currently no suitable sand to place over the geotextile.

Proposed Corrective Action

Propose to use 38mm ODF spec for all backfill in the header underdrain and laterals.

Type of Change:	☐	Owner Change	☒	Clarification/Info	☒ Field Change
	☐	Vendor Change	☐	Design Change	☐ Other
Cost Impact:					
Schedule Impact:					

Requested by: Clint Abel Clinton G. Abel **August 31, 2021**

Name Signature Date

RESPONSE

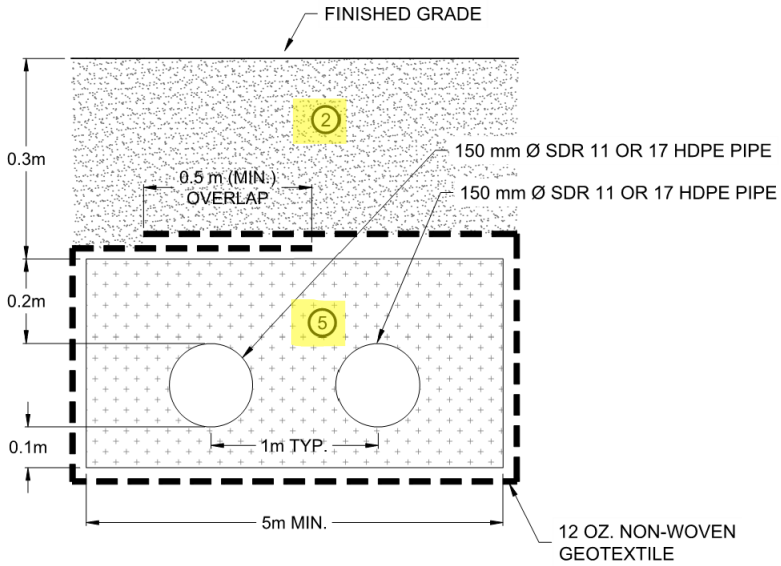
☐ Approved ☐ Approved as noted ☐ Rejected as noted

Response:

Using same material for inside the geotextile (material 5) and above geotextile (material 2) as shown Detail 11 below is approved if the following conditions are met:

- **Material should not be considered ODF as ODF has higher allowable % fines than what is allowable for the underdrain system.**
- **An increase from 20mm to 38mm top size material may be used if percent passing the No. 200 sieve is maintained below 7% per RFI-001 from Phase 1A construction. See Table below:**

		20mm Select Drain Fill	
1	BGC HLF Design Specs IFC	Sieve Size	% Passing
		20mm	100
		12.5mm	85-100
		0.074mm (No. 200)	0-7



TYPICAL HLF 150 mm UNDERDRAIN HEADERS DETAIL

11 / CV-F003

SCALE: NTS

FILL TYPES FOR CONSTRUCTION

MATERIAL No.	FILL MATERIAL NAME	FILL DESCRIPTION	MOISTURE CONDITIONING	LOOSE LIFT THICKNESS	COMPACTION EFFORT	HATCH
1	SITE GRADING FILL	SITE GRADING SOILS FROM REQUIRED EXCAVATIONS AND CUT/FILL ACTIVITIES	2% +/- OF OPTIMUM	300 mm MAX.	95% OF ASTM D698 COMPACTION	
2	SELECT FILL	FINE GRAINED MATERIALS FOR LINER BEDDING	-2% + 1% OF OPTIMUM	150 mm MAX.	95% OF ASTM D698 COMPACTION	
4	OVERLINER DRAIN FILL (ODF)	CLEAN GRAVEL MATERIALS FOR HLF LINER COVER, PLS AND LDRS SUMPS	NONE	FILL NOTE 1	NONE REQUIRED	
5	SELECT DRAIN FILL	CLEAN GRAVEL MATERIAL FOR UNDERDRAIN PIPES	NONE	AS REQUIRED	NONE REQUIRED	
7	COMPACTED ROCKFILL	HIGH STRENGTH ROCK MATERIALS	AS REQUIRED	FILL NOTE 2	LARGE SCALE TEST FILL REQUIRED (FILL NOTE 2)	
8	ANCHOR TRENCH BACKFILL	SITE GRADING FILL MATERIAL FOR USE IN LINER ANCHOR TRENCHES	AS REQUIRED	150 mm	85% OF ASTM D698 COMPACTION	
9	ROAD WEARING COARSE	WELL GRADED SANDY GRAVEL	AS REQUIRED	150 mm	95% OF ASTM D698 COMPACTION	
11	ORE	CRUSHED ORE MATERIAL FOR HEAP LEACHING	N/A	N/A	N/A	

FILL NOTES:

1) OVERLINER DRAIN FILL TO BE PLACED IN A SINGLE LOOSE LIFT OF 0.6 m (MINIMUM) ON THE UPPER PAD AREAS.

2) COMPACTED ROCKFILL THICKNESS AND COMPACTION DEPENDING ON AVAILABLE MATERIALS AND RESULTS OF LARGE SCALE TEST FILLS CONDUCTED BY THE ENGINEER DURING CONSTRUCTION, AS REQUIRED BY THE SPECIFICATIONS.

3) FILL TYPES 3, 6, & 10 INTENTIONALLY OMITTED.

Answered by: Clint Green

Name	Signature	Date

Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does

constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.

REQUEST FOR INFORMATION

JDS RFI:	**VITGOLD-RFI-003**
Contractor RFI:	
Site Location: EAGLEGOLD	
Date Submitted: November 17, 2021	

Subject: 1065 bench and lateral #2 W intersection point	**Project Zone/Area: Heap Leach Phase 2**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green	**Discipline: Civil**

REQUEST

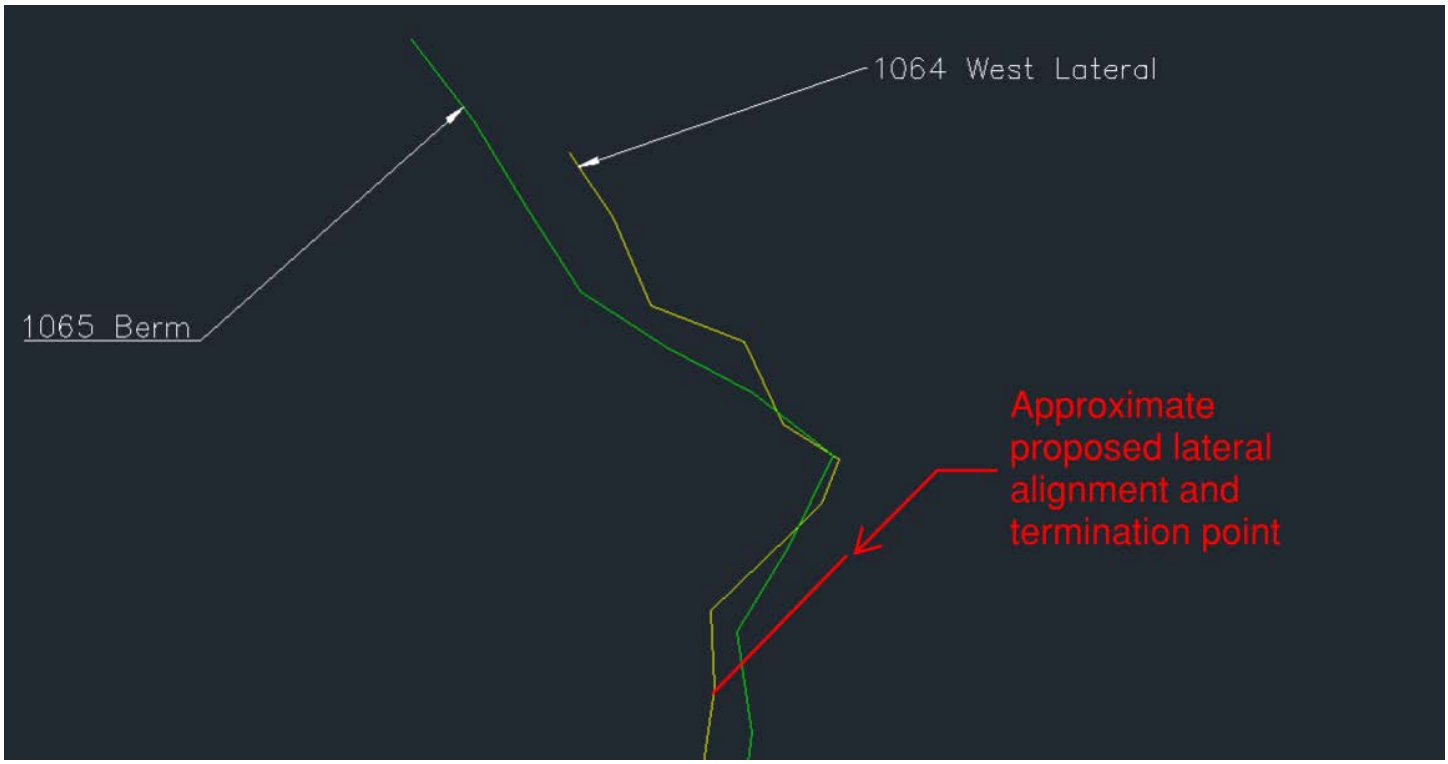
Related Drawings:	**Other Related Documents:** 1064 W lateral Drain FG-1065 Berm SH.dwg

Information Request/Description of Issue:

With the liner key in trench at 1065, the lateral #2 W crosses the 1065 key in bench. Requesting clarification on the lateral #2W lateral drain alignment and end point for phase 2B.

Proposed Corrective Action

Propose to direct the lateral drain towards the north east at 1% earlier to ensure the lateral drain has adequate cover below the 1065 bench. The remainder of the lateral would be completed on phase 2B as it will be above 1065m.



Type of Change:	☐	Owner Change	☒	Clarification/Info	☒	Field Change
	☐	Vendor Change	☐	Design Change	☐	Other

Cost Impact:	
Schedule Impact:	

Requested by: Cody Roberts **November 17, 2021**

Name	Signature	Date

RESPONSE

☐ Approved ☐ Approved as noted ☐ Rejected as noted

Response:

Answered by:

Name	Signature	Date

Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.

REQUEST FOR INFORMATION

JDS RFI:	**VITGOLD-RFI-004**
Contractor RFI:	
Site Location: EAGLEGOLD	
Date Submitted: November 18, 2021	

Subject: Header underdrain grade change @ 1065 bench	**Project Zone/Area: Heap Leach Phase 2**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green	**Discipline: Civil**

REQUEST

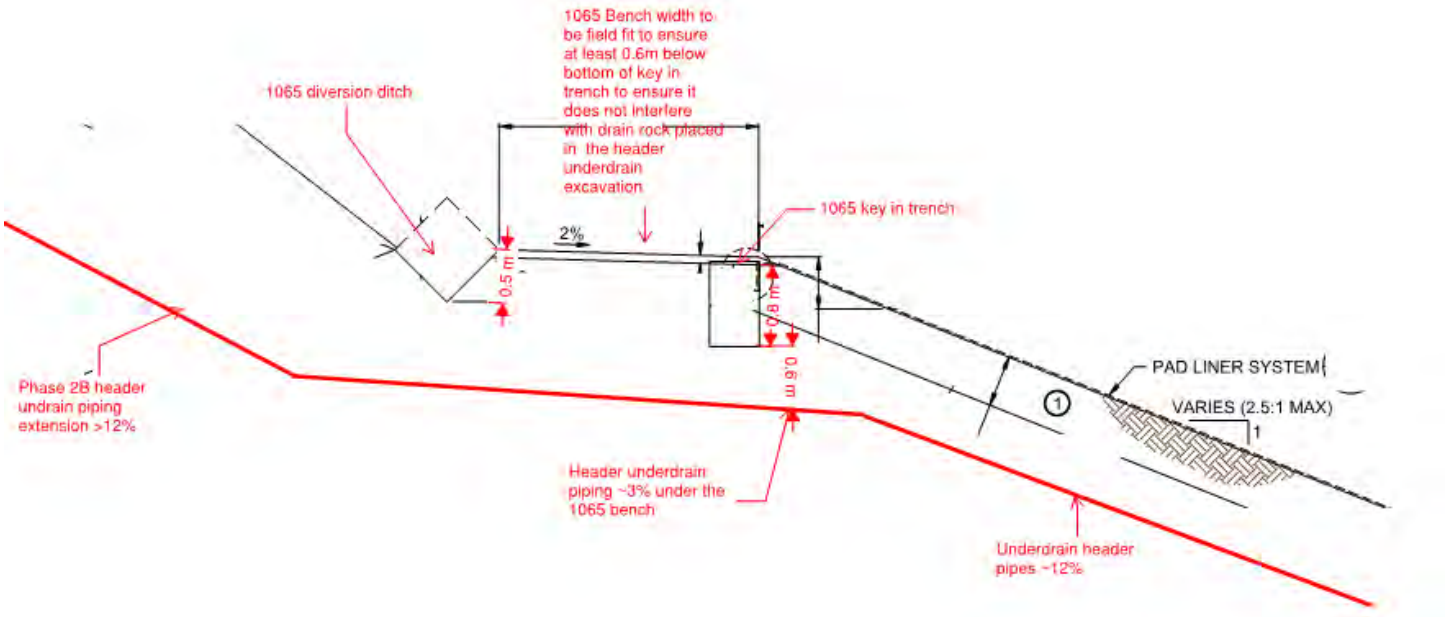
Related Drawings: CV-F003	**Other Related Documents:**

Information Request/Description of Issue:

The header underdrain piping grade will currently intersect the back side of the 1065 bench at 5cm below finished grade of the road.

Proposed Corrective Action

Propose to change the grade from ~12% to ~3% to allow adequate coverage under the 1065 bench (Specifications call for a minimum grade of 10%).



Type of Change:	☐	Owner Change	☒	Clarification/Info	☒	Field Change
	☐	Vendor Change	☐	Design Change	☐	Other

Cost Impact:	
Schedule Impact:	

Requested by: Cody Roberts **November 18, 2021**

Name Signature Date

RESPONSE

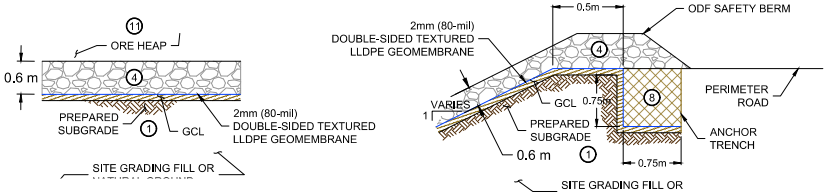
☐ Approved	☐ Approved as noted	☐ Rejected as noted

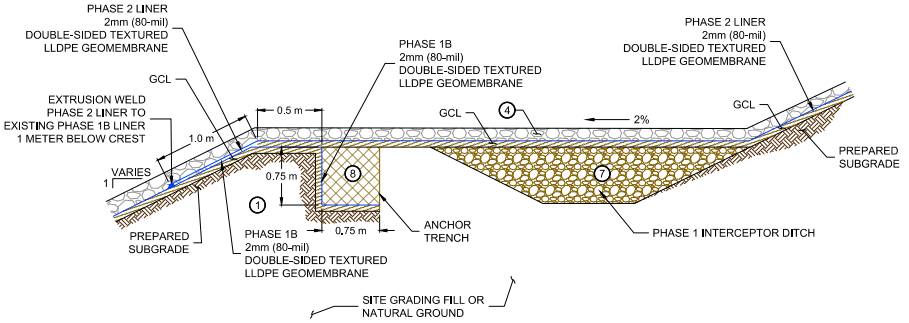
Response:

Answered by:

Name	Signature	Date

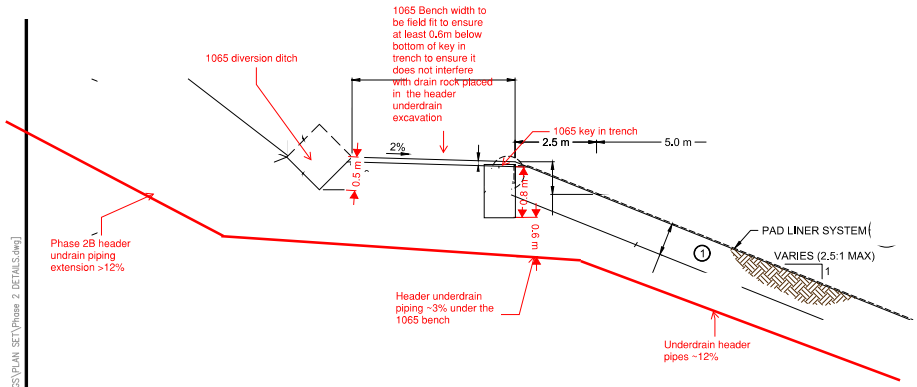
Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.

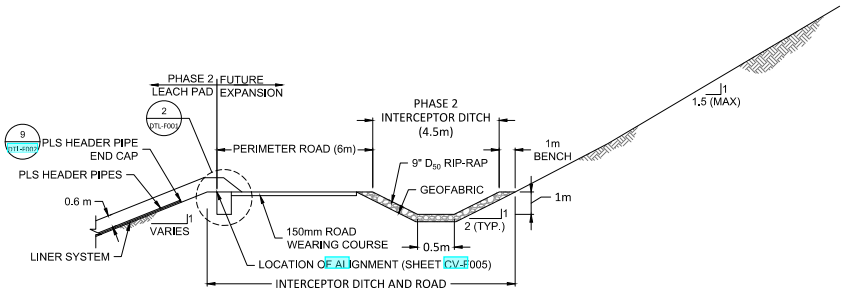




PHASE 1B LINER AND ANCHOR TRENCH TIE-IN DETAIL

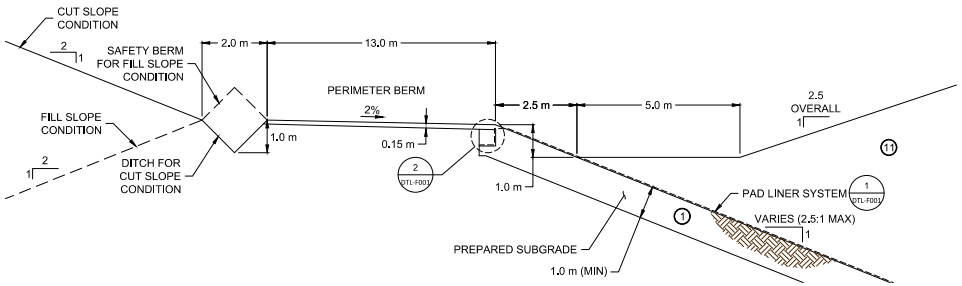
3 CV-F004 DTL-F004 SCALE: NTS





TYPICAL PHASE 2 PERIMETER ROAD W/ INTERCEPTOR DITCH

5 CV-F004 SCALE: NTS



SOUTH PERIMETER BERM DETAIL

4.2 CV-F004 DTL-F004 SCALE: NTS

NOTES:

1. SEE DRAWING 109008-51100-03-GA-F002 FOR GENERAL NOTES, ABBREVIATIONS, LEGEND AND FILL TYPES.
2. OVERLINER DRAIN FILL THICKNESS SHALL BE 0.6 m (MINIMUM) IN UPPER PAD AREAS. ENGINEER MAY REQUIRE THICKER ODF LAYER BASED ON SITE CONDITIONS AND PLACEMENT METHOD.
3. PLACE SELECT FILL AS REQUIRED PRIOR TO PLACEMENT OF GCL AT ENGINEER'S DISCRETION TO MAINTAIN INTEGRITY OF GCL.

PERMIT TO PRACTICE FORTE DYNAMICS, INC. SIGNATURE Date 8/25/21 PERMIT NUMBER PP626 Association of Professional Engineers of Yukon

ISSUE	DATE	DESCRIPTION	DRAWN	CHKD	APPD
0	08/25/21	ISSUED FOR CONSTRUCTION	SMC	CJS	BC

COORD. SYSTEM: NAD 83 UTM ZONE 8

PROFESSIONAL ENGINEER YUKON TERRITORY BARRY I. CARLSON 15-25-21

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DTI PROJECT NO. 109005E

PREPARED BY: FORTE DYNAMICS 120 COMMERCE DRIVE, UNITS 3 & 4 FORT COLLINS, CO 80524

VICTORIA EAGLE GOLD, PHLF PHASE 2

TYPICAL DETAILS SHEET 1 OF 4

YUKON, CANADA

DRAWING NUMBER: 109005E-51100-03

DTL-F001

[sconek] [Aug 27, 2021 – 9:51am] [C:\Users\Sconek\OneDrive – Forte Dynamics\Documents\Work from Home\Victoria\Phase 2\CAD\DRAWINGS\PLAN SET\Phase 2 DETAILS.dwg]

REQUEST FOR INFORMATION

JDS RFI:	**VITGOLD-RFI-005**
Contractor RFI:	
Site Location: EAGLEGOLD	
Date Submitted: November 19, 2021	

Subject: Additional finger drain for lateral #1 W	**Project Zone/Area: Heap Leach Phase 2**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green	**Discipline: Civil**

REQUEST

Related Drawings:	**Other Related Documents:**
VITGOLD-RFI-005 Markups_CR	2021-11-17 HLF P2 Ground Spring

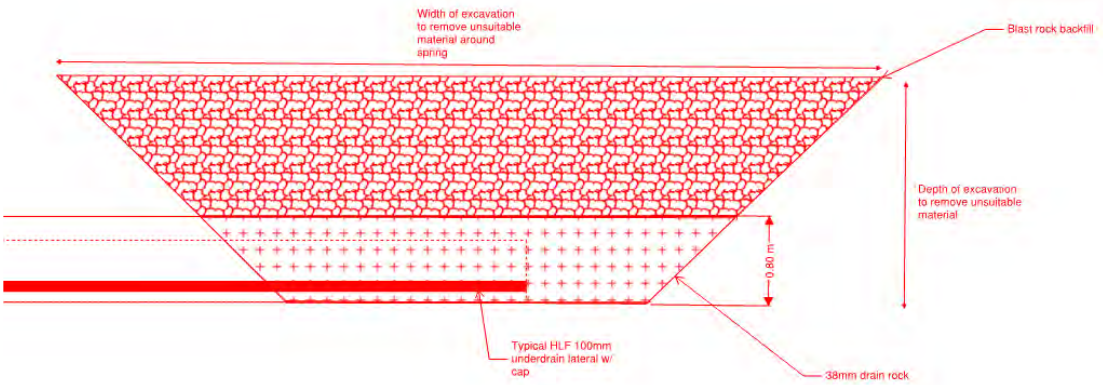
Information Request/Description of Issue:

There is a spring that we assume is part of the Anne Gulch head water within the extents of phase 2A.

Proposed Corrective Action

Propose an additional lateral drain to be installed to capture the springs discharge and direct it into lateral #1 W.

- Excavate to removal of all snow, ice and unsuitable materials
- Install the lateral drain into the spring extents using the typical HLF 100mm underdrain lateral detail
- The bottom 0.8m of the excavation to be filled with 38mm drain rock
- 0.8m depth to grade of the excavation to be backfilled with blast rock
- General area will be contoured/graded with additional blast rock as needed



-

Type of Change:	☐	Owner Change	☒	Clarification/Info	☒	Field Change	
	☐	Vendor Change	☐	Design Change	☐	Other	

Cost Impact:	
Schedule Impact:	

Requested by: Cody Roberts **November 19, 2021**

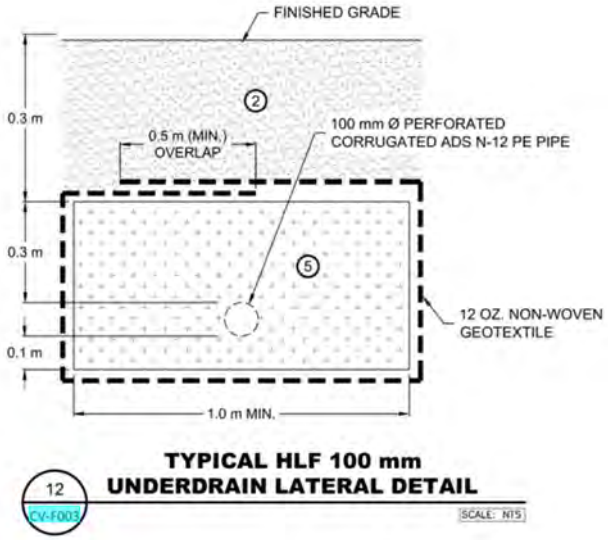
Name Signature Date

RESPONSE

☐ Approved ☒ Approved as noted ☐ Rejected as noted

Response:

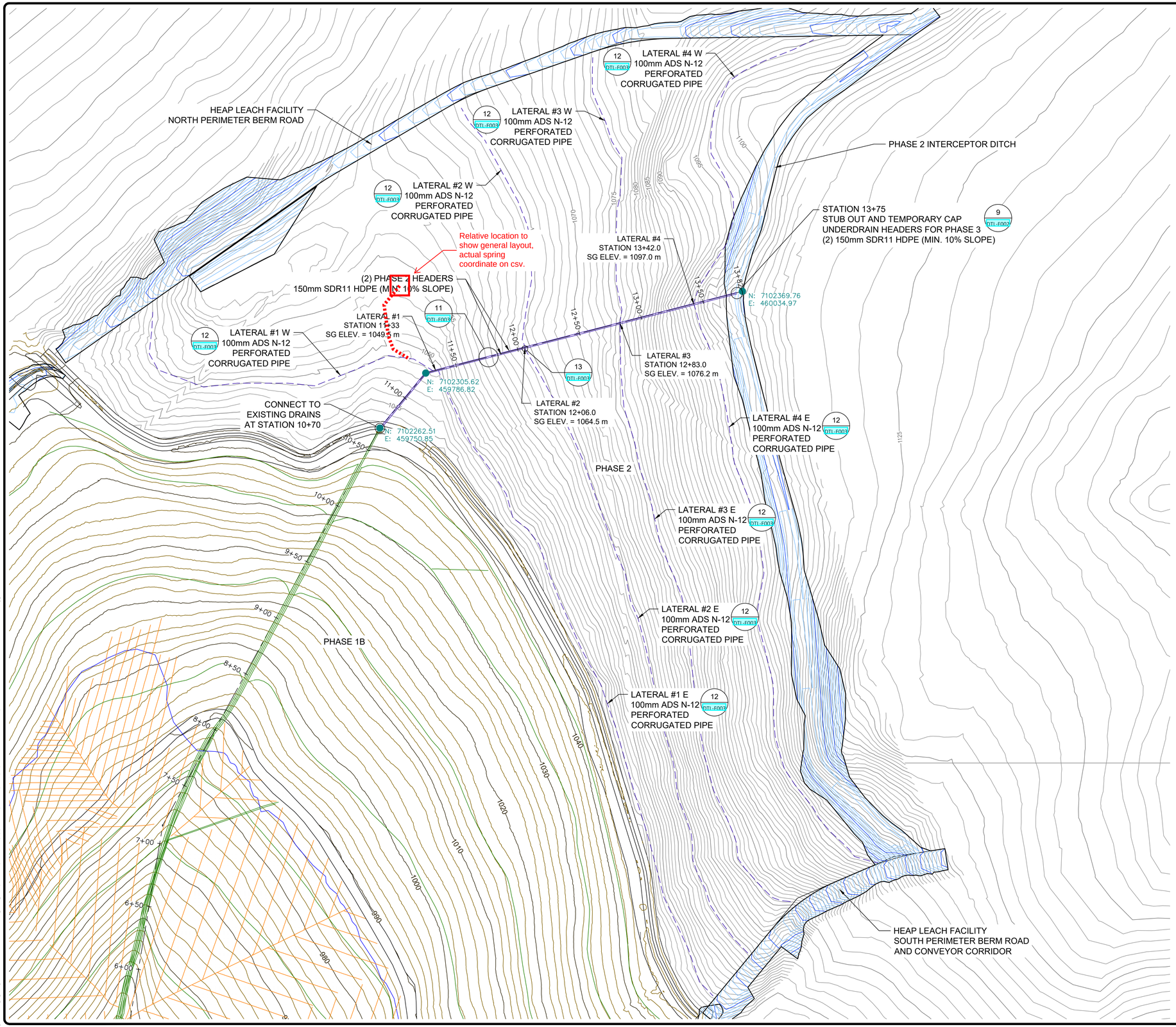
Approved, however include the non-woven geotextile as per Detail 12 on Drawing DTL-F003 or shown below:



Answered by:

Name Clint Green Signature Clint Green Date 11/24/2021

Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.



45 0 45

(In Meters)
1 cm = 15 M
(1 : 1,500)

NOTES:

1. LATERAL DRAIN LINES SPACED 75 METERS MAXIMUM ALONG UNDERDRAIN MAIN DRAIN LINES. EXTEND FROM MAIN DRAINS TO SEEPAGE AREAS AT APPROXIMATELY 3% (1% MINIMUM) POSITIVE GRADE AS DIRECTED BY FIELD ENGINEER.
2. HLF UNDERDRAINS TO BE CONSTRUCTED AS SHOWN WITH ADDITIONAL DRAINS EXTENDED TO SEEPAGE AREAS BASED ON FIELD OBSERVATIONS DURING CONSTRUCTION.

ISSUE	DATE	DESCRIPTION	DRAWN	DSGN	CHKD	APPD
0	082521	ISSUED FOR CONSTRUCTION	SMC	SMC	CJG	BC

COORD SYSTEM: NAD 83 UTM ZONE 8

PROFESSIONAL ENGINEER
YUKON TERRITORY
BARRY CARLSON
8-25-21

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FIELD DEVIATIONS FROM THIS DESIGN ARE NOT PERMITTED WITHOUT DOCUMENTED APPROVAL BY THE ENGINEER.

FDI PROJECT NO: 109005E

PREPARED BY:
FORTE DYNAMICS
120 COMMERCE DRIVE, UNITS 3 & 4
FORT COLLINS, CO 80524

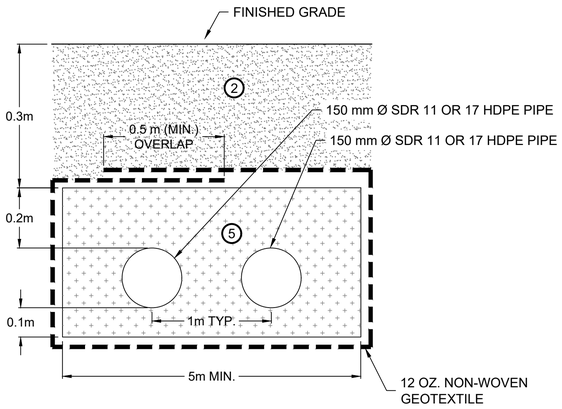
PERMIT TO PRACTICE
FORTE DYNAMICS, INC.
SIGNATURE
Date 8/25/21
PERMIT NUMBER PP626
Association of Professional Engineers of Yukon

VICTORIA EAGLE GOLD, PHLF PHASE 2
YUKON, CANADA

UNDERDRAIN PIPING PLAN VIEW

DRAWING NUMBER:
109005E-51100-03
CV-F003

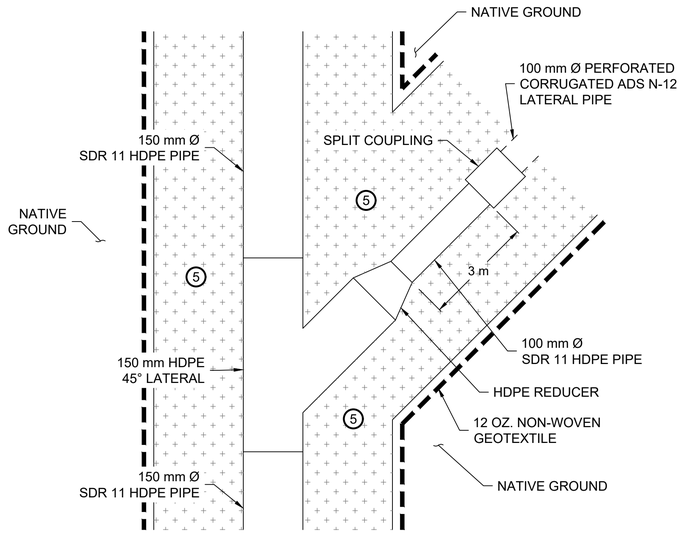
[scrank] [Aug 27, 2021 - 9:40am] [C:\Users\Scrank\AppData\Local\Temp\AcPublish_12128\Phase 2 GRADING AND PIPING.dwg]



TYPICAL HLF 150 mm UNDERDRAIN HEADERS DETAIL

11 CV-F003

SCALE: NTS

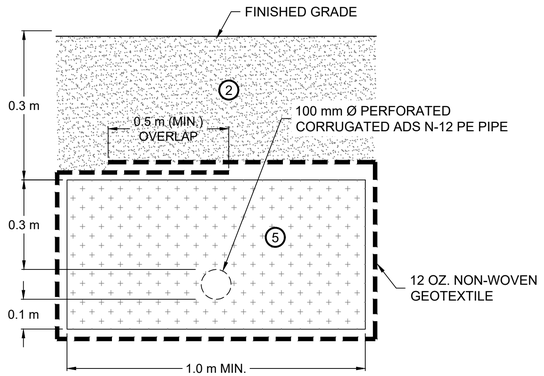


LATERAL CONNECTION

TYPICAL UNDERDRAIN PIPE CONNECTION DETAIL

13 CV-F003

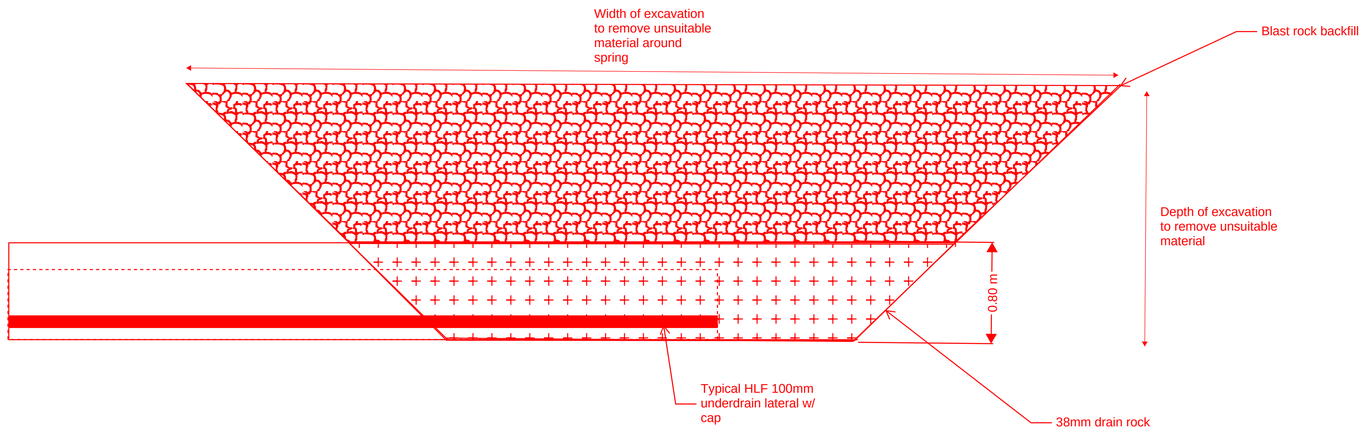
SCALE: NTS



TYPICAL HLF 100 mm UNDERDRAIN LATERAL DETAIL

12 CV-F003

SCALE: NTS



NOTES:

1. SEE DRAWING 109008-51100-03-GA-F002 FOR GENERAL NOTES, ABBREVIATIONS, LEGEND AND FILL TYPES.
2. SELECT FILL SHALL BE USED IN ALL TRENCH LOCATIONS OVERLAIN BY LINER.

PERMIT TO PRACTICE
FORTE DYNAMICS, INC.
SIGNATURE
Date 8/25/21
PERMIT NUMBER PP626
Association of Professional Engineers of Yukon

ISSUE	DATE	DESCRIPTION				
0	082521	ISSUED FOR CONSTRUCTION	SMC	SMC	CJG	BC
COORD SYSTEM	NAD 83 UTM ZONE 8		DRAWN	DSGN	CHKD	APPD

PROFESSIONAL ENGINEER YUKON BARRY L. CARLSON TERRITORY 8-25-21

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FDI PROJECT NO: 109005E

PREPARED BY:

FORTE DYNAMICS

120 COMMERCE DRIVE, UNITS 3 & 4
FORT COLLINS, CO 80524

VICTORIA EAGLE GOLD, PHLF PHASE 2

TYPICAL DETAILS SHEET 3 OF 4

YUKON, CANADA

DRAWING NUMBER: 109005E-51100-03

DTL-F003

[scrank] [Aug 27, 2021 – 9:51am] [C:\Users\Scrank\OneDrive – Forte Dynamics\Documents\Work from Home\Victoria\Phase 2\CAD\DRAWINGS\PLAN SETS\Phase 2 DETAILS.dwg]

2.11E+08 7102391 459842.5 1054.884 GS_ SPRING

REQUEST FOR INFORMATION

JDS RFI:	**VITGOLD-RFI-006**
Contractor RFI:	
Site Location: EAGLEGOLD	
Date Submitted: February 27, 2022	

Subject: Header drain connection to Phase 1B	**Project Zone/Area: Heap Leach Phase 2**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green	**Discipline: Civil**

REQUEST

Related Drawings:	**Other Related Documents:**
DTL-F003 CV-F003	

Information Request/Description of Issue:

The (2) 150mm header connection drains below the phase 1B interceptor ditch (10+70) are not connected to the phase 2 header connection drain that is currently installed.
As the pipe is fixed (backfilled) on both sides, fusing the connection pipe will not be feasible with standard butt fusion as it requires a free moving end to properly face and fuse.

Proposed Corrective Action

Option 1 – (Preferred due to simplicity) Install HDPE pipe couplers on both ends of the connection pipe.
Option 2 – Butt fuse the downstream end of connection pipe and utilize a HDPE pipe coupler on the other end.

The intention is to complete this after substantial run off has completed, but prior to holding up layfields installation team in early June

I would typically use the Victaulic 905 style coupling. If a stainless body is required a ROMAC Armor Lock 304L stainless steel coupling would be suitable

Type of Change:	☒	Owner Change	☒ Clarification/Info	☒	Field Change
	☐	Vendor Change	☐ Design Change	☐	Other
Cost Impact:					
Schedule Impact:					

Requested by: Cody Roberts February 27, 2022

Name Signature Date

RESPONSE

☐ Approved ☐ Approved as noted ☐ Rejected as noted

Response:

Answered by:

Name Signature Date

Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.

REQUEST FOR INFORMATION

JDS RFI:	**VITGOLD-RFI-007**
Contractor RFI:	
Site Location: EAGLEGOLD	
Date Submitted: March 14, 2021	

Subject: Additional finger drain for lateral #1 W - Grading	**Project Zone/Area: Heap Leach Phase 2**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green	**Discipline: Civil**

REQUEST

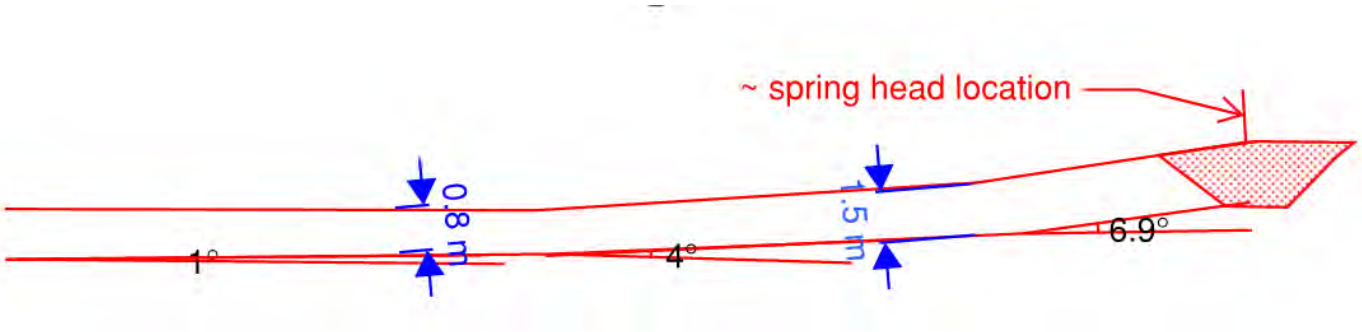
Related Drawings:	**Other Related Documents:**

Information Request/Description of Issue:

There is a spring that we assume is part of the Anne Gulch head water within the extents of phase 2A.
To tie this into the existing lateral drain #1W, a substantial excavation is required to capture the spring head.

Proposed Corrective Action

- In efforts to reduce the excavation required and disturbance of existing subgrade, I would steepen the grade at the spring location to ~7%, tapering it down to 4% then 1% to tie into the existing lateral drain.



Type of Change:	☐	Owner Change	☒	Clarification/Info	☒ Field Change
	☐	Vendor Change	☐	Design Change	☐ Other
Cost Impact:					
Schedule Impact:					

Requested by: Cody Roberts **March 14, 2021**

Name Signature Date

RESPONSE

☐ Approved ☐ Approved as noted ☐ Rejected as noted

Response:

Answered by:

Name Signature Date

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constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.

REQUEST FOR INFORMATION	JDS RFI:	**VITGOLD-RFI-008R1**
	Contractor RFI:	
	Site Location: EAGLEGOLD	
	Date Submitted: April 20, 2021	

Subject: Spring lateral drain subgrade preparation	**Project Zone/Area: Heap Leach Phase 2**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green / Roy Morlan	**Discipline: Civil**

REQUEST

Related Drawings:	**Other Related Documents:** **Test pit location** **Test pit pictures** **Subgrade approval**

Information Request/Description of Issue:

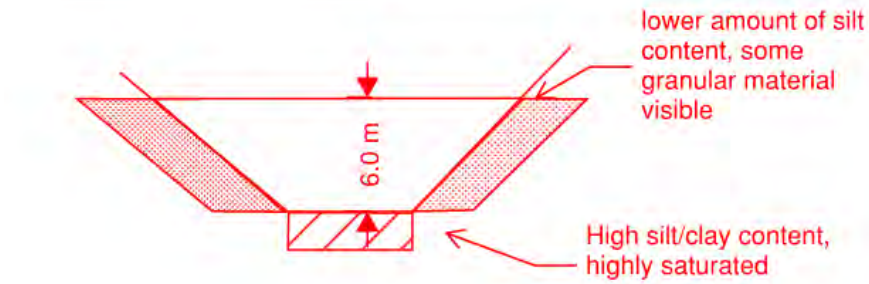
We are still finding smaller amounts of ice and very saturated material at the bottom of the current excavation. (see test pit pictures attached)

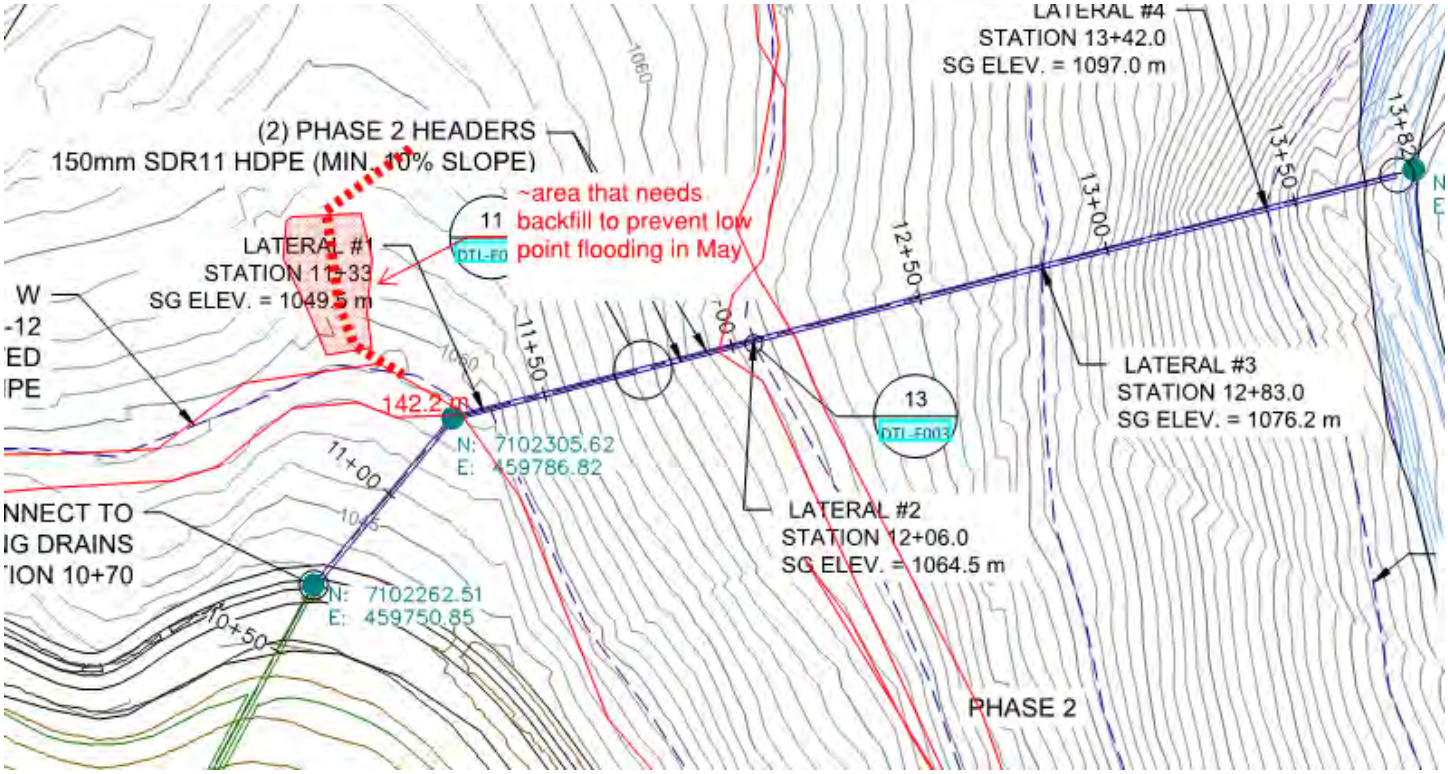
If we keep chasing this down and the ground water starts to flood our excavation, we will have a very hard time to properly to prep our subgrade with the influx of water.

.

Proposed Corrective Action

- **I would propose us to use the current bottom of the excavation as the control elevation for a 6m cover to be backfilled (as per the foundation improvement plan).**
- **Tetratech to approve subgrade to allow us to start backfilling the area.**
- **We would bring in blast rock and place it according to the method spec for winter placement of site grading fill. As discussed with Forte we will bring it up .5m lifts with 6 passes with the CS54B compactor**
- **The subgrade will be brought up to ~1m above the lateral drain.**
- **We would advance the lateral drain to the extents of our backfill to allow the area to drain**





Type of Change:	☐	Owner Change	☒	Clarification/Info	☐	Field Change	
	☐	Vendor Change	☐	Design Change	☐	Other	

Cost Impact:	
Schedule Impact:	

Requested by: Cody Roberts **April 13, 2021**

Name Signature Date

RESPONSE

☐ Approved ☐ Approved as noted ☐ Rejected as noted

Response:

Answered by:

Name Signature Date

Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.

TETRA TECH

FIELD REPORT

ISSUED FOR REVIEW

Project:	VGCX HLF Phase 2 Subgrade Inspection	**Date:**	April 14, 2022
Location:	Eagle Gold Mine, Yukon	**Contractor:**	Ewing Transport Ltd.
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing
Contact:	Cody Roberts, P.Eng.	**Contractor's Email:**	NA
Weather:	Variable	**Tetra Tech Representative:**	Jacob Swartz, EIT and Chad Cowan, P.Eng.
File:	704-ENG.WARC03235-23	**Status:**	Issued for Review

This 'Issued for Review' report is provided solely for the purpose of client review and presents our findings and recommendations to date. Our findings and recommendations are provided only through an 'Issued for Use' report, which will be issued subsequent to this review. You should not rely on the interim recommendations made herein. Once our report is issued for use, the 'Issued for Review' document should be either returned to Tetra Tech Canada Inc. (Tetra Tech) or destroyed.

1.0 INTRODUCTION

1.1 General

NND-EBA Land Protection Corp, operating as NELPCo Limited Partnership (NELPCo), was retained by Victoria Gold Corp. (VGCX) to provide geotechnical support for Phase 2 of the heap leach facility expansion (HLF Phase 2) at the Eagle Gold Mine located in Dublin Gultch north of Mayo, Yukon. Tetra Tech Canada Inc. (Tetra Tech) has prepared this report on behalf of NELPCo as their engineering service provider. Tetra Tech's role includes inspection of earthworks, header underdrain and lateral drain installation, compaction testing of berms, and testpitting to support the ground improvement plan.

VGCX retains JDS Energy and Mining Inc. (JDS) to oversee various Eagle Gold Mine construction works and coordinate Tetra Tech's site visits. As there are various ongoing construction activities at the mine, JDS has requested that Tetra Tech make periodic site visits to inspect the subgrade for HLF Phase 2.

This field report details Tetra Tech's inspection from March 31 to April 14, 2022. All photos and test logs recorded during the site visit are attached below.

2.0 DAILY SUMMARY - FIELD INVESTIGATION

2.1 March 31, 2022

- Weather: Sunny, -9°C
- Tetra Tech's field representative, Mr. Jacob Swartz, EIT, mobilized to the Eagle Gold Mine.
- The Lateral #1 W excavation inspected during the previous site visit on March 14, 2022, was backfilled prior to Tetra Tech's arrival. JDS mentioned that the geotextile/pipe installation and backfill were completed approximately March 20 to March 27.
- Ewing started ripping and excavating the alignment for the spring lateral drain (SLD) (Waiting on survey data for location details).

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

  - Survey is on-site, full time, providing support for the excavation.

- Tetra Tech encountered ice lenses (varying from 1 cm lenses extending a few meters to 300 mm pieces) and thaw unstable soil along the lateral trench sidewalls and subgrade floor.

  - Tetra Tech notified JDS, who determined that laying the lateral trench out was a priority. Once the rough grades are completed, the ice lenses and unsuitable material will be delineated and removed according to the HLF Improvement Plan.

2.2 April 1, 2022

- Weather: Sunny, -17°C

- Ewing continued ripping and excavating the spring lateral drain.

- Tetra Tech encountered additional ice lenses and unsuitable material, then took samples at various locations along the trench floor (1.0 m to 1.5 m in depth) to determine the suitability of the material. The table below shows the locations, notes of the general excavation area, and classification based on Table 2-1: Frozen Material Management from the Technical Specifications. Pictures of the thawed samples are found in Section 4.0.

Table 1: April 1 Sample Locations

SAMPLE #	Northing	Easting	Elevation (m)	Notes/Classification of General Test Area
1	7102334.5	459769.5	1047.9	A mix of fine and coarse-grained soils with no ice. Class 1/2. Trench floor suitable. Large ice lenses were found in side walls up to 0.5 m from the top of the surface.
2	7102340.0	459771.0	1048.0	A mix of fine and coarse-grained soils with no ice. Class 1. Trench floor suitable. Class 1/2. No ice lenses were encountered in the side walls.
3	7102350.8	459776.2	1048.3	Fine-grained soils with visible ice and/or very saturated (Free water in sample bag). Class 3/4. Large ice chunks upward of 10 cm were encountered in the side walls.
4	7102357.9	459779.4	1048.5	Fine-grained soils with visible ice and/or very saturated (Free water in sample bag). Class 3/4. Large ice chunks upward of 20 cm were encountered in the side walls.
5	7102369.8	459784.2	1049.0	Fine-grained soils with visible ice and/or very saturated (Free water in sample bag). Class 3/4. Large ice chunks upward of 20 cm and 2 cm lenses extending 1.5 m were encountered in the side walls.

* All samples were taken from the trench floor. UTM zone 08V.

- JDS met with Forte, and a plan of action was made based on what was being encountered in the field. The plan is:

  - Ewing will rip the entire area, and the lateral trench excavation will be extended to allow the removal of all ice-rich and unsuitable material.

  - The spring lateral trench will continue to be excavated until a competent subgrade is found or to a maximum of 2 m laterally in either direction and up to 6 m vertically.

  - Tetra Tech will continue to inspect and take samples to verify when a competent subgrade is encountered.

2.3 April 2, 2022

- Weather: Partly Cloudy, -13°C
- Ewing continued ripping and pushing unsuitable material found in the SLD area.
- Ewing started to remove/move snow on the bench (1065 m) above the spring to install a temporary drainage ditch to divert water away from the spring area.

2.4 April 3, 2022

- Weather: Flurries, -8°C
- Ewing started ripping the diversion ditch.
- Ewing continued ripping and pushing unsuitable material found at the spring lateral drain area.
- Ice rich material, but with less ice, is still being encountered. The non-ice-rich material is still fine-grained and frozen, but it has less moisture than the samples tested on April 1, 2022.

2.5 April 4, 2022

- Weather: Flurries, 0°C
- Ewing continued ripping the diversion ditch and the spring lateral drain area.
- JDS informed Tetra Tech that they are not required on-site until competent subgrade is encountered.
- JDS intends to remove as much ice-rich and frozen material as possible without creating a low point for the water to collect. JDS will install a sump at the spring with the possibility of installing a second sump below. A 2” pump has been ordered to help with dewatering the area.
- Tetra Tech demobilized to Whitehorse.

2.6 April 14, 2022

- Weather: Sunny, -5°C
- Tetra Tech's field representative, Mr. Chad Cowan, P.Eng., mobilized to the Eagle Gold Mine.
- Ewing continued to rip the SLD area to remove the ice-rich material to approximately 6 m below final design grades.
- Initial inspection of the excavation base determined that Ewing had removed the ice-rich material from the SLD area. Ewing completed two testpits at the excavation base to about 1.0 m depth. Tetra Tech encountered frozen silt and fine-grained sand. When thawed, the material was moist to wet but considered to be thaw stable.
- The side walls were inspected for ice-rich material. One small area in the southeastern corner near the installed lateral drain had some ice-rich material requiring removal to satisfy the requirements of the HLF Improvement Plan. Ewing will continue to remove this ice-rich material prior to any backfill placement.
- Backfill placement will proceed with placement of approved rock fill to the desired grade for installing the spring lateral drain to capture groundwater from the seepage area. Rock fill should be placed in 0.5 m lift thicknesses and compacted at a minimum of 6 passes with the Cat CS54B vibratory drum packer.

3.0 PHOTOGRAPHS

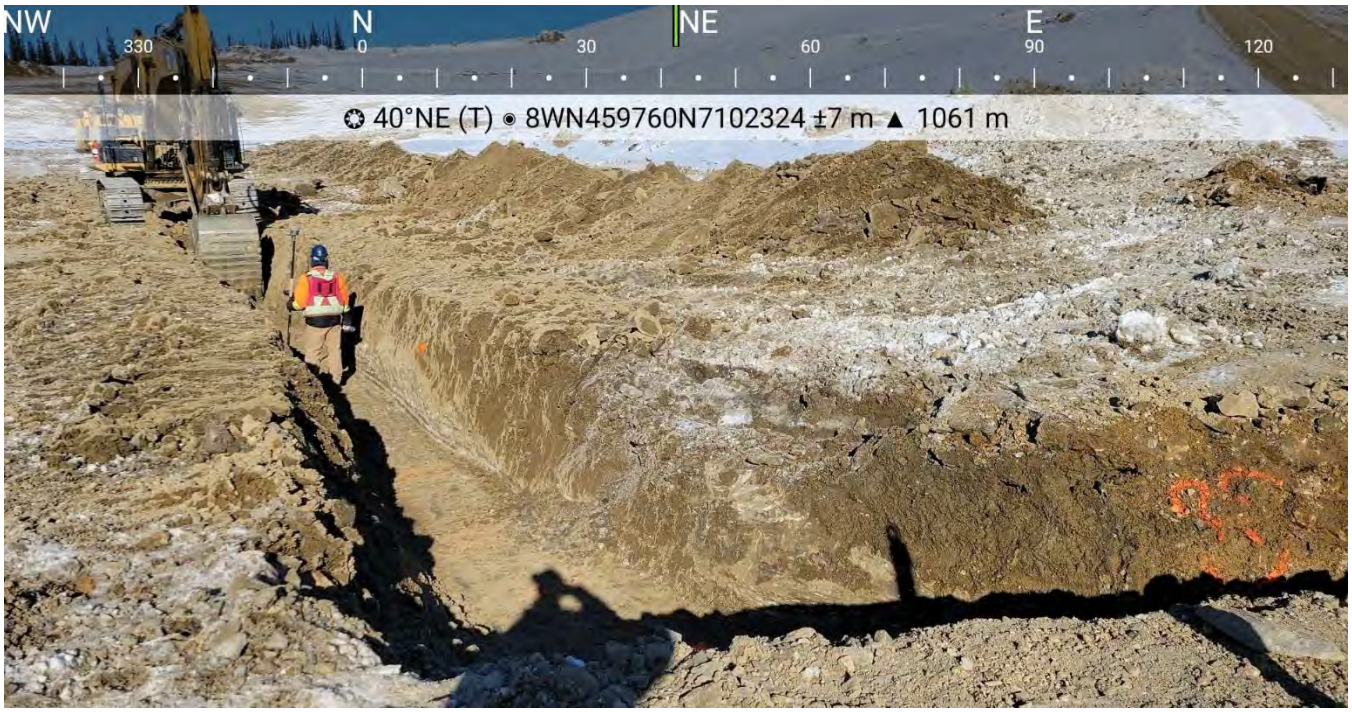


Figure 1: Spring Lateral Drain Excavation (March 31, 2022)

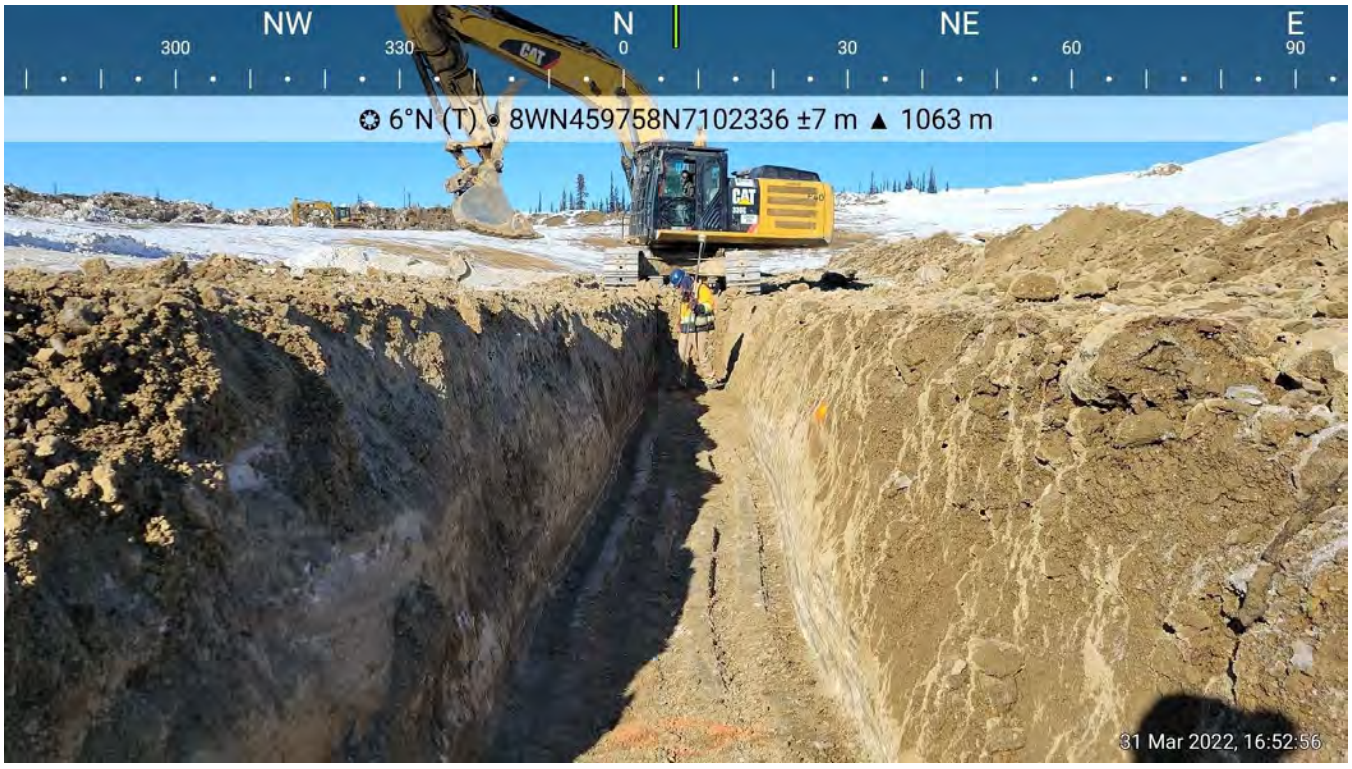


Figure 2: Spring Lateral Drain Excavation (March 31, 2022)

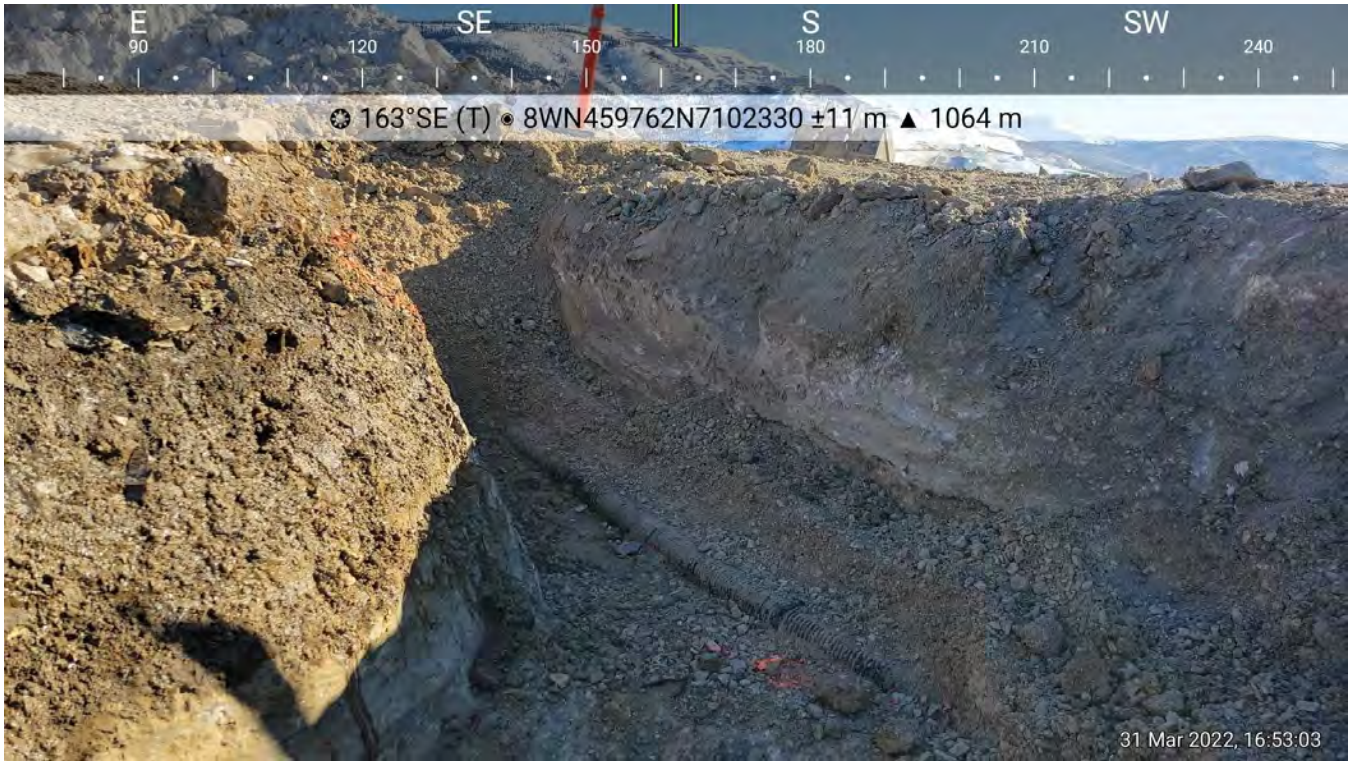


Figure 3: Spring Lateral Drain Excavation Tie-In to Existing Lateral #1 W (March 31, 2022)

Figure 4: Water at the Spring Lateral Drain/Lateral #1 W Tie-In (March 31, 2022)

Figure 5: Ice-Rich Soil Encountered in Spring Lateral Drain Sidewall (April 1, 2022)

Figure 6: Ice-Rich Soil Overlaying Saturated Fine-Grained Soil in Spring Lateral Drain Sidewall ~1.0 m below surface (April 1, 2022)

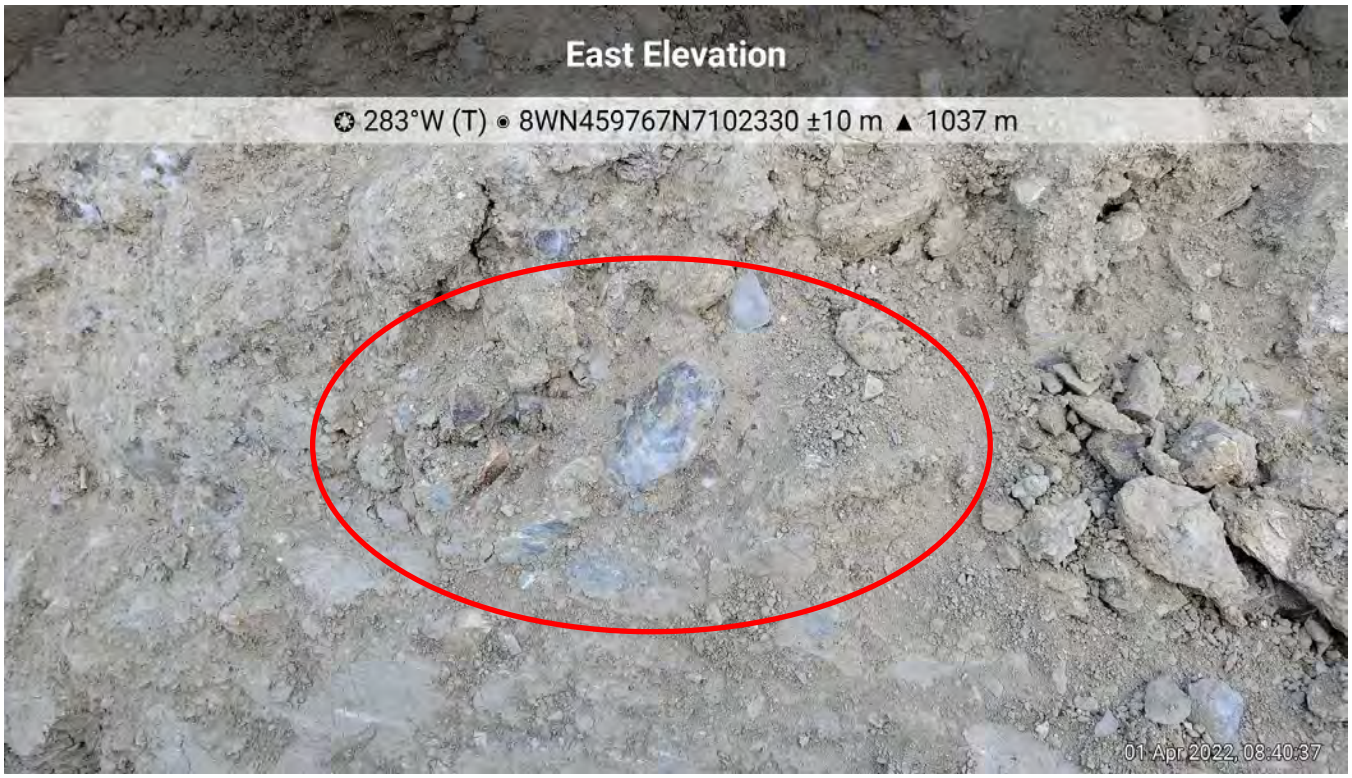


Figure 7: Ice-Rich Soil Encountered in Spring Lateral Drain Sidewall ~0.8 m below surface (April 1, 2022)

Figure 8: Large Ice Lenses Exposed During Ripping ~0.5 m to 1.0 m below final grade (April 1, 2022)

Figure 9: Large Ice Lenses Exposed During Ripping ~0.5 m to 1.0 m below final grade (April 1, 2022)

Figure 10: Tetra Tech Samples 1 and 2 (April 1, 2022)

Figure 11: Tetra Tech Samples 3 to 5 (April 1, 2022)

Figure 12: Lower Section of the Spring Lateral Drain Material Ripped and Hauled Away (April 2, 2022)

Figure 13: Large Ice Lenses Exposed During Ripping ~1.0m to 1.2 m below final grade (April 2, 2022)

Figure 14: Clearing/Preparing Upper Bench Above Spring Area for Water Diversion Channel (April 2, 2022)

Figure 15: Lower Section of the Spring Lateral Drain Being Cleaned Up (April 3, 2022)

Figure 16: Upper Bench Above Spring Area Being Ripped for Water Diversion Channel (April 3, 2022)

Figure 17: Hauling Away Lower Section of the Spring Lateral Drain Material (April 3, 2022)

Figure 18: Excavation Base of the Spring Lateral Drain Area Facing North (April 14, 2022)

Figure 19: Excavation Base of the Spring Lateral Drain Area Facing South (April 14, 2022)

Figure 20: Testpit Completed at Base of Excavation within the Spring Lateral Drain Area (April 14, 2022)

4.0 CLOSURE

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

704-ENG.WARC03235-23
Issued for Review

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704-ENG.WARC03235-23
Issued for Review

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Issued for Review

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/am

APPENDIX 3: RFIS

VITGOLD-RFI-008 PHOTOS

REQUEST FOR INFORMATION

JDS RFI:	**VITGOLD-RFI-009**
Contractor RFI:	
Site Location: EAGLEGOLD	
Date Submitted: May 8, 2021	

Subject: Transmittal of documents & Progress update	**Project Zone/Area: Heap Leach Phase 2**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green / Roy Morlan	**Discipline: Civil**

REQUEST

Related Drawings:	**Other Related Documents:** **Compressed Folder containing:** • **HLF Progress Report** • **Lateral #1 West installation pictures** • **2022 Tetra Tech Inspection reports (up to May)** • **Spring Lateral drain progress photos** • **Spring Lateral drain Production trackers** • **HLF Phase 2A construction Schedule as of May 8** • **Material Sieve results** • **Current Underdrain system As-build to date**

Information Request/Description of Issue:
Just a formal transmittal of the attached documentation as well as a general construction update

Proposed Corrective Action

N/A

Type of Change:	☐	Owner Change	☐	Clarification/Info	☐	Field Change
	☐	Vendor Change	☐	Design Change	☒	Other

Cost Impact:	
Schedule Impact:	

Requested by: Cody Roberts **May 8, 2022**

Name Signature Date

RESPONSE

☐ Approved ☐ Approved as noted ☐ Rejected as noted

Response:

Answered by:

Name Signature Date

Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.

REQUEST FOR INFORMATION	JDS RFI:	**VITGOLD-RFI-010**
	Contractor RFI:	
	Site Location: EAGLEGOLD	
	Date Submitted: July 11, 2021	

Subject: Phase 2A liner reduction	**Project Zone/Area: Heap Leach Phase 2A**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green / Roy Morlan	**Discipline: Civil**

REQUEST

Related Drawings:	**Other Related Documents:** •

Information Request/Description of Issue:
The original liner area to be covered was 105,000m3 as quoted by Layfield. We had Underhill survey the completed prepared subgrade for Phase 2A which came out at 117,867m2.
We currently need to reduce the area by 12,000m2 to ensure we can complete the liner install this year.

Proposed Corrective Action

I recommend that we pull in the northwest corner down to the 1255m elevation. Victoria golds next lift we be stacked up to the 1253m elevation, so we will have ~2m buffer on the corner of this lift
I have confirmed with Victoria Gold that they are able to work around this change if this piece is completed by the end of June 2023.

Type of Change:	☐	Owner Change	☐	Clarification/Info	☒ Field Change
	☐	Vendor Change	☐	Design Change	☒ Other

Cost Impact:	
Schedule Impact:	

Requested by: Cody Roberts **June 29, 2022**

Name Signature Date

RESPONSE

☐ Approved ☐ Approved as noted ☐ Rejected as noted

Response:

Answered by:

Name Signature Date

Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.

APPENDIX 3: RFIS

VITGOLD-RFI-010 PHOTOS

Photograph 1: Phase 2 Subgrade

Photograph 2: Phase 2A – North West Corner Change

REQUEST FOR INFORMATION

JDS RFI:	**VITGOLD-RFI-011**
Contractor RFI:	
Site Location: EAGLEGOLD	
Date Submitted: July 10, 2021	

Subject: Progress update	**Project Zone/Area: Heap Leach Phase 2**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green / Roy Morlan	**Discipline: Civil**

REQUEST

Related Drawings:	**Other Related Documents:** • **HLF Progress Report** • **Liner Mill Certs** • **2022 Tetra Tech Inspection reports (May 5 – June 2)** • **Various folders of progress pictures**

Information Request/Description of Issue:
transmittal of the attached documentation as well as a general construction update

Proposed Corrective Action

N/A

Type of Change:	☐	Owner Change	☐	Clarification/Info	☐ Field Change
	☐	Vendor Change	☐	Design Change	☒ Other
Cost Impact:					
Schedule Impact:					

Requested by: Cody Roberts	CR	**July 10, 2022**
Name	Signature	Date

RESPONSE

☐ Approved ☐ Approved as noted ☐ Rejected as noted

Response:

Answered by:

Name	Signature	Date

Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.

REQUEST FOR INFORMATION	JDS RFI:	**VITGOLD-RFI-012**
	Contractor RFI:	
	Site Location: EAGLEGOLD	
	Date Submitted: Aug 3, 2021	

Subject: Phase 2B header drain route modification	**Project Zone/Area: Heap Leach Phase 2**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green / Roy Morlan	**Discipline: Civil**

REQUEST

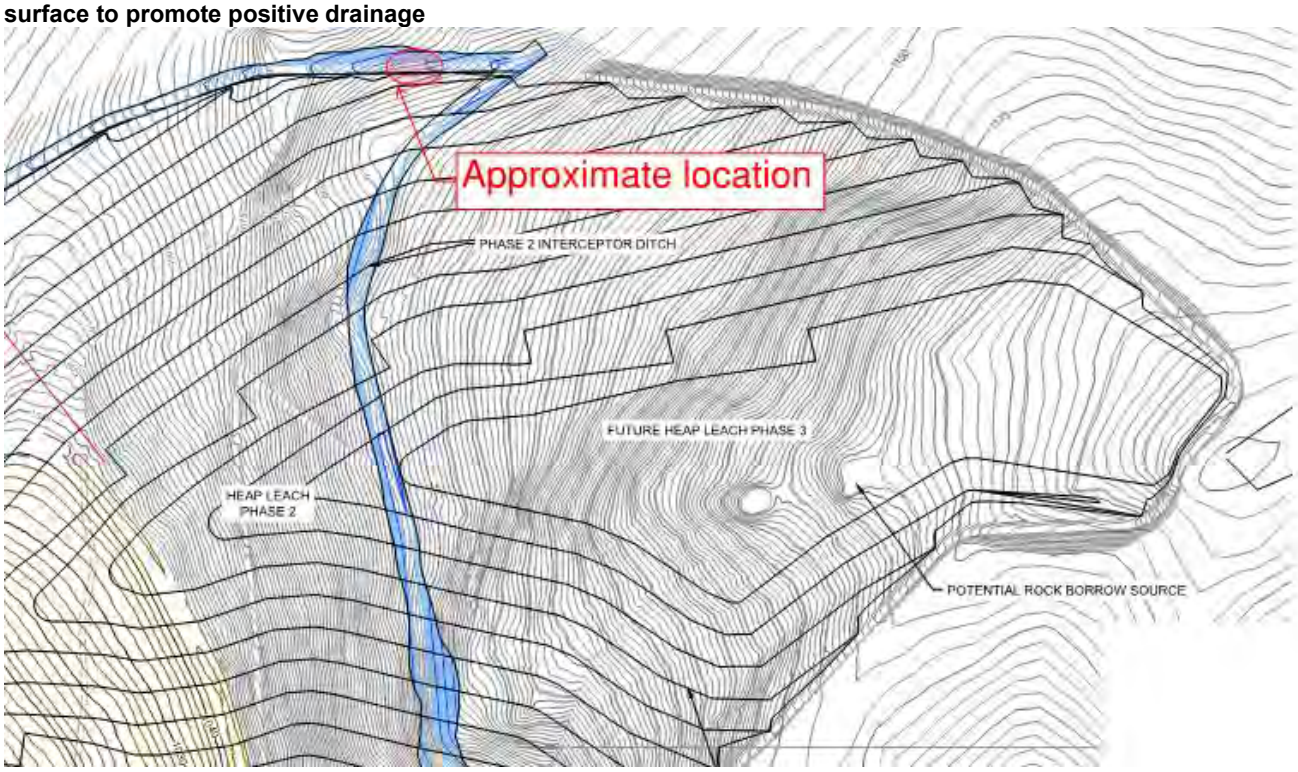
Related Drawings:	**Other Related Documents:**

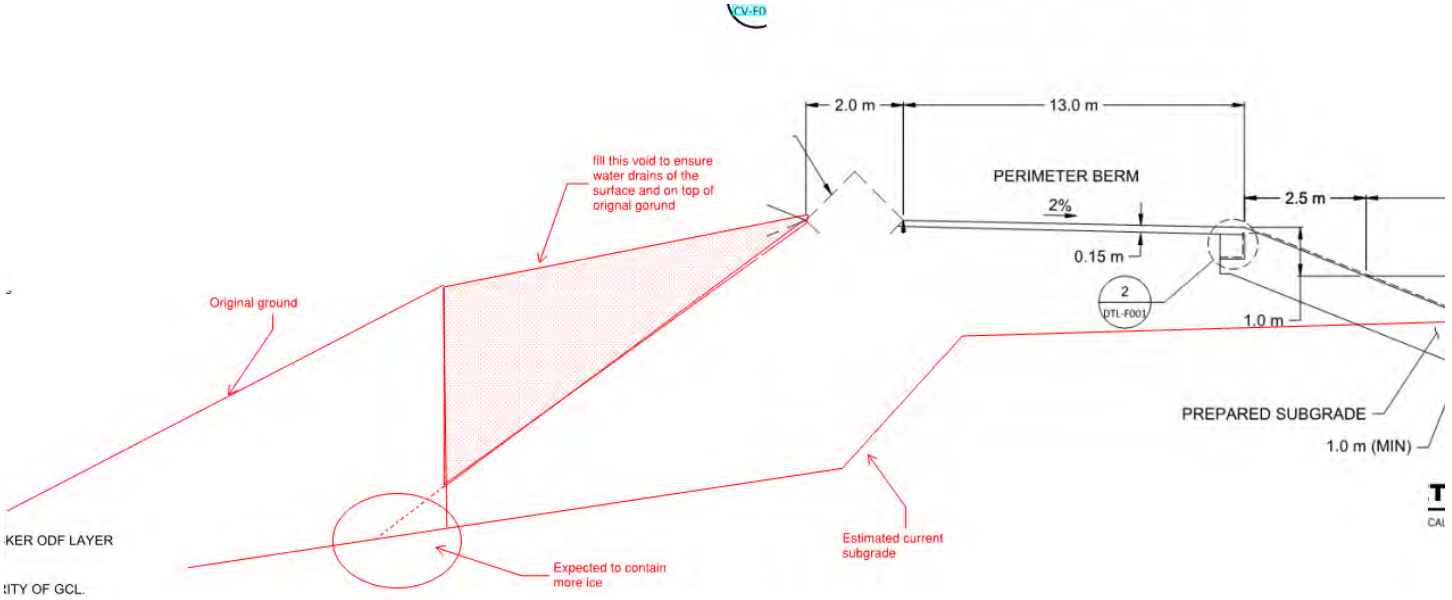
Information Request/Description of Issue:
Frozen material has been encountered on the phase 2B perimeter berm. We have removed the majority of the unsuitable material from the berm's extents. There is a smaller amount of frozen material still within the northern toe that we believe should remain in tact.

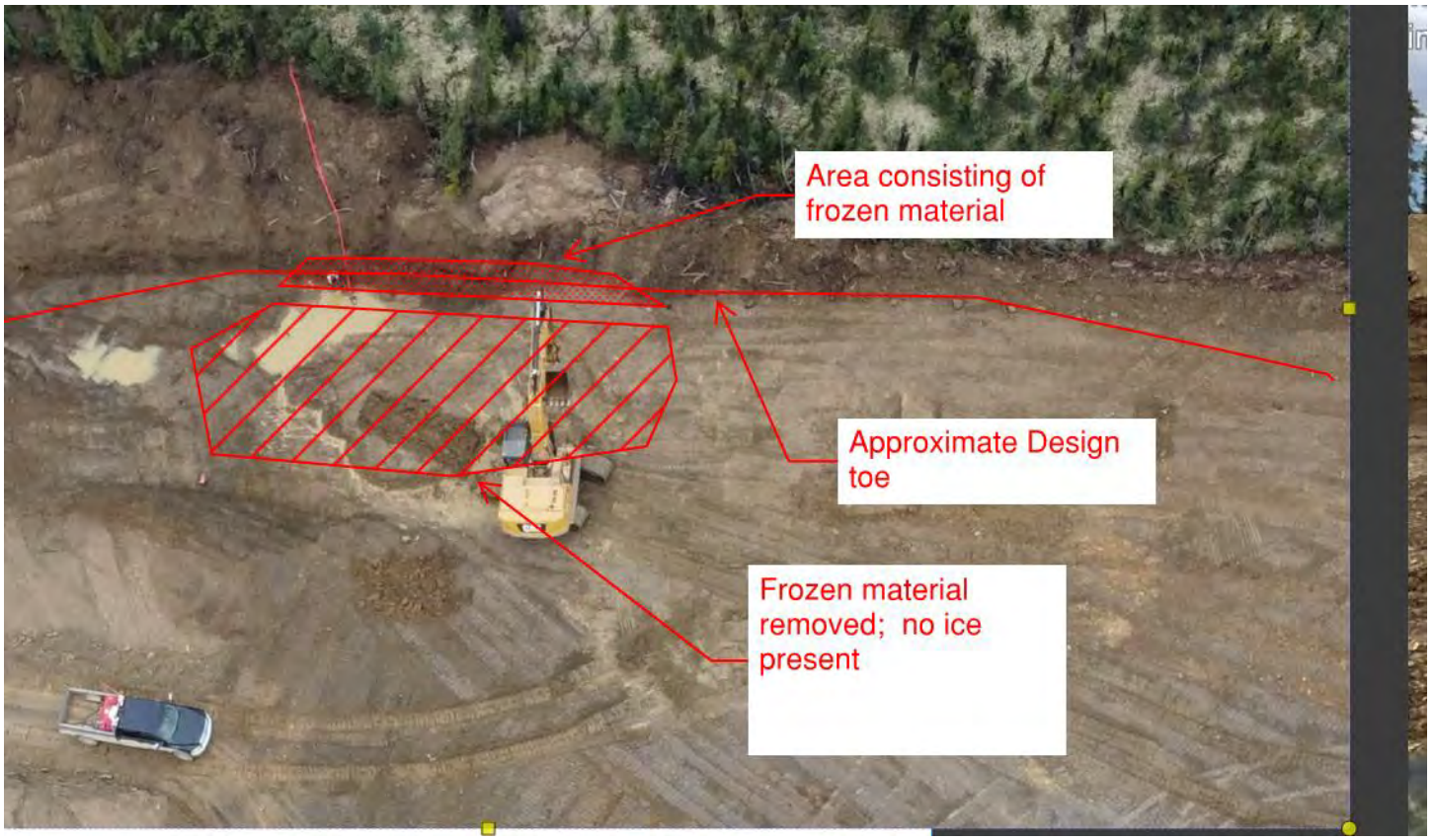
Proposed Corrective Action

I want to prevent the possibility of chasing frozen ground to the north of the perimeter berms toe. As it could take a substantial amount of material removal as well as extend past our clearing limits.

I propose to clean out the existing subgrade, conduct a couple test pits along the outer crest limit in the subgrade to verify we have no more frozen material under the bulk portion of our berm. Tetra Tech on site to verify.
Once confirmed we would construct the berm as per design. The northern toe would extend right up to the original ground limit we have established. Once the berm is completed, we would fill in the void left over and seal this up to the original surface to promote positive drainage







Type of Change:	☐	Owner Change	☒	Clarification/Info	☐	Field Change
	☐	Vendor Change	☐	Design Change	☒	Other
Cost Impact:						
Schedule Impact:						

Requested by: Cody Roberts	CR	**July 11, 2022**
Name	Signature	Date

RESPONSE

☐ Approved ☐ Approved as noted ☐ Rejected as noted

Response:

Answered by:

Name	Signature	Date

Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.

REQUEST FOR INFORMATION

JDS RFI:	**VITGOLD-RFI-013**
Contractor RFI:	
Site Location: EAGLEGOLD	
Date Submitted: Aug 3, 2021	

Subject: Phase 2B header drain route modification	**Project Zone/Area: Heap Leach Phase 2**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green / Roy Morlan	**Discipline: Civil**

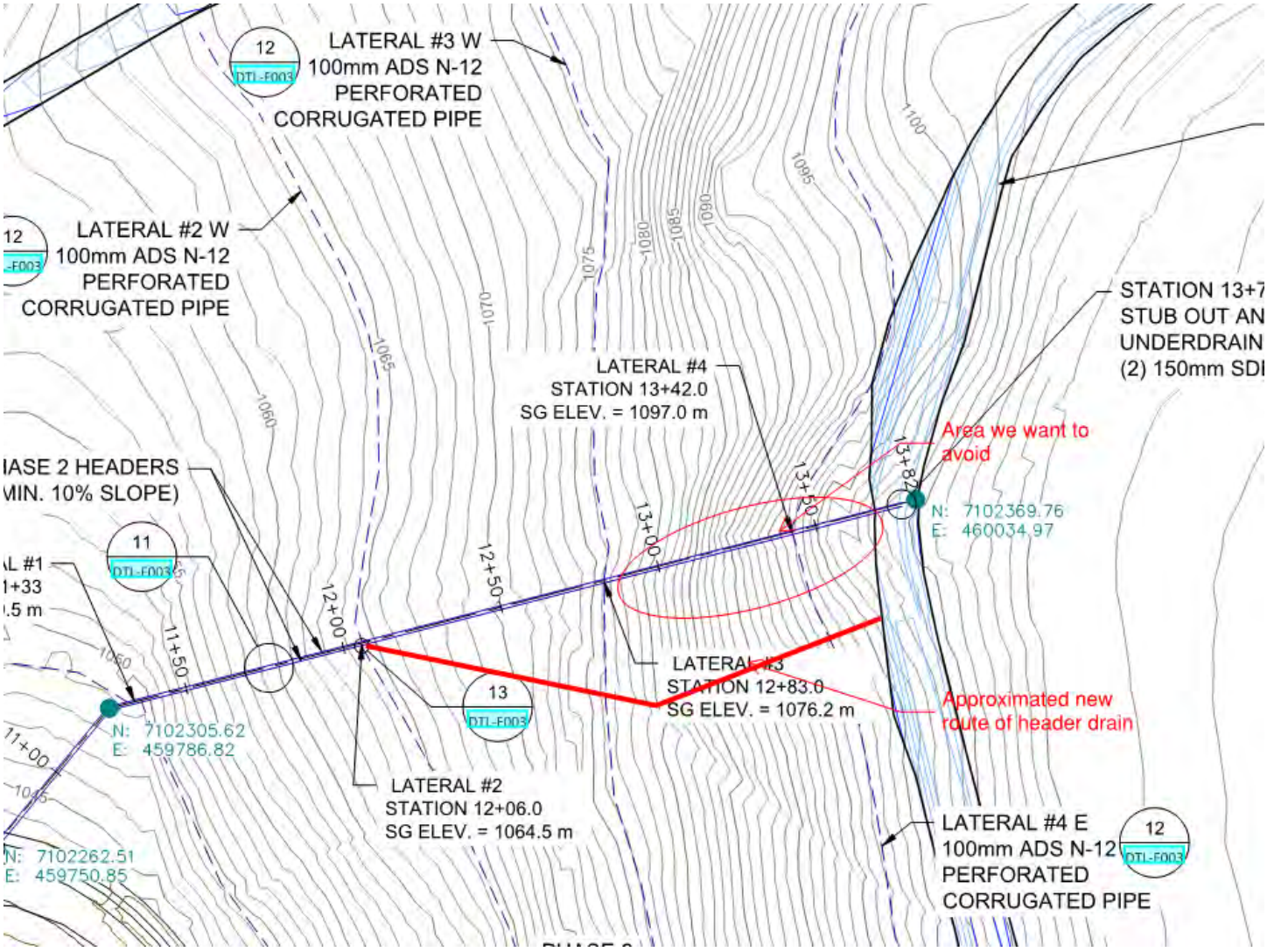
REQUEST

Related Drawings: **CV-F003_ UNDERDRAIN PIPING PLAN VIEW Rev.0 RFI-013**	**Other Related Documents:** **Excel " HLF P2b Underdrain Points.csv"**

Information Request/Description of Issue:
The current alignment of the header drain runs through very hard bed rock that we are having a hard time getting through with the D10 dozer.

Proposed Corrective Action

I would like to run the header drain around the south end of the bed rock know as per pictured below. I have also attached actual field coordinates that we staked out for the proposed route. (below is just an estimated alignment)



Type of Change:	☐	Owner Change	☐	Clarification/Info	☒	Field Change
	☐	Vendor Change	☐	Design Change	☐	Other

Cost Impact:	
Schedule Impact:	

Requested by: Cody Roberts	CR	**Aug 3, 2022**
Name	Signature	Date

RESPONSE

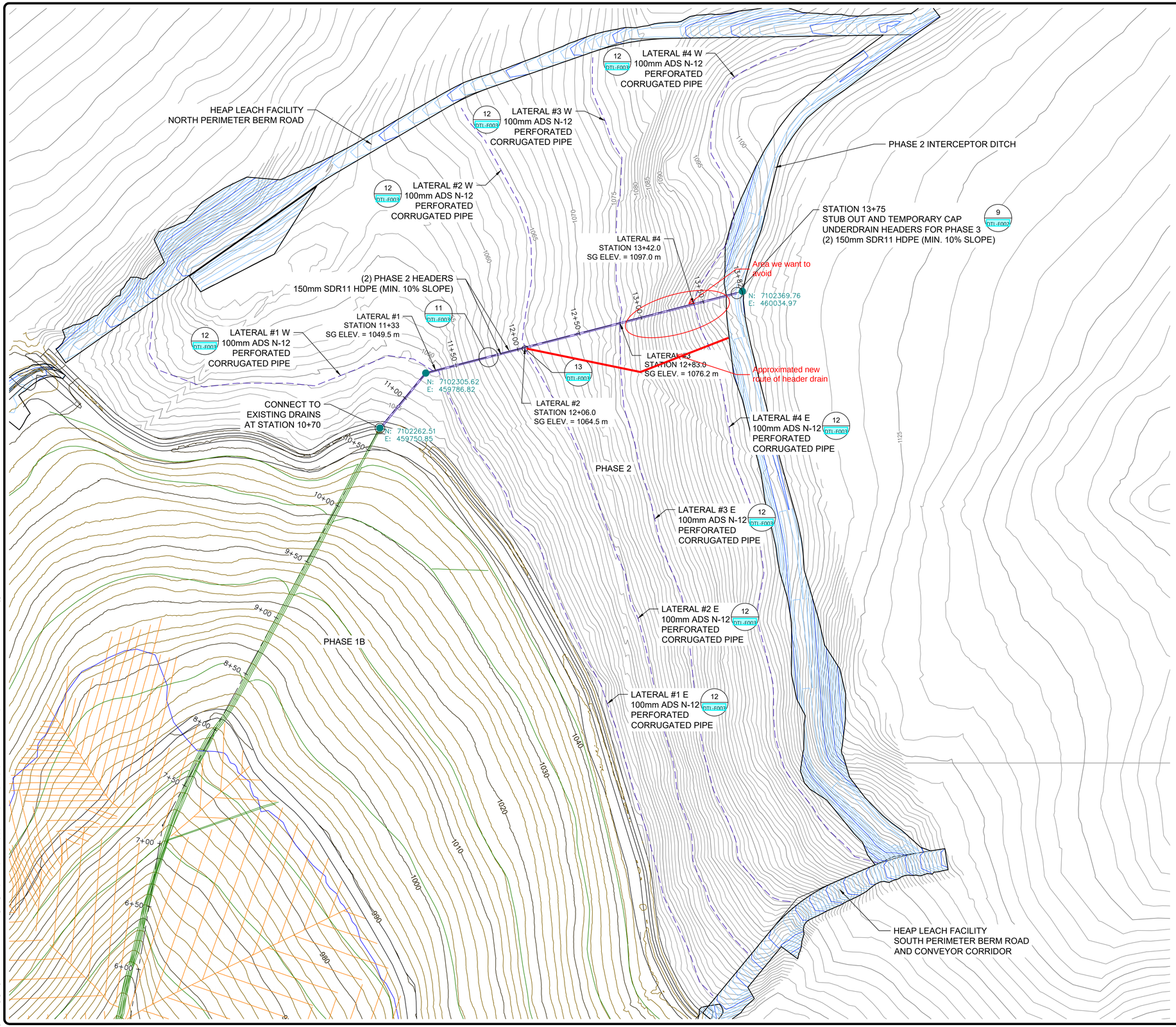
☐ Approved	☐ Approved as noted	☐ Rejected as noted

Response:

Answered by:

Name	Signature	Date

Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.



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(In Meters)
1 cm = 15 M
(1 : 1,500)

NOTES:

1. LATERAL DRAIN LINES SPACED 75 METERS MAXIMUM ALONG UNDERDRAIN MAIN DRAIN LINES. EXTEND FROM MAIN DRAINS TO SEEPAGE AREAS AT APPROXIMATELY 3% (1% MINIMUM) POSITIVE GRADE AS DIRECTED BY FIELD ENGINEER.
2. HLF UNDERDRAINS TO BE CONSTRUCTED AS SHOWN WITH ADDITIONAL DRAINS EXTENDED TO SEEPAGE AREAS BASED ON FIELD OBSERVATIONS DURING CONSTRUCTION.

ISSUE	DATE	DESCRIPTION	DRAWN	DSGN	CHKD	APPD
0	082521	ISSUED FOR CONSTRUCTION	SMC	SMC	CJG	BC

COORD SYSTEM: NAD 83 UTM ZONE 8

PROFESSIONAL ENGINEER
YUKON
BARRY L. CARLSON
TERRITORY
8-25-21

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FIELD DEVIATIONS FROM THIS DESIGN ARE NOT PERMITTED WITHOUT DOCUMENTED APPROVAL BY THE ENGINEER.

FDI PROJECT NO: 109005E

PREPARED BY:
FORTE DYNAMICS
120 COMMERCE DRIVE, UNITS 3 & 4
FORT COLLINS, CO 80524

VICTORIA EAGLE GOLD, PHLF PHASE 2
YUKON, CANADA

UNDERDRAIN PIPING PLAN VIEW

PERMIT TO PRACTICE
FORTE DYNAMICS, INC.
SIGNATURE
Date 8/25/21
PERMIT NUMBER PP626
Association of Professional Engineers of Yukon

DRAWING NUMBER:
109005E-51100-03
CV-F003

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REQUEST FOR INFORMATION

JDS RFI:	**VITGOLD-RFI-014**
Contractor RFI:	
Site Location: EAGLEGOLD	
Date Submitted: October 16, 2021	

Subject: Phase 2B Lateral drain alignment modification	**Project Zone/Area: Heap Leach Phase 2**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green / Roy Morlan	**Discipline: Civil**

REQUEST

Related Drawings: **CV-F003_ UNDERDRAIN PIPING PLAN VIEW Rev.0 RFI-014**	**Other Related Documents:**

Information Request/Description of Issue:
Transmittal of information

Proposed Corrective Action
No action required

Type of Change: ☐ Owner Change ☐ Clarification/Info ☒ Field Change ☐ Vendor Change ☐ Design Change ☐ Other

Cost Impact:	**X**
Schedule Impact:	

Requested by: Cody Roberts *CR* **Aug 10, 2022**

Name Signature Date

RESPONSE

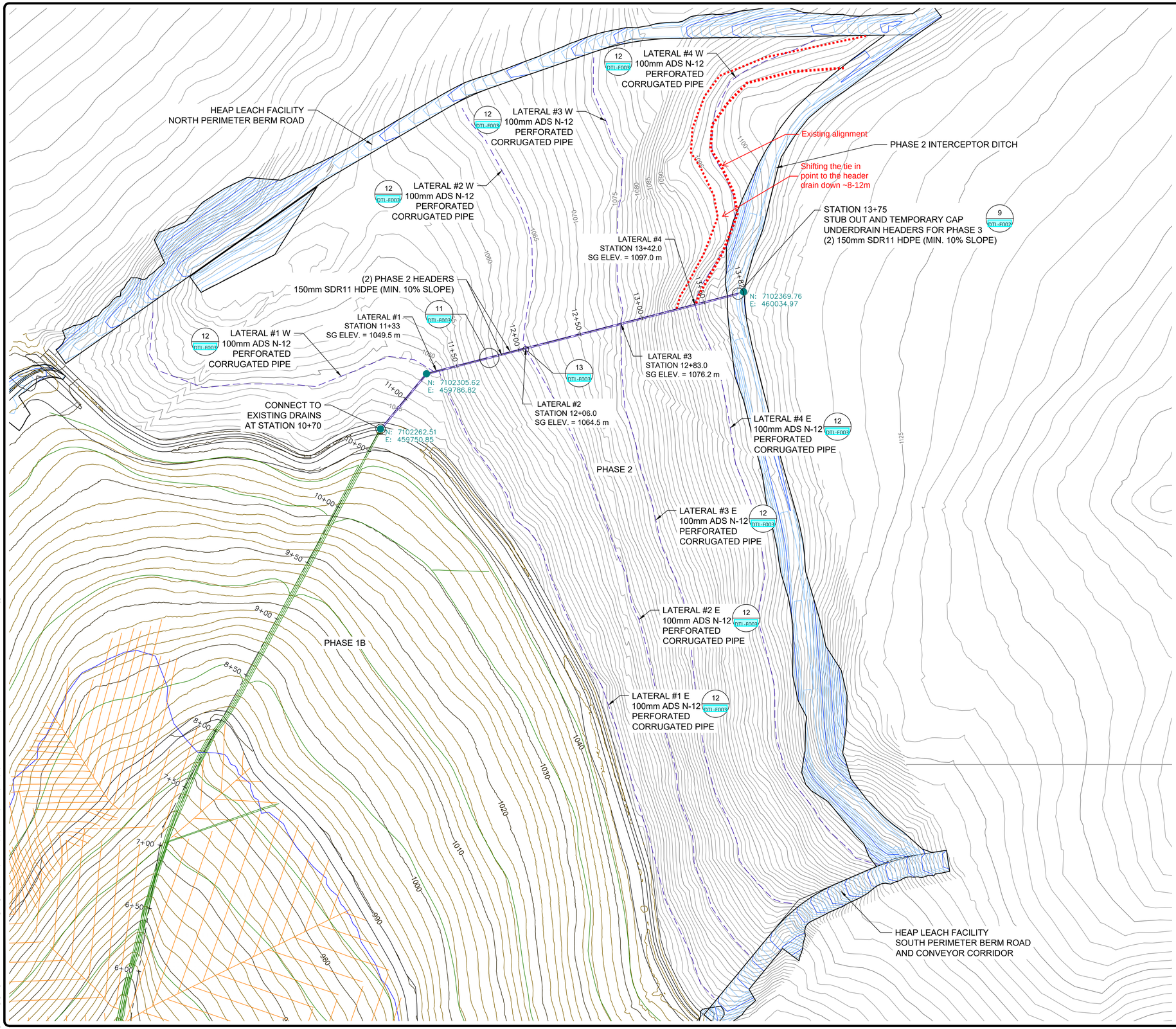
☐ Approved ☐ Approved as noted ☐ Rejected as noted

Response:

Answered by:

Name Signature Date

Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.



45 0 45

(In Meters)
1 cm = 15 M
(1 : 1,500)

NOTES:

1. LATERAL DRAIN LINES SPACED 75 METERS MAXIMUM ALONG UNDERDRAIN MAIN DRAIN LINES. EXTEND FROM MAIN DRAINS TO SEEPAGE AREAS AT APPROXIMATELY 3% (1% MINIMUM) POSITIVE GRADE AS DIRECTED BY FIELD ENGINEER.
2. HLF UNDERDRAINS TO BE CONSTRUCTED AS SHOWN WITH ADDITIONAL DRAINS EXTENDED TO SEEPAGE AREAS BASED ON FIELD OBSERVATIONS DURING CONSTRUCTION.

ISSUE	DATE	DESCRIPTION	SMC	SMC	CJG	BC
			DRAWN	DSGN	CHKD	APPD
0	082521	ISSUED FOR CONSTRUCTION				

COORD SYSTEM: NAD 83 UTM ZONE 8

PROFESSIONAL ENGINEER
YUKON
BARRY L. CARLSON
TERRITORY
8-25-21

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FIELD DEVIATIONS FROM THIS DESIGN ARE NOT PERMITTED WITHOUT DOCUMENTED APPROVAL BY THE ENGINEER.

FDI PROJECT NO: 109005E

PREPARED BY:
FORTE DYNAMICS
120 COMMERCE DRIVE, UNITS 3 & 4
FORT COLLINS, CO 80524

VICTORIA EAGLE GOLD, PHLF PHASE 2
YUKON, CANADA

UNDERDRAIN PIPING PLAN VIEW

PERMIT TO PRACTICE
FORTE DYNAMICS, INC.
SIGNATURE
Date 8/25/21
PERMIT NUMBER PP626
Association of Professional Engineers of Yukon

DRAWING NUMBER:
109005E-51100-03
CV-F003

[scrank] [Aug 27, 2021 - 9:40am] [C:\Users\Scrank\AppData\Local\Temp\AcPublish_12128\Phase 2 GRADING AND PIPING.dwg]

REQUEST FOR INFORMATION	JDS RFI:	**VITGOLD-RFI-015**
	Contractor RFI:	
	Site Location: EAGLEGOLD	
	Date Submitted: October 16, 2021	

Subject: Phase 2B Lateral drain alignment modification	**Project Zone/Area: Heap Leach Phase 2**
Contractor: JDS/Ewing	**Station/Location:**
Attention: Clint Green / Roy Morlan	**Discipline: Civil**

REQUEST

Related Drawings: **See below**	**Other Related Documents:** **See below**

Information Request/Description of Issue:
Transmittal of information

1. **HLF Subgrade Inspections**
   a. **Lateral #2W**
   b. **Lateral #3E**
   c. **Lateral #3W & phase 2B header extension**
   d. **Lateral #4W**
   e. **Lateral #4E**
   f. **Phase 2B West Perimeter Berm**
2. **Layfield Phase 2A turnover Package**
   a. **CT001708 - Eagle Gold Phase 2A Quality Control Package**
3. **Tetra Tech Liner CQA package for Phase 2A liner installation**
   a. **RPT_WARC03235-23_Phase 2A CQA Liner Inspection_IFU**
4. **Phase 2B header underdrain fusing log**
   a. **Header drain - Phase 2B extension fusing Log**
   b. **Fusing Certification**
5. **Underdrain as built file up to September 16, 2022**
   a. **20220916 Master Underdrains to date**
6. **Progress Photos**
   a. **Header Drain**
   b. **Lateral #3 E**
   c. **Lateral #3W**
   d. **Lateral #4W**
   e. **Phase 2B west perimeter berm**
   f. **Liner install (remaining photos after June 30)**
7. **Phase 2A liner Modifications Sept 22**
   a. **Certificate of Final Inspection and Acceptance Sept 22, 2022**

Proposed Corrective Action
No action required

Type of Change:	☐	Owner Change	☒	Clarification/Info	☐	Field Change	
	☐	Vendor Change	☐	Design Change	☐	Other	

Cost Impact:	**X**
Schedule Impact:	

Requested by: Cody Roberts	*CR*	**Oct 16, 2022**
Name	Signature	Date

RESPONSE

☐ Approved ☐ Approved as noted ☐ Rejected as noted

Response:

Answered by:

Name	Signature	Date

Note: Response to this RFI does not constitute authorization to perform a change to any Contract. The Requestor may proceed with the response only on the basis that the Requestor agrees that it is not a contract change. If the Requestor believes that the response does constitute a contract change, the Requestor shall immediately notify JDS. Work undertaken without JDS written authorization is at the Contractor's risk and expense.

APPENDIX 4: SUBGRADE INSPECTION FORMS

TETRA TECH

FIELD REPORT

ISSUED FOR REVIEW

Project:	VGCX HLF Phase 2 Subgrade Inspection	**Date:**	March 15, 2022
Location:	Eagle Gold Mine, Yukon	**Contractor:**	Ewing Transport Ltd.
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing
Contact:	Cody Roberts, P.Eng.	**Contractor's Email:**	NA
Weather:	Variable	**Tetra Tech Representative:**	Jacob Swartz, EIT
File:	704-ENG.WARC03235-23	**Status:**	Issued for Review

This 'Issued for Review' report is provided solely for the purpose of client review and presents our findings and recommendations to date. Our findings and recommendations are provided only through an 'Issued for Use' report, which will be issued subsequent to this review. You should not rely on the interim recommendations made herein. Once our report is issued for use, the 'Issued for Review' document should be either returned to Tetra Tech Canada Inc. (Tetra Tech) or destroyed.

1.0 INTRODUCTION

1.1 General

NND-EBA Land Protection Corp, operating as NELPCo Limited Partnership (NELPCo), was retained by Victoria Gold Corp. (VGCX) to provide geotechnical support for Phase 2 of the heap leach facility expansion (HLF Phase 2) at the Eagle Gold Mine located in Dublin Gulch north of Mayo, Yukon. Tetra Tech Canada Inc. (Tetra Tech) has prepared this report on behalf of NELPCo as their engineering service provider. Tetra Tech's role includes inspection of earthworks, header underdrain and lateral drain installation, compaction testing of berms, and testpitting to support the ground improvement plan.

VGCX retains JDS Energy and Mining Inc. (JDS) to oversee various Eagle Gold Mine construction works and coordinate Tetra Tech's site visits. As there are various ongoing construction activities at the mine, JDS has requested that Tetra Tech conduct periodic site visits to inspect work performed on the HLF Phase 2.

The excavations were completed prior to Tetra Tech mobilizing to the site and completed at an unknown date.

This field report details Tetra Tech's inspection from March 14 to March 15, 2022. All photos and test logs recorded during the site visit are attached below.

2.0 FIELD INVESTIGATION

Tetra Tech's field representative, Mr. Jacob Swartz, EIT, mobilized to the Eagle Gold Mine on March 14, 2022, to inspect Lateral #1 W. The Lateral #1 W section that was inspected included approximately 459,743.5 m E, 7,102,325.8 m N, Elevation: 1049 m to 459,593.5 m E, 7,102,374.7 m N, Elevation:1052.05 (Coordinates provided by Underhill March 31, 2022)

Upon arrival, sections of the trench contained varying amounts of snow covering the trench floor (approximately 50 to 500 mm thick). Due to the snow, the entire trench floor was not inspected; instead, sections, approximately 10 m apart, were cleared to confirm that the trench soils met the requirements of the foundation improvement plan. The excavation side walls were seasonally frozen for the entire depth of the trench, and snow/ice was embedded in the

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sidewalls. After speaking with Ewing, they mentioned that the embedded snow is due to the excavator bucket pushing it in during the excavation. Some of the snow looked to be deposited in the trench from wind or snowfall events. Tetra Tech checked the trench excavation sidewalls in multiple sections by scraping the snow/ice away with a shovel, and the snow/ice was surficial. Due to winter conditions, Tetra Tech could not determine if the ice was permafrost. However, Tetra Tech did not observe any ice lenses.

The excavator pinched the adjacent 100 mm corrugated pipe extending from the completed section to the east during the snow removal.

On March 14, 2022, the first log was completed on a section containing no snow. Ewing provided an excavator to help clear the snow on March 15, 2022, and the second log was completed once the soil conditions under the snow were verified. The detailed test pit logs are attached at the end of this report.

Tetra Tech did not identify any conditions that required additional subexcavation or did not meet the foundation improvement plan. Tetra Tech approved the lateral trench excavation subgrade subject to the action items below in Section 3.0.

3.0 ACTION ITEMS

All of the topsoil and unsuitable soil was removed from the trench. However, before placing the geotextile, 100 mm corrugated pipe, and backfill, the snow should be removed from the excavated trench. Once the snow is removed, the inspected subgrade section for Lateral #1 W is considered suitable for the placement of geotextile, 100 mm corrugated pipe, and backfill. The damaged 100 mm corrugated lateral pipe connection should be replaced/repaired to ensure a proper connection.

4.0 PHOTOGRAPHS

Photo 1: TT-TP22-01 (March 14, 2022)

Photo 2: Excavated Lateral Trench (Lateral #1 W) Looking West (March 14, 2022)

Photo 3: Excavated Lateral Trench (Lateral #1 W, March 14, 2022)

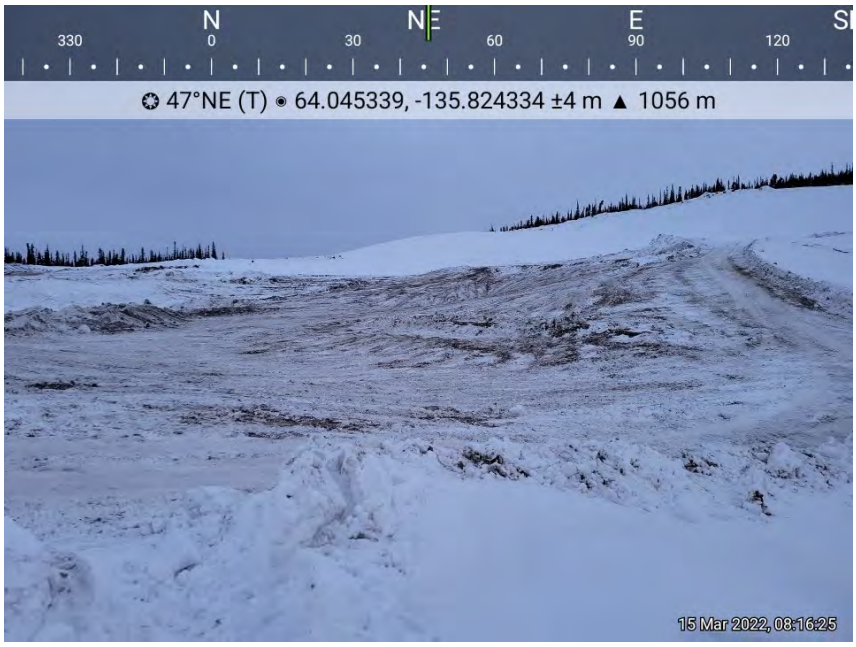

Photo 4: Area Cleared Where Water Ponding/Spring Found the Previous Year (March 15, 2022)

Photo 5: Ewing Removing Snow from Trench (March 15, 2022)

Photo 6: TT-TP22-02 (March 15, 2022)

Photo 7: Excavated Lateral Trench (Lateral #1 W, March 15, 2022)

Photo 8: Lateral Trench (Lateral #1 W) Excavation Showing Snow/Ice Imbedded in Sidewalls (March 15, 2022)

5.0 CLOSURE

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

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/am

Enclosure: Testpit Logs

Testpit No: **TT-TP22-01**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	UTM: 459605 E; 7102351 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	SAND (COLLUVIUM) - silty, some gravel, fine to coarse grained sand, angular to subangular gravel to 100 mm diameter, damp, brown, (300 mm thick)	Seasonally frozen			0.2
0.2		BEDROCK - minor fractures, sand and silt between, damp, brown and grey				0.4
						0.6
0.4						0.8
						1.0
0.6						1.2
						1.4
0.8						1.6
						1.8
1.0						2.0
						2.2
1.2						2.4
						2.6
1.4						2.8
						3.0
		END OF TESTPIT (1.5 metres) Note: Target depth reached				3.2
1.6						3.4
						3.6
						3.8
1.8						4.0
						4.2
						4.4
						4.6
						4.8
						5.0
						5.2
						5.4
						5.6
						5.8
						6.0
						6.2
2						6.4

TETRA TECH

Contractor: Ewing	Completion Depth: 1.5 m
Equipment Type: Excavator	Start Date: 2022 March 14
Logged By: JS	Completion Date: 2022 March 14
Reviewed By: AM	Page 1 of 1

Testpit No: **TT-TP22-02**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	UTM: 459735 E; 7102321 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	SAND (COLLUVIUM) - gravelly, silty, fine to coarse grained sand, angular gravel to 100 mm diameter, damp, brown	Seasonally frozen			
0.2						0.2
						0.4
0.4						0.6
						0.8
0.6						1.0
						1.2
0.8						1.4
						1.6
						1.8
1.0		BEDROCK - highly fractured, sand and silt between, brown and grey, red hue				2.0
						2.2
						2.4
1.2						2.6
						2.8
						3.0
						3.2
						3.4
						3.6
						3.8
						4.0
						4.2
1.4		END OF TESTPIT (1.3 metres) Note: Target depth reached				4.4
						4.6
						4.8
						5.0
1.6						5.2
						5.4
						5.6
						5.8
1.8						6.0
						6.2
						6.4
2						

TETRA TECH

Contractor: Ewing	Completion Depth: 1.3 m
Equipment Type: Excavator	Start Date: 2022 March 15
Logged By: JS	Completion Date: 2022 March 15
Reviewed By: AM	Page 1 of 1

TETRA TECH

FIELD REPORT

ISSUED FOR REVIEW

Project:	VGCX HLF Phase 2 Subgrade Inspection	**Date:**	April 14, 2022
Location:	Eagle Gold Mine, Yukon	**Contractor:**	Ewing Transport Ltd.
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing
Contact:	Cody Roberts, P.Eng.	**Contractor's Email:**	NA
Weather:	Variable	**Tetra Tech Representative:**	Jacob Swartz, EIT and Chad Cowan, P.Eng.
File:	704-ENG.WARC03235-23	**Status:**	Issued for Review

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1.0 INTRODUCTION

1.1 General

NND-EBA Land Protection Corp, operating as NELPCo Limited Partnership (NELPCo), was retained by Victoria Gold Corp. (VGCX) to provide geotechnical support for Phase 2 of the heap leach facility expansion (HLF Phase 2) at the Eagle Gold Mine located in Dublin Gultch north of Mayo, Yukon. Tetra Tech Canada Inc. (Tetra Tech) has prepared this report on behalf of NELPCo as their engineering service provider. Tetra Tech's role includes inspection of earthworks, header underdrain and lateral drain installation, compaction testing of berms, and testpitting to support the ground improvement plan.

VGCX retains JDS Energy and Mining Inc. (JDS) to oversee various Eagle Gold Mine construction works and coordinate Tetra Tech's site visits. As there are various ongoing construction activities at the mine, JDS has requested that Tetra Tech make periodic site visits to inspect the subgrade for HLF Phase 2.

This field report details Tetra Tech's inspection from March 31 to April 14, 2022. All photos and test logs recorded during the site visit are attached below.

2.0 DAILY SUMMARY - FIELD INVESTIGATION

2.1 March 31, 2022

- Weather: Sunny, -9°C
- Tetra Tech's field representative, Mr. Jacob Swartz, EIT, mobilized to the Eagle Gold Mine.
- The Lateral #1 W excavation inspected during the previous site visit on March 14, 2022, was backfilled prior to Tetra Tech's arrival. JDS mentioned that the geotextile/pipe installation and backfill were completed approximately March 20 to March 27.
- Ewing started ripping and excavating the alignment for the spring lateral drain (SLD) (Waiting on survey data for location details).

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  - Survey is on-site, full time, providing support for the excavation.

- Tetra Tech encountered ice lenses (varying from 1 cm lenses extending a few meters to 300 mm pieces) and thaw unstable soil along the lateral trench sidewalls and subgrade floor.

  - Tetra Tech notified JDS, who determined that laying the lateral trench out was a priority. Once the rough grades are completed, the ice lenses and unsuitable material will be delineated and removed according to the HLF Improvement Plan.

2.2 April 1, 2022

- Weather: Sunny, -17°C

- Ewing continued ripping and excavating the spring lateral drain.

- Tetra Tech encountered additional ice lenses and unsuitable material, then took samples at various locations along the trench floor (1.0 m to 1.5 m in depth) to determine the suitability of the material. The table below shows the locations, notes of the general excavation area, and classification based on Table 2-1: Frozen Material Management from the Technical Specifications. Pictures of the thawed samples are found in Section 4.0.

Table 1: April 1 Sample Locations

SAMPLE #	Northing	Easting	Elevation (m)	Notes/Classification of General Test Area
1	7102334.5	459769.5	1047.9	A mix of fine and coarse-grained soils with no ice. Class 1/2. Trench floor suitable. Large ice lenses were found in side walls up to 0.5 m from the top of the surface.
2	7102340.0	459771.0	1048.0	A mix of fine and coarse-grained soils with no ice. Class 1. Trench floor suitable. Class 1/2. No ice lenses were encountered in the side walls.
3	7102350.8	459776.2	1048.3	Fine-grained soils with visible ice and/or very saturated (Free water in sample bag). Class 3/4. Large ice chunks upward of 10 cm were encountered in the side walls.
4	7102357.9	459779.4	1048.5	Fine-grained soils with visible ice and/or very saturated (Free water in sample bag). Class 3/4. Large ice chunks upward of 20 cm were encountered in the side walls.
5	7102369.8	459784.2	1049.0	Fine-grained soils with visible ice and/or very saturated (Free water in sample bag). Class 3/4. Large ice chunks upward of 20 cm and 2 cm lenses extending 1.5 m were encountered in the side walls.

* All samples were taken from the trench floor. UTM zone 08V.

- JDS met with Forte, and a plan of action was made based on what was being encountered in the field. The plan is:

  - Ewing will rip the entire area, and the lateral trench excavation will be extended to allow the removal of all ice-rich and unsuitable material.

  - The spring lateral trench will continue to be excavated until a competent subgrade is found or to a maximum of 2 m laterally in either direction and up to 6 m vertically.

  - Tetra Tech will continue to inspect and take samples to verify when a competent subgrade is encountered.

2.3 April 2, 2022

- Weather: Partly Cloudy, -13°C
- Ewing continued ripping and pushing unsuitable material found in the SLD area.
- Ewing started to remove/move snow on the bench (1065 m) above the spring to install a temporary drainage ditch to divert water away from the spring area.

2.4 April 3, 2022

- Weather: Flurries, -8°C
- Ewing started ripping the diversion ditch.
- Ewing continued ripping and pushing unsuitable material found at the spring lateral drain area.
- Ice rich material, but with less ice, is still being encountered. The non-ice-rich material is still fine-grained and frozen, but it has less moisture than the samples tested on April 1, 2022.

2.5 April 4, 2022

- Weather: Flurries, 0°C
- Ewing continued ripping the diversion ditch and the spring lateral drain area.
- JDS informed Tetra Tech that they are not required on-site until competent subgrade is encountered.
- JDS intends to remove as much ice-rich and frozen material as possible without creating a low point for the water to collect. JDS will install a sump at the spring with the possibility of installing a second sump below. A 2” pump has been ordered to help with dewatering the area.
- Tetra Tech demobilized to Whitehorse.

2.6 April 14, 2022

- Weather: Sunny, -5°C
- Tetra Tech's field representative, Mr. Chad Cowan, P.Eng., mobilized to the Eagle Gold Mine.
- Ewing continued to rip the SLD area to remove the ice-rich material to approximately 6 m below final design grades.
- Initial inspection of the excavation base determined that Ewing had removed the ice-rich material from the SLD area. Ewing completed two testpits at the excavation base to about 1.0 m depth. Tetra Tech encountered frozen silt and fine-grained sand. When thawed, the material was moist to wet but considered to be thaw stable.
- The side walls were inspected for ice-rich material. One small area in the southeastern corner near the installed lateral drain had some ice-rich material requiring removal to satisfy the requirements of the HLF Improvement Plan. Ewing will continue to remove this ice-rich material prior to any backfill placement.
- Backfill placement will proceed with placement of approved rock fill to the desired grade for installing the spring lateral drain to capture groundwater from the seepage area. Rock fill should be placed in 0.5 m lift thicknesses and compacted at a minimum of 6 passes with the Cat CS54B vibratory drum packer.

3.0 PHOTOGRAPHS

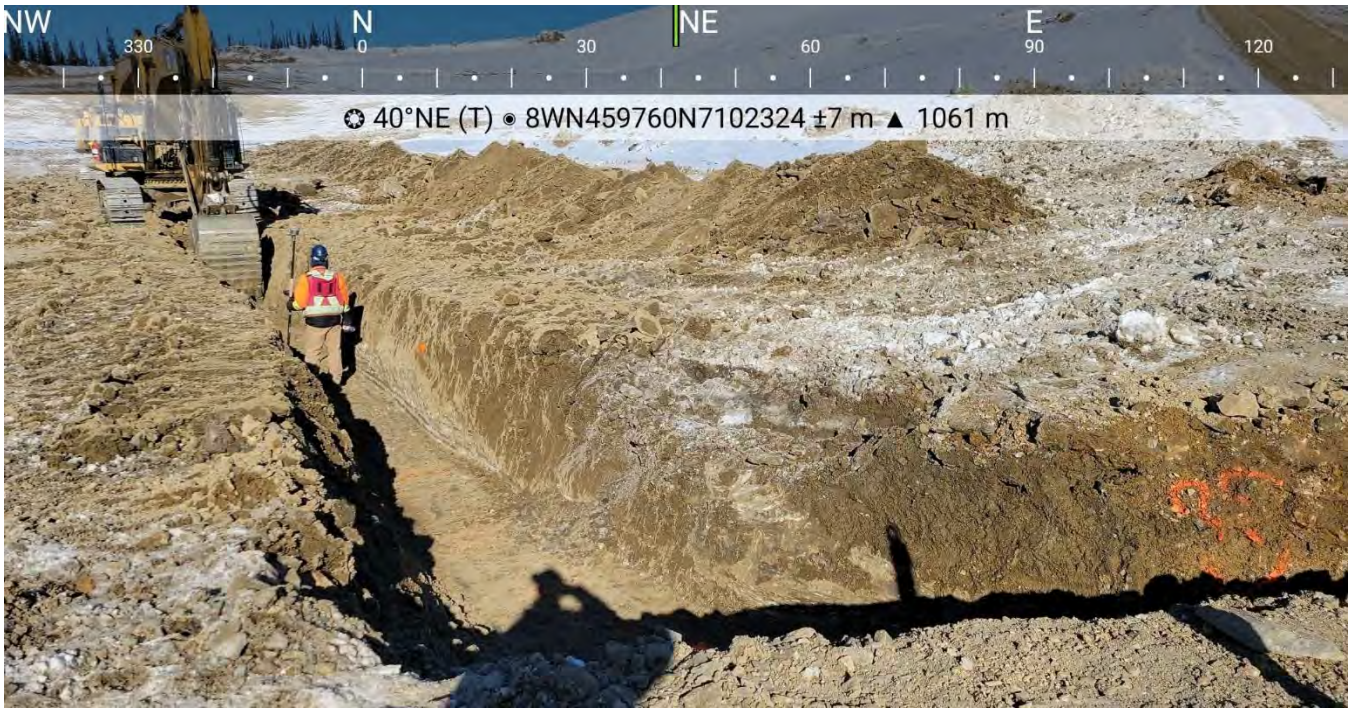

Figure 1: Spring Lateral Drain Excavation (March 31, 2022)

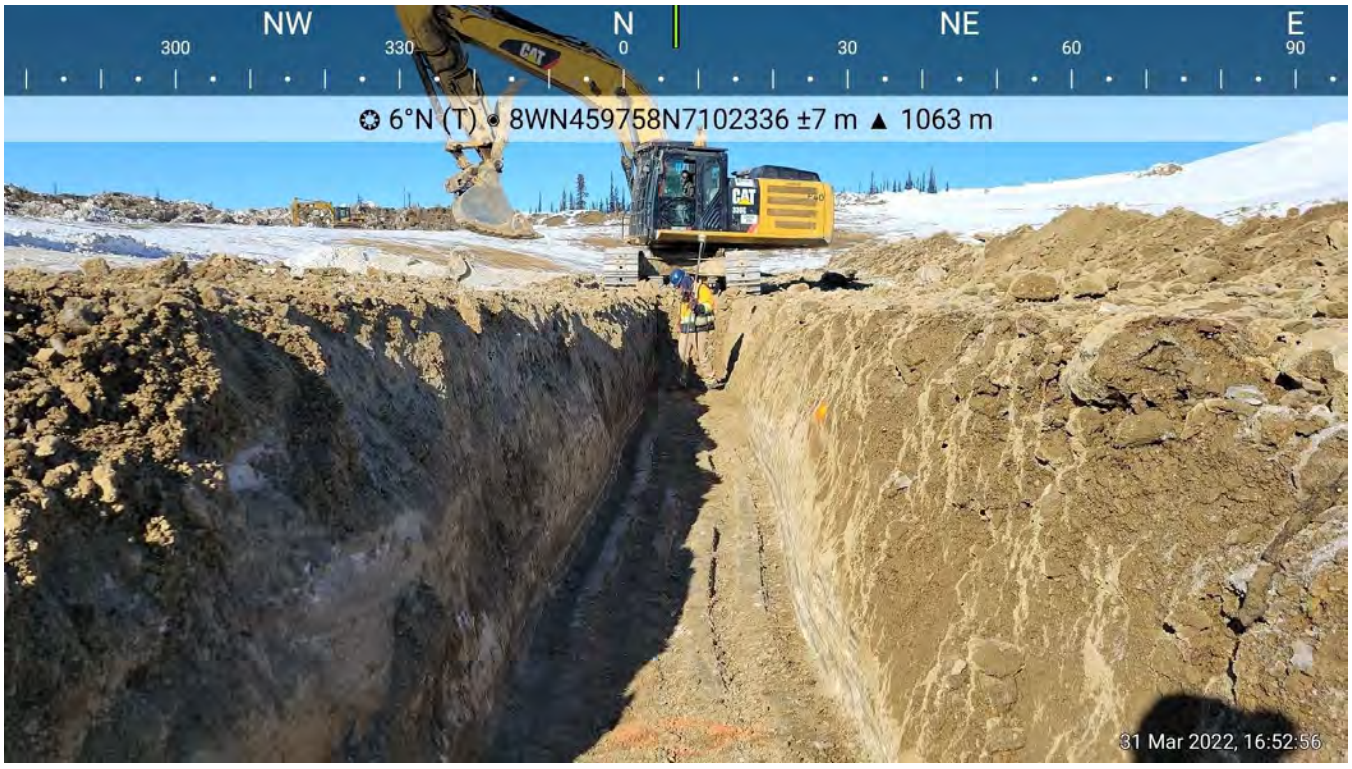

Figure 2: Spring Lateral Drain Excavation (March 31, 2022)

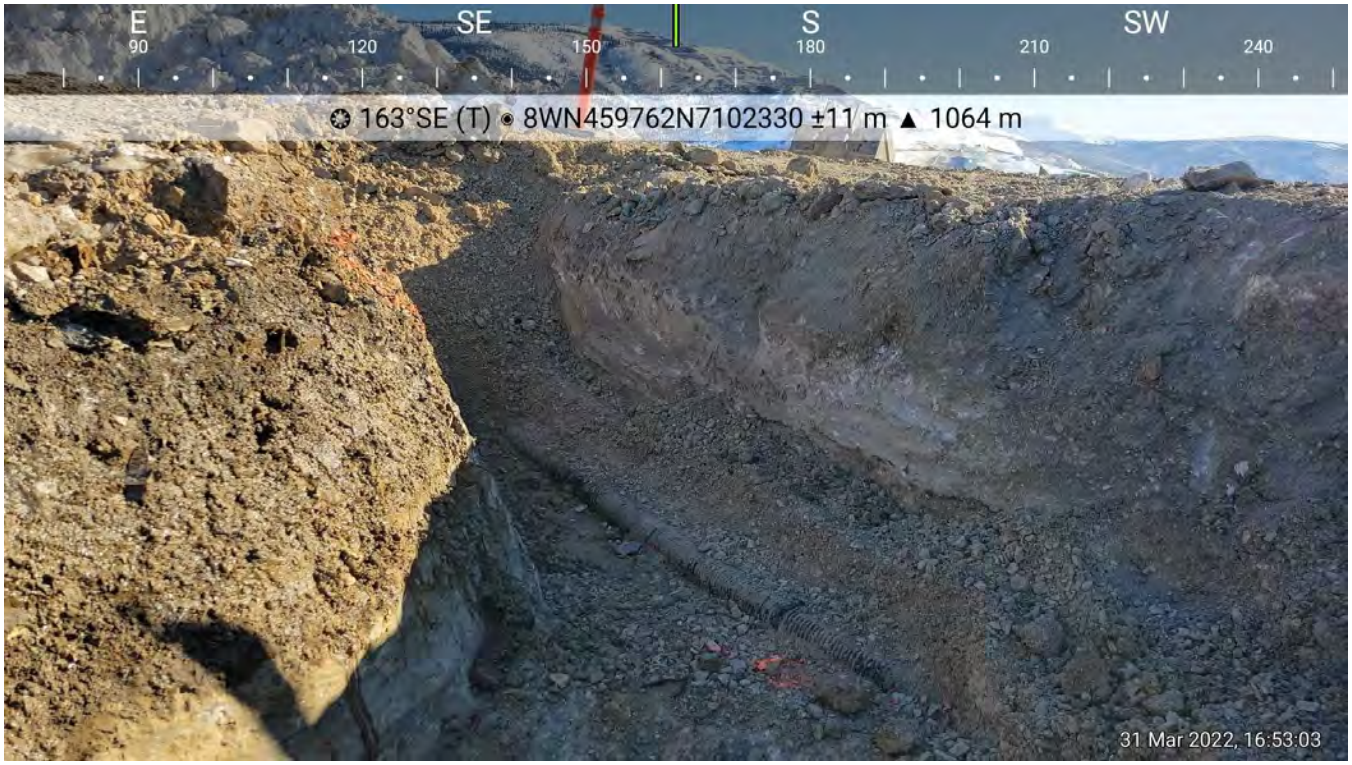

Figure 3: Spring Lateral Drain Excavation Tie-In to Existing Lateral #1 W (March 31, 2022)

Figure 4: Water at the Spring Lateral Drain/Lateral #1 W Tie-In (March 31, 2022)

Figure 5: Ice-Rich Soil Encountered in Spring Lateral Drain Sidewall (April 1, 2022)

Figure 6: Ice-Rich Soil Overlaying Saturated Fine-Grained Soil in Spring Lateral Drain Sidewall ~1.0 m below surface (April 1, 2022)

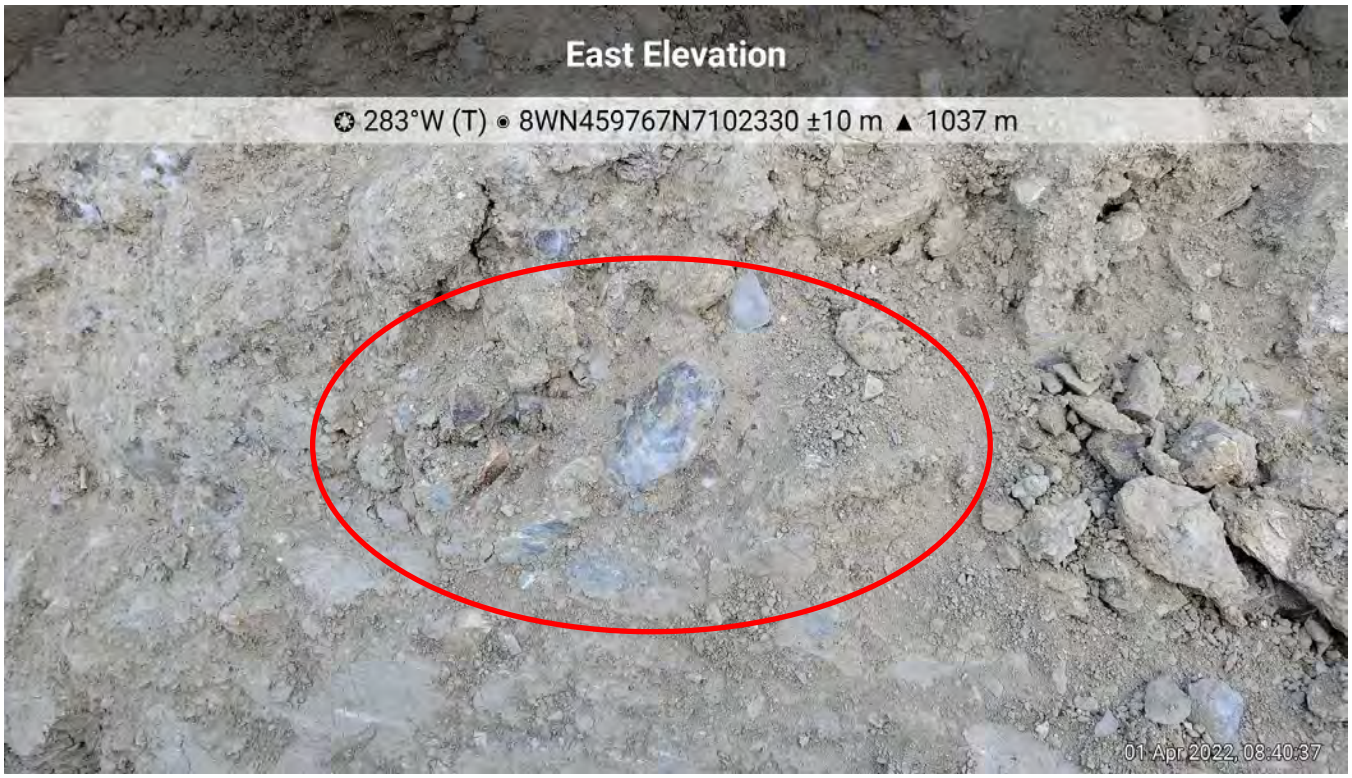

Figure 7: Ice-Rich Soil Encountered in Spring Lateral Drain Sidewall ~0.8 m below surface (April 1, 2022)

Figure 8: Large Ice Lenses Exposed During Ripping ~0.5 m to 1.0 m below final grade (April 1, 2022)

Figure 9: Large Ice Lenses Exposed During Ripping ~0.5 m to 1.0 m below final grade (April 1, 2022)

Figure 10: Tetra Tech Samples 1 and 2 (April 1, 2022)

Figure 11: Tetra Tech Samples 3 to 5 (April 1, 2022)

Figure 12: Lower Section of the Spring Lateral Drain Material Ripped and Hauled Away (April 2, 2022)

Figure 13: Large Ice Lenses Exposed During Ripping ~1.0m to 1.2 m below final grade (April 2, 2022)

Figure 14: Clearing/Preparing Upper Bench Above Spring Area for Water Diversion Channel (April 2, 2022)

Figure 15: Lower Section of the Spring Lateral Drain Being Cleaned Up (April 3, 2022)

Figure 16: Upper Bench Above Spring Area Being Ripped for Water Diversion Channel (April 3, 2022)

Figure 17: Hauling Away Lower Section of the Spring Lateral Drain Material (April 3, 2022)

Figure 18: Excavation Base of the Spring Lateral Drain Area Facing North (April 14, 2022)

Figure 19: Excavation Base of the Spring Lateral Drain Area Facing South (April 14, 2022)

Figure 20: Testpit Completed at Base of Excavation within the Spring Lateral Drain Area (April 14, 2022)

4.0 CLOSURE

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

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/am

TETRA TECH

FIELD REPORT

ISSUED FOR USE

Project:	VGCX HLF Phase 2 Subgrade Inspection	**Date:**	May 15, 2022
Location:	Eagle Gold Mine, Yukon	**Contractor:**	Ewing Transport Ltd.
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing
Contact:	Cody Roberts, P.Eng.	**Contractor's Email:**	NA
Weather:	Variable	**Tetra Tech Representative:**	Jacob Swartz, EIT
File:	704-ENG.WARC03235-23	**Status:**	Issued for Use

1.0 INTRODUCTION

1.1 General

NND-EBA Land Protection Corp, operating as NELPCo Limited Partnership (NELPCo), was retained by Victoria Gold Corp. (VGCX) to provide geotechnical support for Phase 2 of the heap leach facility expansion (HLF Phase 2) at the Eagle Gold Mine located in Dublin Gulch north of Mayo, Yukon. Tetra Tech Canada Inc. (Tetra Tech) has prepared this report on behalf of NELPCo as their engineering service provider. Tetra Tech's role includes inspection of earthworks, header underdrain and lateral drain installation, compaction testing of berms, and testpitting to support the ground improvement plan.

VGCX retains JDS Energy and Mining Inc. (JDS) to oversee various Eagle Gold Mine construction works and coordinate Tetra Tech's site visits. As there are various ongoing construction activities at the mine, JDS has requested that Tetra Tech make periodic site visits to inspect the subgrade for HLF Phase 2.

This field report details Tetra Tech's inspection from May 12 to 15, 2022. All photos and test logs recorded during the site visit are attached below.

2.0 DAILY SUMMARY - FIELD INVESTIGATION

2.1 May 12, 2022

- Weather: Sunny, 10 °C
- Tetra Tech's field representative, Mr. Jacob Swartz, EIT, mobilized to the Eagle Gold Mine.
- Prior to arriving, the Spring Lateral Drain (SLD) area that was inspected April 14, 2022, was backfilled with rock fill. The SLD was completed from the Lateral #1 W to the bottom of the spring source (08V 459,770E 7,102,332N Ele: 1048.041 m.a.s.l.).
- Ewing continued SLD excavation to the source of the spring.
- JDS determined that the best method of action was to complete the excavation in phases due to accessibility. The phases consisted of the following:

    1. Ewing will excavate towards the water source to the maximum reach of the excavator.

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2. Ewing will backfill with the rock fill after Tetra Tech has approved the subgrade and the excavator will move forward.

3. Steps one and two will be repeated until the spring source is reached.

4. The SLD trench will then be excavated within the rockfill, and the pipe installed.

- Survey is on-site, full time, providing support for the excavation.

- Tetra Tech encountered surficial ice lenses and thaw unstable soil within the top 1 meter of material. All ice rich and thaw unstable soil was removed.

2.2 May 13, 2022

- Weather: Sunny, 10°C

- Ewing continued excavating the SLD until the seepage source was reached. All the ice-rich and thaw unstable soils were removed from the trench excavation. The excavation subgrade consisted of a matrix of finer-grained soils mixed with coarse-grained colluvium. As the spring source was reached, the material became coarser with bedrock presenting along the sidewalls and bottom of the trench.

  - Tetra Tech observed frozen conditions at the bottom of the excavation.

- Ewing backfilled the final section of the excavation with rock fill. The area is ready for the trench to be excavated and the pipe installed.

- Water from the spring was accumulating and flowing through the excavation/rock fill.

2.3 May 14, 2022

- Weather: Sunny, 10°C

- Ewing excavated the trench and completed the installation of the SLD (placement of the geotextile, drain rock, and perforated pipe). From approximately 08V 459,771E 7,102,330N Ele:1048.12 m.a.s.l. to 08V 459,799E 7,102,397N Ele:1050.58 m.a.s.l.

  - The trench was cut within the rock fill material.

- Ewing started to push, place, and pack the material into the Phase 1 interceptor ditch.

  - The material was pushed from above the ditch using a D10 dozer, and the excavator spread out the material in 350 mm lifts.

  - Tetra Tech's site representative, Jacob Swartz, tested the material to see if the compaction method spec would be sufficient for the material.

    - As per the Compaction Method Spec RFI, eight passes with the vibratory compactor were completed to see if the material would compact to the specified 95% Standard Proctor Maximum Dry Density (SPMDD). Compaction was not met until ten passes were made. Therefore, Tetra Tech recommended to Ewing/JDS that 10 passes must be completed to reach the density spec (95%).

    - Two test spots were conducted to confirm the required compaction effort for the material. The results are shown below in Table 1

Table 1: Compaction Results from Method Spec Check

Test #	Test Spot #1 08V 459971 E 7101827 N	Test Spot #2 08V 459966 E 7101844 N
1	▪ # Passes: 8 ▪ Probe Depth: 0.3 m ▪ WD: 2170 kg/m^3 ▪ DD: 2063 kg/m^3 ▪ MC: 5.2% ▪ 91.7% @ 2250 kg/m^3	▪ # Passes: 8 ▪ Probe Depth: 0.3 m ▪ WD: 2254 kg/m^3 ▪ DD: 2117 kg/m^3 ▪ MC: 6.5% ▪ 94.1% @ 2250 kg/m^3
2	▪ # Passes: 10 ▪ Probe Depth: 0.3 m ▪ WD: 2307 kg/m^3 ▪ DD: 2168 kg/m^3 ▪ MC: 6.4% ▪ 96.3% @ 2250 kg/m^3	▪ # Passes: 10 ▪ Probe Depth: 0.3 m ▪ WD: 2274 kg/m^3 ▪ DD: 2154 kg/m^3 ▪ MC: 5.6% ▪ 95.9% @ 2250 kg/m^3

2.4 May 15, 2022

- Weather: Cloudy, Fresh snow on the ground from overnight, 5°C
- Tetra Tech's field representative, Mr. Jacob Swartz, EIT, demobilized to Whitehorse.

3.0 PHOTOGRAPHS

Figure 1: SLD Tie Into the Spring Source Area (May 12, 2022)

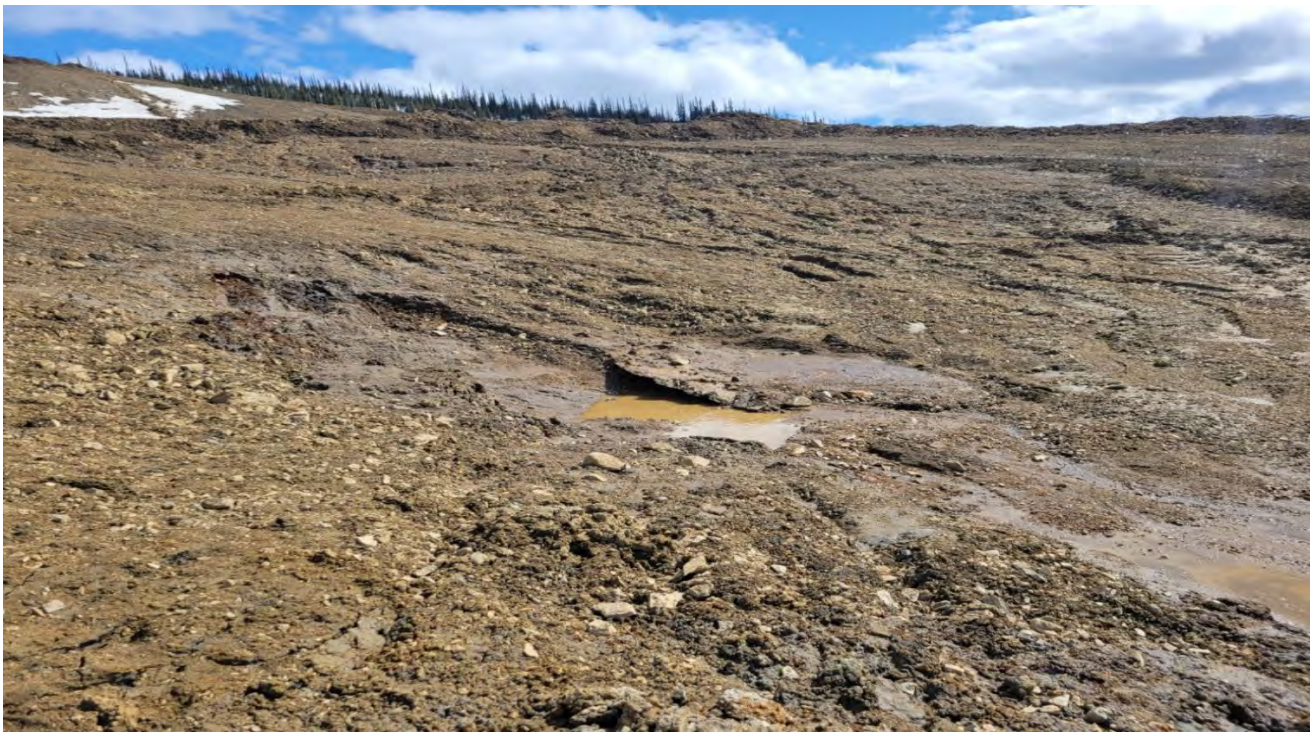


Figure 2: Spring Source Area (May 12, 2022)

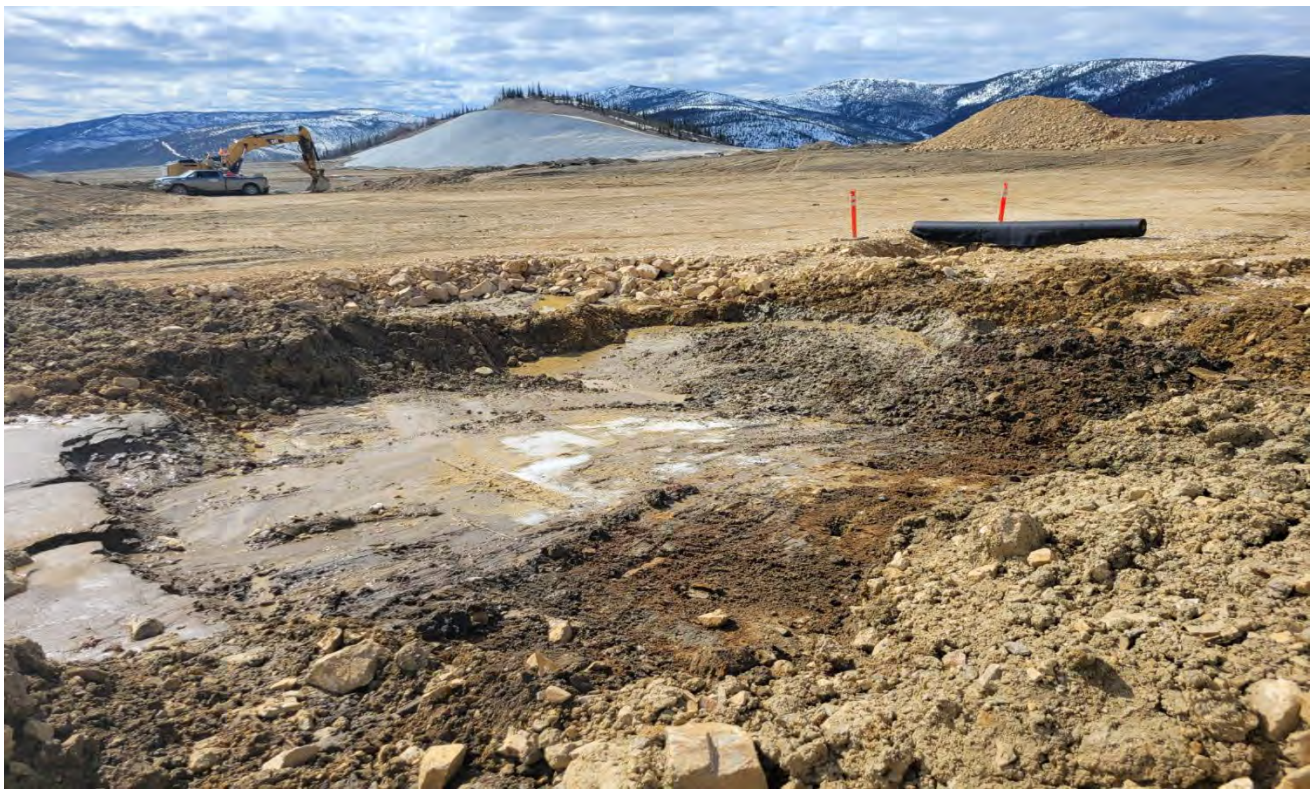


Figure 3: SLD Excavation: Removal of Deleterious Material (May 12, 2022)

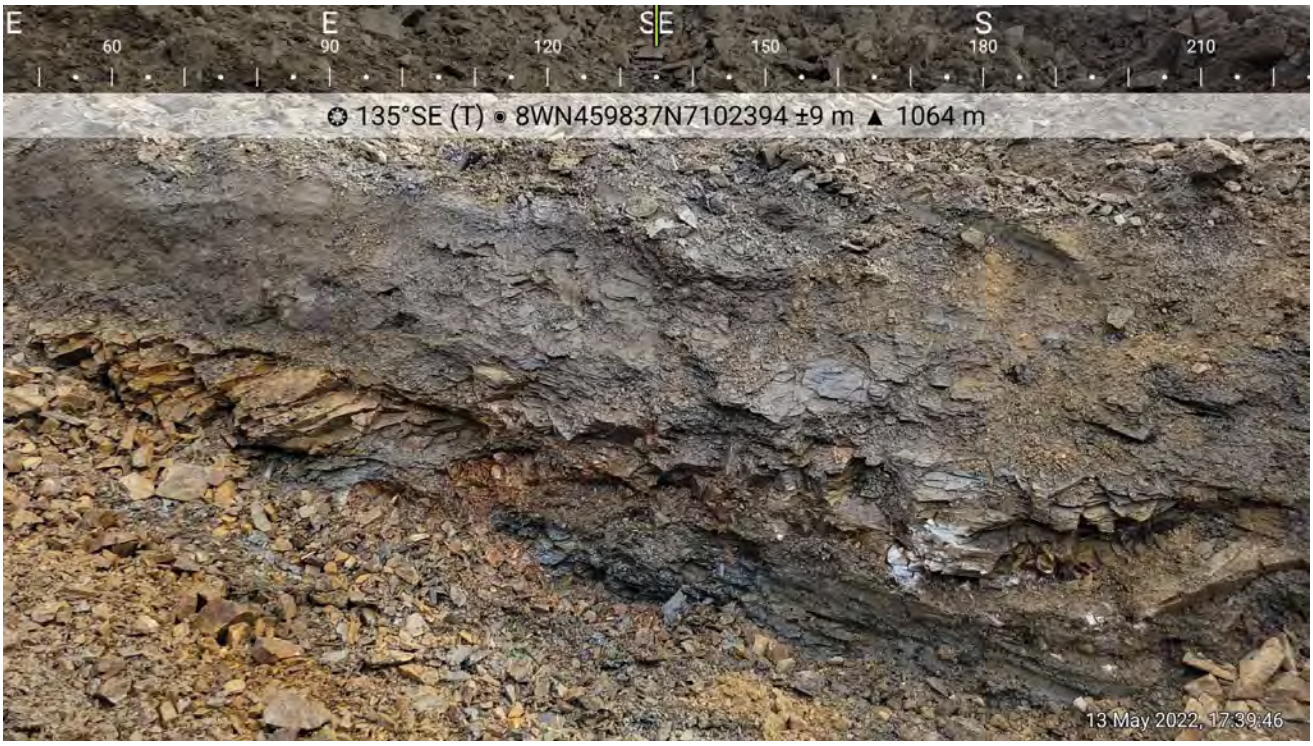


Figure 4: SLD Subgrade (May 13, 2022)

Figure 5: SLD Subgrade (May 13, 2022)

Figure 6: Water Flowing Through SLD Excavation (May 13, 2022)

Figure 7: End of SLD Excavation:
Water Seeping from Bedrock Interface Near Bottom of Excavation (May 13, 2022)

Figure 8: SLD Excavation/Backfill (May 13, 2022)

Figure 9: SLD Excavation/Backfill (May 13, 2022)

Figure 10: SLD Backfill Material Being Packed (May 13, 2022)

Figure 11: SLD Trench Being Excavated in Rockfill (May 14, 2022)

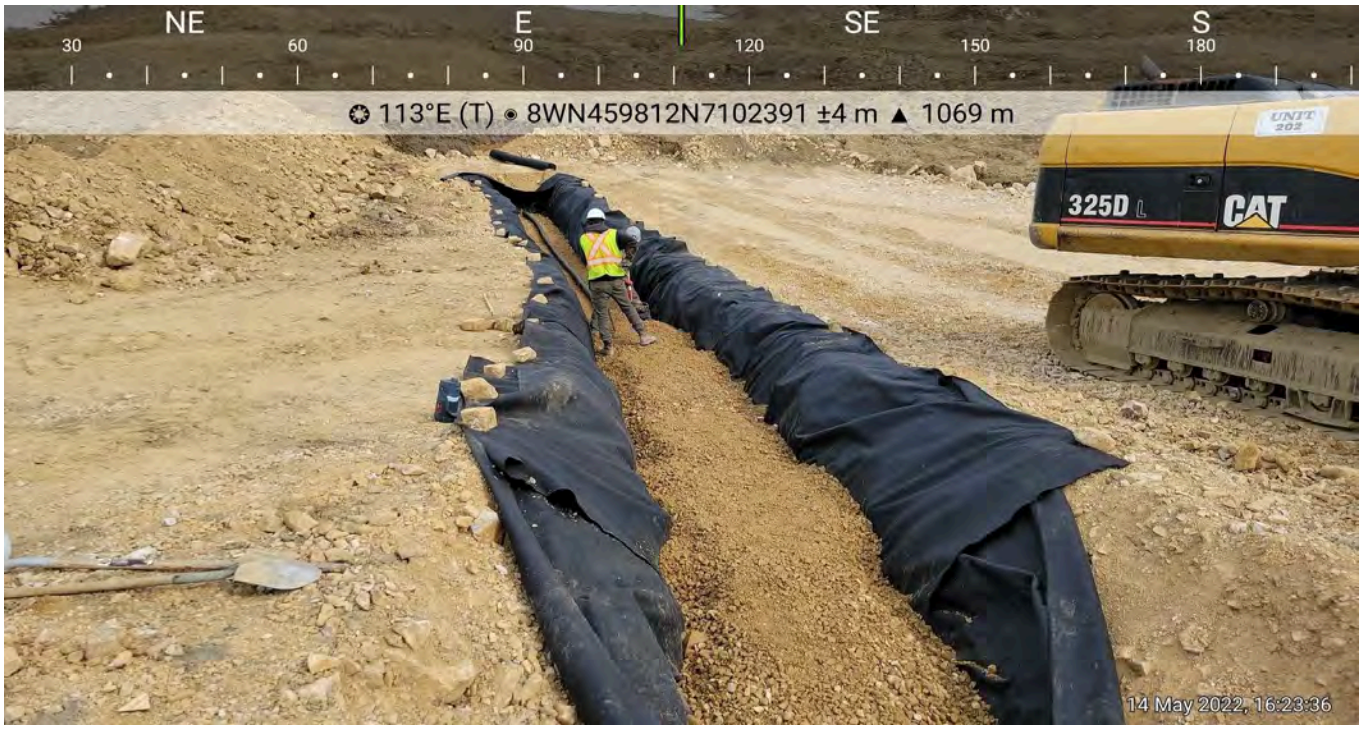


Figure 12: Installation Of The SLD (May 14, 2022)

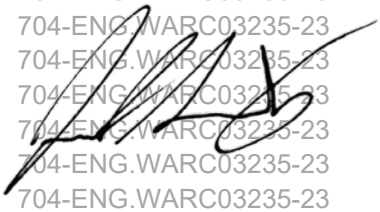
Figure 13: Interceptor Ditch Control Strip for Method Spec Confirmation (May 14, 2022)

4.0 CLOSURE

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

704-ENG.WARC03235-23



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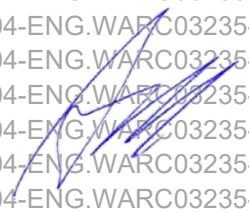

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Engineering Practice
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/cr

FIELD REPORT

ISSUED FOR REVIEW

Project:	VGCX HLF Phase 2 Subgrade Inspection	**Date:**	May 22, 2022
Location:	Eagle Gold Mine, Yukon	**Contractor:**	Ewing Transport Ltd.
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing
Contact:	Cody Roberts, P.Eng.	**Contractor's Email:**	NA
Weather:	Clear	**Victoria Gold Representative:**	Reanna Roberts
Status:	Issued for Review		

1.0 INTRODUCTION

Lateral drain #2 East was started in November of 2021. Approximately 30% of the trench was excavated and inspected by Tetra Tech. The subgrade was approved, and the lateral detail was installed as per the drawings. Due to cold weather conditions the lateral was stopped in December 2021. The tie in location was bermed off and delineated; to be continued with better conditions in spring of 2022.

2.0 FIELD INVESTIGATION

Lateral drain #2 East was excavated and graded between May 18-May 21, 2022. JDS, Ewing and Victoria Gold representatives were on site for a field investigation to inspect and approve the subgrade conditions on May 22, 2022.

Lateral #2 East had previously been completed at the end of 2021 up to 459,967.520 m E, 7,102,102.043 m N, Elevation: 1066.685 m. The remainder of this lateral was considered from the previous point to 460, 063.978 m E, 7,101, 884.557 m N, Elevation: 1070.385 m. (Coordinates provided by Underhill May 21, 2022); The area being inspected was ~244m.

The entire trench was open and free of debris prior to arriving. The trench varied in depth from approximately 1.2m to 1.7m. A sand/gravel colluvium was observed in the top 0.2-0.4m of the trench walls, which overlay 0.4 to 1.7m of weathered Metasediment bedrock (Phyllitic), which typically ranged from very weak (R1), highly weathered (W4), friable bedrock to more competent weak (R2), moderately weathered (W3) bedrock with small zones of medium strong (R3), moderately weathered (W3) material. Narrow, localized, intermittent zones of sandy clay, and/or clayey sand, was observed within about a half meter of the trench bottom for an extent of about 3 to 5m over an estimated percentage of 15-20% of trench length. This was interpreted as completely weathered Phyllite bedrock, which has weathered insitu due to presence of rock mass fabric. A few damp and wet areas were visible on trench floor and trench walls from seasonal thaw conditions, with the only pooled water (very minor) noted at ~100 m from South End of trench and approximately 40 m from the North End where very minor seepage was observed from lower half of wall (dripping, estimated volume of 25 l/min/10m).No visible ice or frozen material was observed in the trench excavation.

3.0 ACTION ITEMS

The trench subgrade was accepted under the foundation improvement plan and technical specifications

4.0 PHOTOGRAPHS

Photo 1: Tie in location to the existing lateral #2 East

Photo 2: Trench walls /floors looking south east from the tie in location

Photo 3: minor moisture observed in the trench from thawing

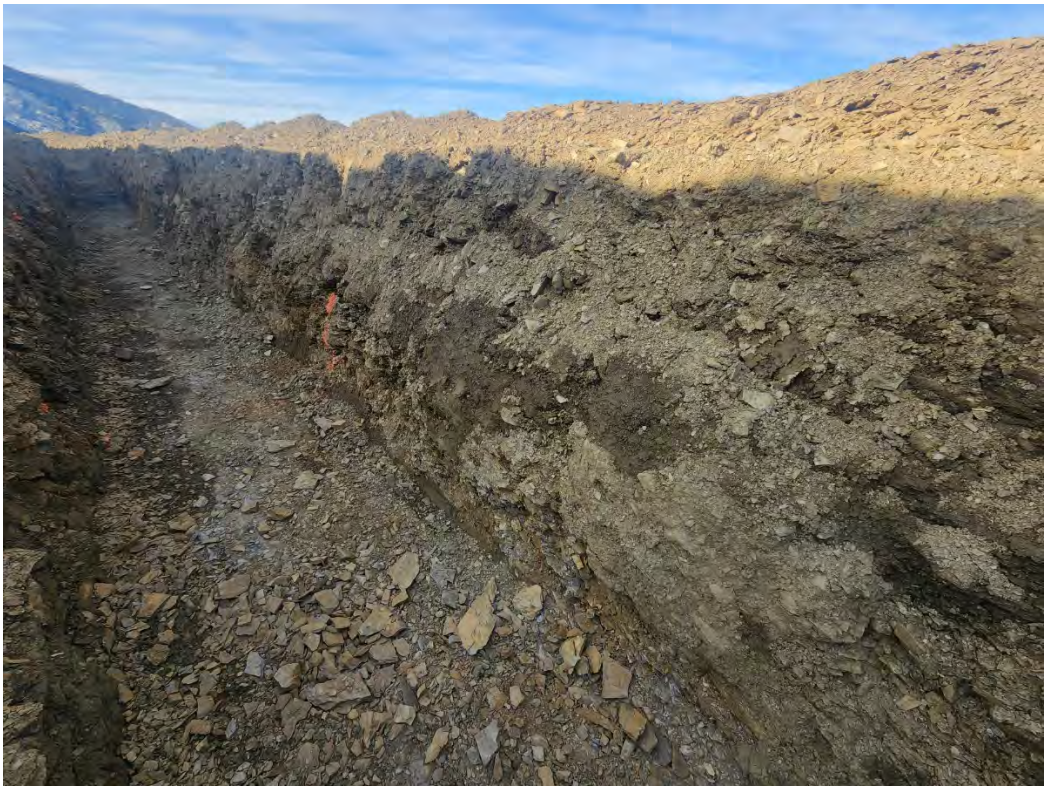

Photo 4: primarily fractured bedrock with a top layer of sand/silty colluvium

Photo 5: localized clay content on the trench wall

Photo 6: localized clay content on the trench walls

5.0 Closure

Name: Cody Roberts
Company: JDS Energy & Mining
Position: Construction Superintendent
Signature: Cody Roberts Digitally signed by Cody Roberts DN: C=CA, E=codyr@jdsmining.ca, O=JDS Mining and Energy, OU=Construction Division, CN=Cody Roberts Date: 2022.05.24 07:05:20-07'00'

Name: Reanna Roberts
Company: Victoria Gold Corp.
Position: Senior Engineering Geologist, Technical Services Group
Signature:

TETRA TECH

FIELD REPORT

ISSUED FOR USE

Project:	VGCX HLF Phase 2 Subgrade Inspection	**Date:**	May 29, 2022
Location:	Eagle Gold Mine, Yukon	**Contractor:**	Ewing Transport Ltd.
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing
Contact:	Cody Roberts, P.Eng.	**Contractor's Email:**	NA
Weather:	Partly cloudy, 15°C	**Tetra Tech Representative:**	Shawn Matthies, EIT
File:	704-ENG.WARC03235-23	**Status:**	Issued for Use

1.0 INTRODUCTION

1.1 General

NND-EBA Land Protection Corp, operating as NELPCo Limited Partnership (NELPCo), was retained by Victoria Gold Corp. (VGCX) to provide geotechnical support for Phase 2 of the heap leach facility expansion (HLF Phase 2) at the Eagle Gold Mine located in Dublin Gulch north of Mayo, Yukon. Tetra Tech Canada Inc. (Tetra Tech) has prepared this report on behalf of NELPCo as their engineering service provider. Tetra Tech's role includes inspection of earthworks, header underdrain and lateral drain installation, compaction testing of berms, and testpitting to support the ground improvement plan.

VGCX retains JDS Energy and Mining Inc. (JDS) to oversee various Eagle Gold Mine construction works and coordinate Tetra Tech's site visits. As there are various ongoing construction activities at the mine, JDS has requested that Tetra Tech make periodic site visits to inspect the subgrade for HLF Phase 2.

This field report details Tetra Tech's inspection on May 29, 2022. Selected photos and test logs recorded during the site visit are attached below.

2.0 DAILY SUMMARY – FIELD INVESTIGATION

2.1 May 29, 2022

- Tetra Tech's field representative, Shawn Matthies, mobilized to the Eagle Gold Mine to inspect the excavation for a segment of Lateral Drain #1 E.
- GPS coordinates of the lateral drain segment and testpit locations were taken using a handheld GPS by Tetra Tech. Some coordinates appear to be tens of metres from actual locations. Underhill advised that survey pickups of the trench segments inspected by Tetra Tech were completed. Coordinates taken by Underhill should be referred to for locations.
- Site surveyor (Underhill) advised that they had GPS coordinates of the trench segment inspected during this site visit which would be provided to JDS and Tetra Tech.
- The trench segment inspected was mostly unfrozen. Trench walls in some areas were moist to wet, indicating that frozen ground had melted following excavation. Excess moisture and/or significant sloughing were not observed, and previous excess ice was not inferred.

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Whitehorse, YT Y1A 0H7 CANADA
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- One 10 mm-thick ice lens in moderately weathered bedrock was observed at 459,842 m E; 7,102,217 m N; 8W (Photo 6). Ewing excavated the sidewall of the trench in this area and additional ice was not observed by Tetra Tech.
- Tetra Tech advised JDS that the section of trench inspected was considered compliant with Forte Dynamics' earthworks specifications.

3.0 PHOTOGRAPHS

Photo 1: TT-TP22-03 Sidewall

Photo 2: TT-TP22-04 Sidewall

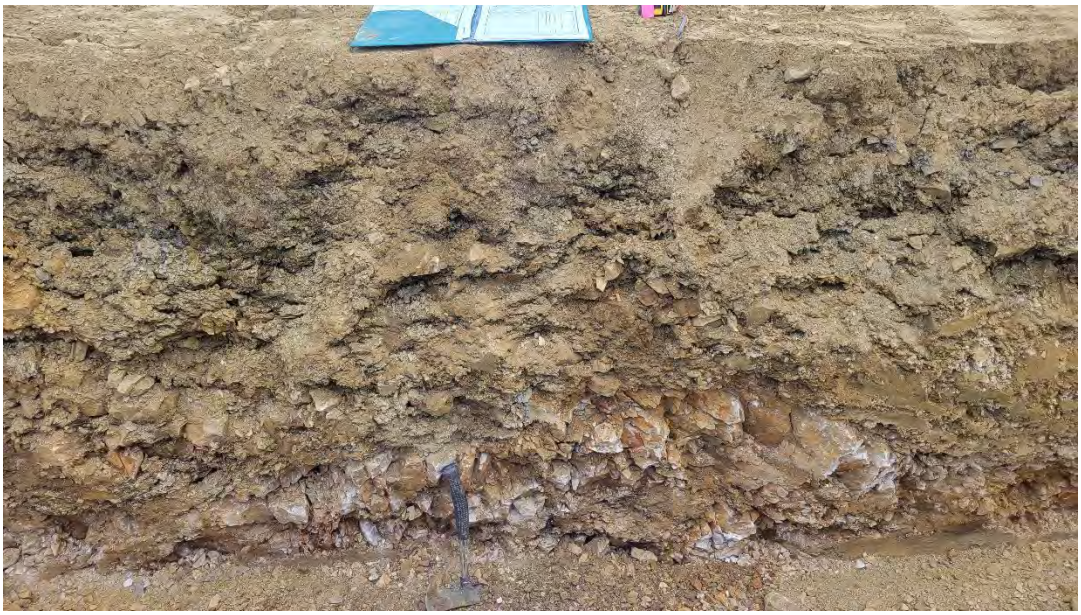


Photo 3: TT-TP22-05 Sidewall

Photo 4: TT-TP22-06 Sidewall

Photo 5: Ongoing lateral drain excavation beyond TP04. Considered approved to painted mark surveyed by Underhill.

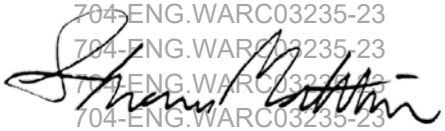
Photo 6: 10 mm-thick ice lens observed at 459,842 m E; 7,102,217 m N; 8W in moderately weathered bedrock.

4.0 CLOSURE

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

704-ENG.WARC03235-23



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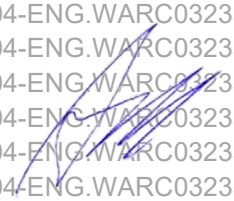

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/cr

Testpit No: **TT-TP22-03**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	SAND AND SILT (COLLUVIUM) - some gravel, angular gravel to 50 mm diameter, friable, damp, orangish brown, (200 mm thick)	Unfrozen			0.2
0.2		BEDROCK - highly weathered, highly fractured, grey and reddish brown, silt and sand between fractures				0.4
0.4						0.6
						0.8
						1.0
						1.2
0.6						1.4
						1.6
						1.8
0.8						2.0
						2.2
						2.4
						2.6
						2.8
1.0		- slightly weathered				3.0
						3.2
						3.4
		END OF BOREHOLE (1.1 metres) Note: Stopped at trench depth				3.6
1.2						3.8
						4.0
						4.2
						4.4
1.4						4.6
						4.8
						5.0
						5.2
1.6						5.4
						5.6
						5.8
1.8						6.0
						6.2
						6.4
2						

TETRA TECH

Contractor: Ewing	Completion Depth: 1.1 m
Equipment Type: Excavator	Start Date: 2022 May 29
Logged By: SAM	Completion Date: 2022 May 29
Reviewed By: AMM	Page 1 of 1

Testpit No: **TT-TP22-04**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	BEDROCK - moderately weathered, moderately fractured, moist, light reddish brown, sand and silt in fractures	Unfrozen			
0.2						0.2 / 0.4 / 0.6 / 0.8 / 1.0 / 1.2 / 1.4
0.4						1.6 / 1.8 / 2.0 / 2.2 / 2.4 / 2.6 / 2.8
0.6						3.0 / 3.2 / 3.4 / 3.6 / 3.8 / 4.0 / 4.2
		- slightly weathered				
0.8						4.4 / 4.6 / 4.8 / 5.0 / 5.2 / 5.4 / 5.6
1.0						5.8 / 6.0 / 6.2 / 6.4
		END OF BOREHOLE (1.1 metres) Note: Stopped at trench depth				
1.2						
1.4						
1.6						
1.8						
2						

TETRA TECH

Contractor: Ewing	Completion Depth: 1.1 m
Equipment Type: Excavator	Start Date: 2022 May 29
Logged By: SAM	Completion Date: 2022 May 29
Reviewed By: AMM	Page 1 of 1

Testpit No: **TT-TP22-05**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	SAND (COLLUVIUM) - silty, some gravel, fine to coarse grained sand, angular gravel to 100 mm diameter, damp, brown	Unfrozen			
0.2						0.2
						0.4
0.4		- moist				0.6
						0.8
0.6						1.0
						1.2
						1.4
						1.6
						1.8
						2.0
						2.2
						2.4
0.8		BEDROCK - moderately weathered, moderately fractures, damp, brownish grey, orange oxidized areas, sand and silt in fractures				2.6
						2.8
		- slightly weathered				3.0
1.0						3.2
						3.4
						3.6
						3.8
1.2		END OF BOREHOLE (1.2 metres) Note: Stopped at trench depth				4.0
						4.2
						4.4
1.4						4.6
						4.8
						5.0
1.6						5.2
						5.4
						5.6
						5.8
1.8						6.0
						6.2
						6.4
2						

TETRA TECH

Contractor: Ewing	Completion Depth: 1.2 m
Equipment Type: Excavator	Start Date: 2022 May 29
Logged By: SAM	Completion Date: 2022 May 29
Reviewed By: AMM	Page 1 of 1

Testpit No: **TT-TP22-06**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	SAND (COLLUVIUM) - silty, gravelly, angular gravel to 100 mm diameter, damp, brown	Unfrozen			
0.2						0.2
						0.4
						0.6
						0.8
						1.0
						1.2
0.4		BEDROCK - highly weathered, highly fractured, damp, brown and blue grey, sand and silt in fractures				1.4
						1.6
0.6		- moist				1.8
						2.0
						2.2
						2.4
0.8		- moderately weathered, damp				2.6
						2.8
						3.0
1.0						3.2
		END OF BOREHOLE (1.0 metre) Note: Stopped at trench depth				3.4
						3.6
1.2						3.8
						4.0
						4.2
						4.4
1.4						4.6
						4.8
						5.0
1.6						5.2
						5.4
						5.6
1.8						5.8
						6.0
						6.2
2						6.4

TETRA TECH

Contractor: Ewing	Completion Depth: 1 m
Equipment Type: Excavator	Start Date: 2022 May 29
Logged By: SAM	Completion Date: 2022 May 29
Reviewed By: AMM	Page 1 of 1

TETRA TECH

FIELD REPORT

ISSUED FOR USE

Project:	VGCX HLF Phase 2 Subgrade Inspection	**Date:**	June 6, 2022
Location:	Eagle Gold Mine, Yukon	**Contractor:**	Ewing Transport Ltd.
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing
Contact:	Cody Roberts, P.Eng.	**Contractor's Email:**	NA
Weather:	Variable	**Tetra Tech Representative:**	Jacob Swartz, EIT
File:	704-ENG.WARC03235-23	**Status:**	Issued for Use

1.0 INTRODUCTION

1.1 General

NND-EBA Land Protection Corp, operating as NELPCo Limited Partnership (NELPCo), was retained by Victoria Gold Corp. (VGCX) to provide geotechnical support for Phase 2 of the heap leach facility expansion (HLF Phase 2) at the Eagle Gold Mine located in Dublin Gulch north of Mayo, Yukon. Tetra Tech Canada Inc. (Tetra Tech) has prepared this report on behalf of NELPCo as their engineering service provider. Tetra Tech's role includes inspection of earthworks, header underdrain and lateral drain installation, compaction testing of berms, and testpitting to support the ground improvement plan.

VGCX retains JDS Energy and Mining Inc. (JDS) to oversee various Eagle Gold Mine construction works and coordinate Tetra Tech's site visits. As there are various ongoing construction activities at the mine, JDS has requested that Tetra Tech make periodic site visits to inspect the subgrade for HLF Phase 2.

This field report details Tetra Tech's inspection on June 2, 2022. All photos and test logs recorded during the site visit are attached below.

2.0 DAILY SUMMARY - FIELD INVESTIGATION

2.1 June 2, 2022

- Weather: Sunny, 10 °C
- Tetra Tech's field representative, Mr. Jacob Swartz, EIT, mobilized to the Eagle Gold Mine to inspect the last section of the Lateral #1 E.
- Upon arrival, the trench for the Lateral #1 E was open from approximately 459,919E 7,102,098N Ele:1050.32 m.a.s.l. to 460,014E 7,101,824N Ele:1053.94 m.a.s.l. (Coordinates provided by JDS June 4, 2022).
  - Soft spots were present throughout the trench because the material was saturated and loose due to higher silt content and water runoff from above the trench.
  - Ewing excavated the soft spots, which were found to be surficial. Tetra Tech observed coarse colluvium material or bedrock under the saturated material.
- Prior to leaving Tetra Tech informed JDS that the inspected subgrade for Lateral #1 E is considered suitable and is ready for the placement of corrugated pipe and backfill.

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Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

3.0 PHOTOGRAPHS

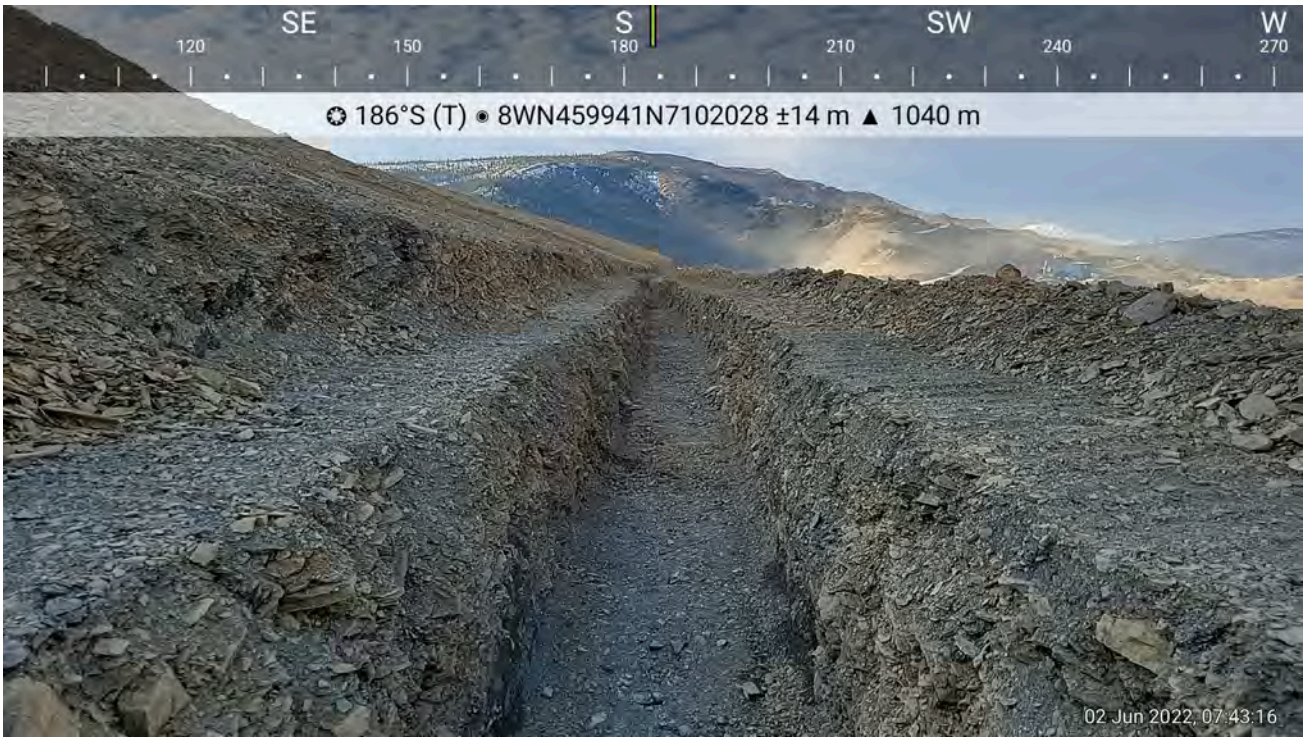


Figure 1: Lateral #1 E Subgrade (June 2, 2022)

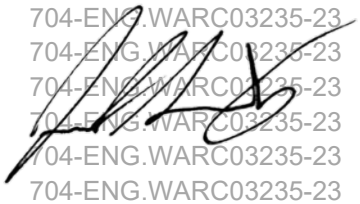
Figure 2: Completed Lateral #1 E (May 12, 2022)

4.0 CLOSURE

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

704-ENG.WARC03235-23



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704-ENG.WARC03235-23

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/cr

TETRA TECH

FIELD REPORT

ISSUED FOR USE

Project:	VGCX HLF Phase 2 Subgrade Inspection	**Date:**	July 4, 2022
Location:	Eagle Gold Mine, Yukon	**Contractor:**	Ewing Transport Ltd.
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing
Contact:	Cody Roberts, P.Eng.	**Contractor's Email:**	NA
Weather:	Variable	**Tetra Tech Representative:**	Josh McKenzie
File:	704-ENG.WARC03235-23	**Status:**	Issued for Use

1.0 INTRODUCTION

1.1 General

NND-EBA Land Protection Corp, operating as NELPCo Limited Partnership (NELPCo), was retained by Victoria Gold Corp. (VGCX) to provide geotechnical support for Phase 2 of the heap leach facility expansion (HLF Phase 2) at the Eagle Gold Mine located in Dublin Gulch north of Mayo, Yukon. Tetra Tech Canada Inc. (Tetra Tech) has prepared this report on behalf of NELPCo as their engineering service provider. Tetra Tech's role includes inspection of earthworks, header underdrain and lateral drain installation, compaction testing of berms, and testpitting to support the ground improvement plan.

VGCX retains JDS Energy and Mining Inc. (JDS) to oversee various Eagle Gold Mine construction works and coordinate Tetra Tech's site visits. As there are various ongoing construction activities at the mine, JDS has requested that Tetra Tech make periodic site visits to inspect the subgrade for HLF Phase 2.

This field report details Tetra Tech's inspection from July 4, 2022. All photos and test logs recorded during the site visit are attached below.

2.0 DAILY SUMMARY - FIELD INVESTIGATION

2.1 July 4, 2022

- Weather: Sunny, 15 °C
- Tetra Tech's field representative, Mr. Josh McKenzie, mobilized from CQA liner inspection to inspect a section of the Lateral #2 West.
- Upon arrival, the trench for the Lateral #2 W was open from approximately 459,870 m east, 7,102,482 m north to 459,901 m east, 7,102,454 m north.
  - No soft, saturated, or ice-rich material was detected while inspecting the section of this trench.
  - Tetra Tech observed coarse colluvium material, from surface to 0.45 m depth, situated above a thick unsaturated fine-grained layer that extended to the bottom of the lateral trench.
  - See testpit TT-TP22-07.

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- Prior to leaving Tetra Tech informed JDS that the inspected subgrade for Lateral #2 West is considered suitable for the placement of corrugated pipe and backfill.

3.0 PHOTOGRAPHS

Figure 1: Lateral #2 W Subgrade (July 4, 2022)

Figure 2: Completed Lateral #2 W (May 12, 2022)

Figure 3: Installation of LD #2 W (July 4, 2022)

Figure 4: LD #2 W backfill (July 4, 2022)

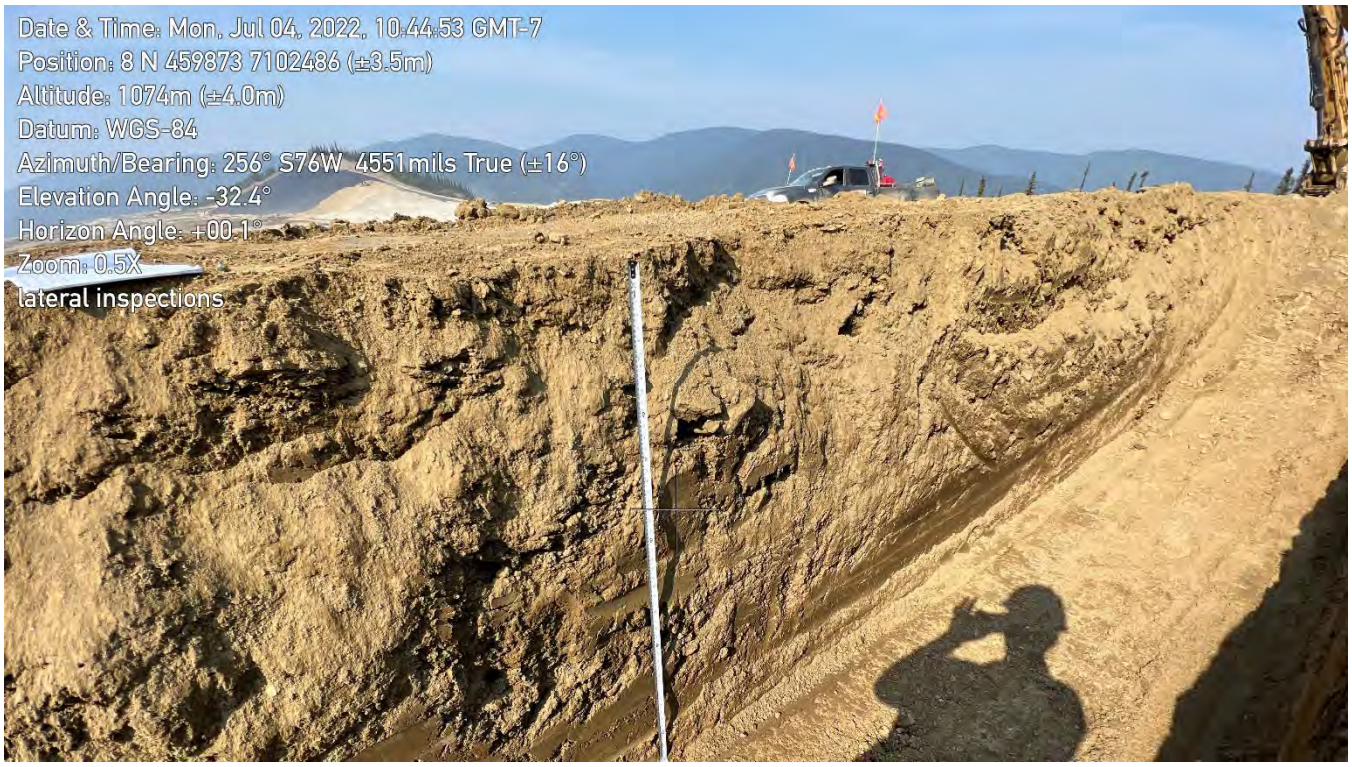

Figure 5: LD #2 W Subgrade (July 4, 2022)

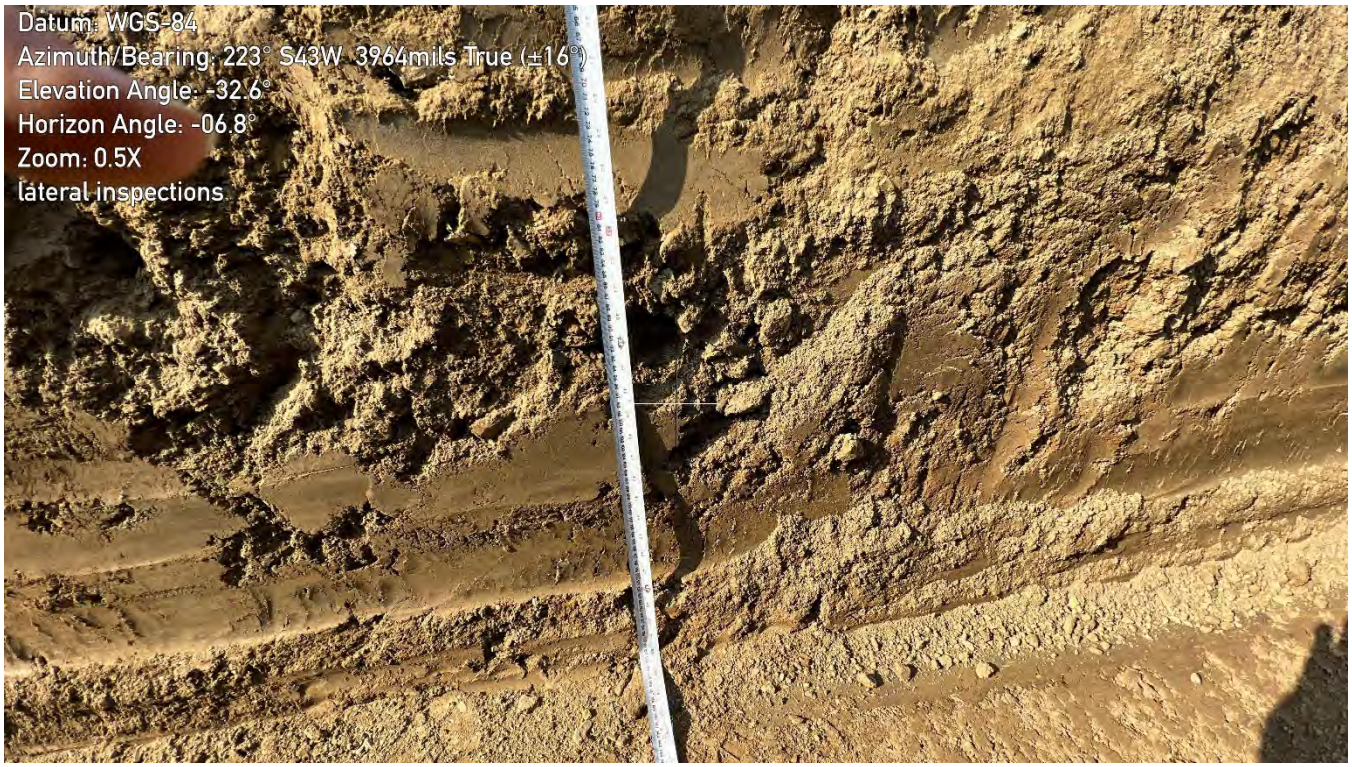

Figure 6: LD #2 W Subgrade clay layer (July 4, 2022)

Figure 7: SLD Subgrade colluvium layer (July 4, 2022)

Figure 8: LD #2 W after backfilling and rolling (July 7, 2022)

4.0 CLOSURE

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

704-ENG.WARC03235-23

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APPENDIX A

TESTPIT LOGS

TERMS USED ON BOREHOLE LOGS

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE GRAINED SOILS (major portion retained on 0.075mm sieve): Includes (1) clean gravels and sands, and (2) silty or clayey gravels and sands. Condition is rated according to relative density, as inferred from laboratory or in situ tests.

DESCRIPTIVE TERM	RELATIVE DENSITY	N (blows per 0.3m)
Very Loose	0 TO 20%	0 to 4
Loose	20 TO 40%	4 to 10
Compact	40 TO 75%	10 to 30
Dense	75 TO 90%	30 to 50
Very Dense	90 TO 100%	greater than 50

The number of blows, N, on a 51mm O.D. split spoon sampler of a 63.5kg weight falling 0.76m, required to drive the sampler a distance of 0.3m from 0.15m to 0.45m.

FINE GRAINED SOILS (major portion passing 0.075mm sieve): Includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as estimated from laboratory or in situ tests.

DESCRIPTIVE TERM	UNCONFINED COMPRESSIVE STRENGTH (KPA)
Very Soft	Less than 25
Soft	25 to 50
Firm	50 to 100
Stiff	100 to 200
Very Stiff	200 to 400
Hard	Greater than 400

NOTE: Slickensided and fissured clays may have lower unconfined compressive strengths than shown above, because of planes of weakness or cracks in the soil.

GENERAL DESCRIPTIVE TERMS

Slickensided - having inclined planes of weakness that are slick and glossy in appearance.
Fissured - containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical.
Laminated - composed of thin layers of varying colour and texture.
Interbedded - composed of alternate layers of different soil types.
Calcareous - containing appreciable quantities of calcium carbonate.;
Well graded - having wide range in grain sizes and substantial amounts of intermediate particle sizes.
Poorly graded - predominantly of one grain size, or having a range of sizes with some intermediate size missing.

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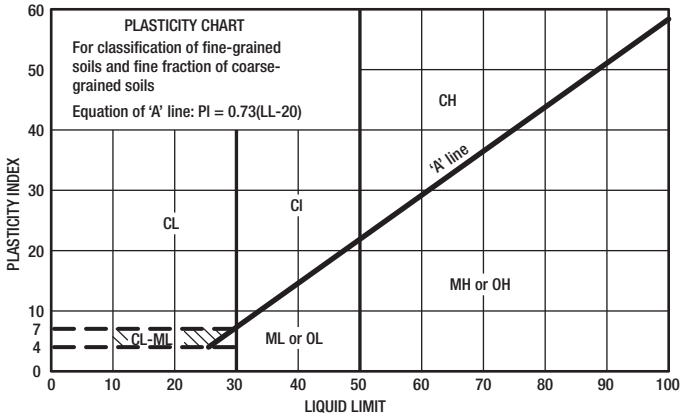
MODIFIED UNIFIED SOIL CLASSIFICATION

MAJOR DIVISION			GROUP SYMBOL	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA	
COARSE - GRAINED SOILS More than 50% retained on No. 75 µm sieve*	GRAVELS 50% or more of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines	Classification on basis of percentage of fines GW, GP, SW, SP GM, GC, SM, SC Borderline classification requiring use of dual symbols Less than 5% pass 75 µm sieve More than 12% pass 75 µm sieve 5% to 12% pass 75 µm sieve	$C_U = D_{60} / D_{10}$ Greater than 4 $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3
			GP	Poorly-graded gravels and gravel-sand mixtures, little or no fines		Not meeting both criteria for GW
		GRAVELS WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures		Atterberg limits plot below 'A' line or plasticity index less than 4 — Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-clay mixtures		Atterberg limits plot above 'A' line and plasticity index greater than 7
	SANDS More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS	SW	Well-graded sands and gravelly sands, little or no fines		$C_U = D_{60} / D_{10}$ Greater than 6 $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3
			SP	Poorly-graded sands and gravelly sands, little or no fines		Not meeting both criteria for SW
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures		Atterberg limits plot above 'A' line and plasticity index less than 4 — Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures		Atterberg limits plot above 'A' line and plasticity index greater than 7
FINE-GRAINED SOILS (by behavior) 50% or more passes 75 µm sieve*	SILTS Liquid limit <50		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands of slight plasticity		
	SILTS Liquid limit >50		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts		
	CLAYS Above "A" line on plasticity chart negligible organic content Liquid limit <30		CL	Inorganic clays of low plasticity, gravelly clays, sandy clays, silty clays, lean clays		
	CLAYS Above "A" line on plasticity chart negligible organic content Liquid limit 30-50		CI	Inorganic clay of medium plasticity, silty clays		
	CLAYS Above "A" line on plasticity chart negligible organic content Liquid limit >50		CH	Inorganic clay of high plasticity, fat clays		
	ORGANIC SILTS AND CLAYS Liquid limit <50		OL	Organic silts and organic silty clays of low plasticity		
	ORGANIC SILTS AND CLAYS Liquid limit >50		OH	Organic clays of medium to high plasticity		
HIGHLY ORGANIC SOILS			PT	Peat, muck and other highly organic soils		



* Based on the material passing the 75 mm sieve

† ASTM Designation D 2487, for identification procedure see D 2488 USC as modified by PFRA

GROUND ICE DESCRIPTION

ICE NOT VISIBLE

GROUP SYMBOL	SYMBOL	SUBGROUP DESCRIPTION	
N	Nf	Poorly-bonded or friable	
	Nbn	No excess ice, well-bonded	
	Nbe	Excess ice, well-bonded	

VISIBLE ICE LESS THAN 50% BY VOLUME

GROUP SYMBOL	SYMBOL	SUBGROUP DESCRIPTION	
V	Vx	Individual ice crystals or inclusions	
	Vc	Ice coatings on particles	
	Vr	Random or irregularly oriented ice formations	
	Vs	Stratified or distinctly oriented ice formations	

VISIBLE ICE GREATER THAN 50% BY VOLUME

ICE	ICE + Soil Type	Ice with soil inclusions	
	ICE	Ice without soil inclusions (greater than 25 mm thick	

NOTES:

1. Dual symbols are used to indicate borderline or mixed ice classifications.
2. Visual estimates of ice contents indicated on borehole logs ± 5%
3. This system of ground ice description has been modified from NRC Technical Memo 79, Guide to the Field Description of Permafrost for Engineering Purposes.

LEGEND: Soil ☐ Ice ■

TETRA TECH

BOREHOLE KEYSHEET

Water Level Measurement

Measured in standpipe, piezometer or well

Inferred

Sample Types

A-Casing

Core

Disturbed, Bag, Grab

HQ Core

Jar

Jar and Bag

75 mm SPT

No Recovery

Split Spoon/SPT

Tube

CRREL Core

Backfill Materials

Asphalt

Bentonite

Cement/ Grout

Drill Cuttings

Grout

Gravel

Sand

Slough

Topsoil Backfill

Undisturbed

Lithology - Graphical Legend[1]

Asphalt

Bedrock

Cobbles/Boulders

Clay

Coal

Concrete

Fill

Gravel

Limestone

Mudstone

Organics

Peat

Sand

Sandstone

Shale

Silt

Siltstone

Conglomerate

Topsoil

Till

1. The graphical legend is an approximation and for visual representation only. Soil strata may comprise a combination of the basic symbols shown above. Particle sizes are not drawn to scale

TETRA TECH

Testpit No: **TT-TP22-07**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	UTM: E; N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
0.2	Excavated	SILT (COLLUVIUM) - sandy, trace gravel, fine to medium grained sand, angular to subangular gravel to 50 mm diameter, moist, very low plastic, reddish brown	Unfrozen			0.2
0.4						0.4
0.6						0.6
0.8						0.8
1.0						1.0
1.2						1.2
1.4		END OF TESTPIT (1.3 metres)				1.4
1.6						1.6
1.8						1.8
2						2.0
						2.2
						2.4
						2.6
						2.8
						3.0
						3.2
						3.4
						3.6
						3.8
						4.0
						4.2
						4.4
						4.6
						4.8
						5.0
						5.2
						5.4
						5.6
						5.8
						6.0
						6.2
						6.4

TETRA TECH

Contractor: Ewing	Completion Depth: 1.3 m
Equipment Type: Excavator	Start Date: 2022 July 4
Logged By: JM	Completion Date: 2022 July 4
Reviewed By: AMM	Page 1 of 1

TETRA TECH

FIELD REPORT

ISSUED FOR USE

Project:	VGCX HLF Phase 2	**Date:**	July 8, 2022
Location:	Eagle Gold Mine, Yukon	**Contractor:**	Ewing Transport Ltd.
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing
Contact:	Cody Roberts, P.Eng.	**Contractor's Email:**	NA
Weather:	Variable	**Tetra Tech Representative:**	Josh McKenzie
File:	704-ENG.WARC03235-23	**Status:**	Issued for Use

1.0 INTRODUCTION

1.1 General

NND-EBA Land Protection Corp, operating as NELPCo Limited Partnership (NELPCo), was retained by Victoria Gold Corp. (VGCX) to provide geotechnical support for Phase 2 of the heap leach facility expansion (HLF Phase 2) at the Eagle Gold Mine located in Dublin Gulch north of Mayo, Yukon. Tetra Tech Canada Inc. (Tetra Tech) has prepared this report on behalf of NELPCo as their engineering service provider. Tetra Tech's role includes inspecting earthworks, header underdrain and lateral drain installation, compaction testing of berms, and pitting to support the ground improvement plan.

VGCX retains JDS Energy and Mining Inc. (JDS) to oversee various Eagle Gold Mine construction works and coordinate Tetra Tech's site visits. As there are various ongoing construction activities at the mine, JDS has requested that Tetra Tech make periodic site visits to inspect the subgrade for HLF Phase 2.

This field report details Tetra Tech's inspection from July 8, 2022. All photos and testpit logs generated during the site visit are attached below.

2.0 DAILY SUMMARY – FIELD INVESTIGATION

2.1 July 8, 2022

- Weather: Overcast, 10°C
- Tetra Tech's field representative, Mr. Josh McKenzie, mobilized from CQA liner inspections on-site with Layfield to inspect a section of the northern perimeter berm subgrade.
- Upon arrival, the width of the perimeter berm being inspected was approximately 5 m wide and 100 m long (from 459,965 m east, 7,102,581 m north to 460,073 m east, 7,102,588 m north).
  - Tetra Tech observed coarse colluvium material from the ground surface to 200 mm depth, situated above a layer of shale and highly fractured and weathered meta-sediments.
- Testpit TT-TP22-08 was dug approximately 0.3 m deep, at 460,011 m east, 7,102,586 m north.
  - An unsorted colluvium layer, consisting of 50 to 100 mm subangular clasts, extended from the top of the test pit to 50 mm below the ground surface.
  - From 50 mm to 200 mm, there was a highly fractured, weathered meta-sedimentary rock with black shale.

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- From 200 mm to 300 mm, a fine-grained layer was observed.
- At 300 mm below the ground surface, the excavator encountered weathered sandstone bedrock suitable to support appropriate fill material. There was no evidence of soft, saturated, or ice-rich soil in testpit TT-TP22-08.

2.2 July 9, 2022

- Weather: Overcast, moderate showers, 10°C
- Tetra Tech's site representative tested the material using a nuclear densometer to confirm whether the compaction method spec approved in 2021 would be sufficient for each 500 mm lift of the northern berm.

Table 1: Compaction testing results for method spec confirmation

Lift #	Test Spot #1 08V 459859E 7102541N	Test Spot #2 08V 460055E 7012592N	Test Spot #3 08V 459989E 7102582N
1	# Passes: 15 Probe Depth: 300mm WD: 2283 kg/m³ DD: 2162 kg/m³ MC:5.6% 96.1% PR @ 2250 kg/m³	# Passes: 15 Probe Depth: 300mm WD: 2255 kg/m³ DD: 2139 kg/m³ MC: 5.6% 95.0% PR @ 2250 kg/m³	# Passes: 15 Probe Depth: 300mm WD: 2265 kg/m³ DD: 2148 kg/m³ MC:5.4% 95.5% PR @ 2250 kg/m³
2	# Passes: 15 Probe Depth: 300mm WD: 2283 kg/m³ DD: 2159 kg/m³ MC:5.7% 96.0% PR @ 2250 kg/m³	# Passes: 15 Probe Depth: 300mm WD: 2301 kg/m³ DD: 2154 kg/m³ MC:6.8% 95.7% PR @ 2250 kg/m³	# Passes: 15 Probe Depth: 300mm WD: 2293 kg/m³ DD: 2196 kg/m³ MC:4.4% 97.6% PR @ 2250 kg/m³

2.3 July 10, 2022

- Weather: Overcast, 15°C
- Tetra Tech observed seepage at the next stage of the northern berm in an area of terrain relief. Ewing installed a sump to capture the seepage.
- Tetra Tech observed notable amounts of ice inclusions in the top 200 mm of soil, with visible ice segregation observed in testpit TT-TP22-09. Irregularly oriented ice formations and ice lenses less than 20 mm thick are present. Tetra Tech did not observe visible ice within the frozen fine-grained layer beneath. Additionally, ice was not observed in the surrounding areas, suggesting that these ice formations are not continuous. The ice appears within the drainage path of roughly 20 m along the northern perimeter berm.

2.4 July 12, 2022

- Five compaction tests completed on North Perimeter berm.

2.5 July 13, 2022

- Seven compaction tests completed on North Perimeter berm.

2.6 July 14, 2022

- Four compaction tests completed on North Perimeter berm.

2.7 July 15, 2022

- Ewing excavated a testpit next to the Y-shaped trench below the interceptor ditch to determine the depth to bedrock. Testpit TT-TP22-10 hit refusal at approximately 0.7 m below ground surface. Bedrock was determined to be a sandstone with moderate amounts of quartz, possibly a low-grade quartzite. The weathered and fractured nature of the bedrock was suitable for draining excess water seeping downslope into the pad area for the perimeter berm.
- Seven compaction tests completed on North Perimeter berm.

2.8 July 17, 2022

- Three compaction tests completed on North Perimeter berm.

2.9 July 20, 2022

- One compaction test completed on North perimeter berm.

2.10 July 21, 2022

- Three compaction tests completed on North perimeter berm.

2.11 July 22, 2022

- Three compaction tests completed on North perimeter berm.

2.12 July 23, 2022

- Two compaction tests completed on North perimeter berm.

2.13 July 24, 2022

- One compaction test completed on North perimeter berm.
- Tetra Tech demobilized in the afternoon after performing the last compaction test for the northern perimeter berm.

3.0 PHOTOGRAPHS

Figure 1: Northern berm subgrade inspection with inspection area delineated in red (July 8, 2022)

Figure 2: Blue line signifying toe line of northern berm (July 8, 2022)

Figure 3: Excavating saturated areas of the northern berm subgrade (July 8, 2022)

Figure 4: Seepage areas east of July 8 inspection (July 8, 2022)

Figure 5: North perimeter berm test pit TT-TP22-08 (July 8, 2022)

.

Figure 6: North perimeter berm test pit TT-TP22-08 (July 8, 2022)

Figure 7: North perimeter berm sub-grade inspection, west end (July 8, 2022)

Figure 8: North perimeter berm subgrade inspection, east end (July 8, 2022)

Figure 9: Test pit TT-TP22-08 along northern berm (July 8, 2022)

Figure 10: Compaction testing after lift along northern berm (July 9, 2022)

Figure 11: Aerial view of northern perimeter berm that will connect with eastern perimeter berm (July 9, 2022)

Figure 12: Multiple shallow test pits dug to get an indication of ice-rich material distribution (July 10, 2022)

Figure 13: Aerial view of multiple shallow test pits (July 10, 2022)

Figure 14: 1.5m test pit, TT-TP22-09, to determine depth of frozen ground (July 10, 2022)

Figure 15: 10 mm thick ice seam above notebook; irregularly oriented ice formation (July 10, 2022)

Figure 16: 10 mm ice seam observed in regolith (July 10, 2022)

Figure 17: Multiple ice lenses in toe wall of excavation site (July 10, 2022)

Figure 18: Multiple ice lenses in toe wall of excavation site (July 10, 2022)

Figure 19: Test pit TT-TP22-10 (July 15, 2022)

Figure 20: Sample of sandstone-quartzite bedrock (July 15, 2022)

Figure 20: Final lift of northern perimeter berm (July 23, 2022)

Figure 21: Final lift of northern perimeter berm (July 23, 2022)

4.0 CLOSURE

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Respectfully submitted,
Tetra Tech Canada Inc.

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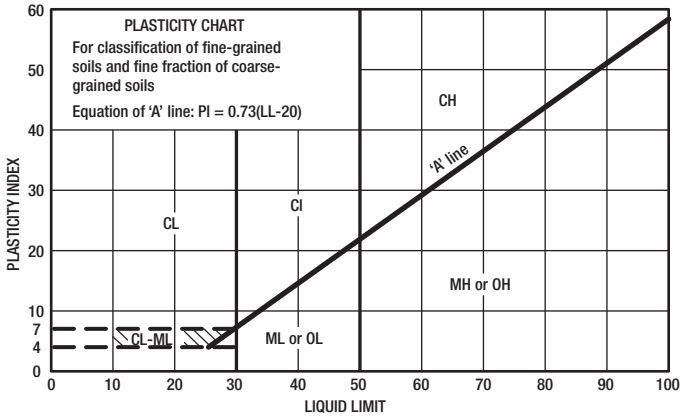

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VISIBLE ICE GREATER THAN 50% BY VOLUME

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	ICE	Ice without soil inclusions (greater than 25 mm thick	

NOTES:

1. Dual symbols are used to indicate borderline or mixed ice classifications.
2. Visual estimates of ice contents indicated on borehole logs ± 5%
3. This system of ground ice description has been modified from NRC Technical Memo 79, Guide to the Field Description of Permafrost for Engineering Purposes.

LEGEND: Soil ☐ Ice ■

TETRA TECH

BOREHOLE KEYSHEET

Water Level Measurement

Measured in standpipe, piezometer or well

Inferred

Sample Types

A-Casing

Core

Disturbed, Bag, Grab

HQ Core

Jar

Jar and Bag

75 mm SPT

No Recovery

Split Spoon/SPT

Tube

CRREL Core

Backfill Materials

Asphalt

Bentonite

Cement/ Grout

Drill Cuttings

Grout

Gravel

Sand

Slough

Topsoil Backfill

Undisturbed

Lithology - Graphical Legend[1]

Asphalt

Bedrock

Cobbles/Boulders

Clay

Coal

Concrete

Fill

Gravel

Limestone

Mudstone

Organics

Peat

Sand

Sandstone

Shale

Silt

Siltstone

Conglomerate

Topsoil

Till

1. The graphical legend is an approximation and for visual representation only. Soil strata may comprise a combination of the basic symbols shown above. Particle sizes are not drawn to scale

TETRA TECH

Testpit No: **TT-TP22-08**

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	Ground Elev: 1089 m
Dublin Gulch, Yukon	UTM: 460011 E; 7702584 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Elevation (m)
0						
	Excavated	GRAVEL (COLLUVIUM) - sandy, some silt, subangular gravel, fine to coarse grained sand, damp, light grey, (50 mm thick)	Unfrozen			
		SHALE (BEDROCK) - platy, light yellow brown mudstone crossbedding, rusty brown limonite staining, (150 mm thick)				
0.2		SILT - some clay, moist, low plastic, light grey	Possibly frozen			1088.8
		END OF TESTPIT (0.3 metres) Note: Stopped due to refusal on sandstone				
0.4						1088.6
0.6						1088.4
0.8						1088.2
1.0						1088.0
1.2						1087.8
1.4						1087.6
1.6						1087.4
1.8						1087.2
2						

Contractor: Ewing	Completion Depth: 0.3 m
Equipment Type: Excavator	Start Date: 2022 July 8
Logged By: JM	Completion Date: 2022 July 8
Reviewed By: AMM	Page 1 of 1

Testpit No: **TT-TP22-09**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	Ground Elev: 1095 m
Dublin Gulch, Yukon	UTM: 460087 E; 7702589 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Elevation (m)
0						
	Excavated	GRAVEL (COLLUVIUM) - sandy, some silt, subangular gravel to 100 mm diameter, fine to coarse grained sand, damp, light grey, (200 mm thick) - <15% ice	Unfrozen Frozen, ice seams to 10 mm thick, 10 mm diameter ice inclusions			
0.2		SILT - some clay, moist when thawed, low plastic, grey	No visible ice			1094.8
		END OF TESTPIT (0.3 metres) Note: Stopped due to frozen soil				
0.4						1094.6
0.6						1094.4
0.8						1094.2
1.0						1094.0
1.2						1093.8
1.4						1093.6
1.6						1093.4
1.8						1093.2
2						

TETRA TECH

Contractor: Ewing	Completion Depth: 0.3 m
Equipment Type: Excavator	Start Date: 2022 July 8
Logged By: JM	Completion Date: 2022 July 8
Reviewed By: AMM	Page 1 of 1

Testpit No: **TT-TP22-10**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	Ground Elev: 1102 m
Dublin Gulch, Yukon	UTM: 460122 E; 7102567 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Elevation (m)
0						
	Excavated	GRAVEL (COLLUVIUM) - sandy, some silt, angular gravel to 150 mm diameter, fine to coarse grained sand, damp, brown, (100 mm thick)	Unfrozen			
		SHALE (BEDROCK) - cross bedded, weathered, fractured, dark brown to black, rusty brown limonite staining, (150 mm thick)				
0.2						1101.8
		SILT - some clay, moist when thawed, low plastic, grey	Frozen			
0.4						1101.6
0.6		SANDSTONE - very weathered, fractured				1101.4
		END OF TESTPIT (0.7 metres)				
0.8						1101.2
1.0						1101.0
1.2						1100.8
1.4						1100.6
1.6						1100.4
1.8						1100.2
2						

TETRA TECH

Contractor: Ewing	Completion Depth: 0.7 m
Equipment Type: Excavator	Start Date: 2022 July 15
Logged By: JM	Completion Date: 2022 July 15
Reviewed By: AMM	Page 1 of 1

TETRA TECH

FIELD REPORT

ISSUED FOR USE

Project:	VGCX HLF Phase 2 Subgrade Inspection	**Date:**	August 25, 2022
Location:	Eagle Gold Mine, Yukon	**Contractor:**	Ewing Transport Ltd.
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing
Contact:	Cody Roberts, P.Eng.	**Contractor's Email:**	NA
Weather:	Variable	**Tetra Tech Representative:**	Jacob Swartz, EIT
File:	704-ENG.WARC03235-23	**Status:**	Issued for Use

1.0 INTRODUCTION

1.1 General

NND-EBA Land Protection Corp, operating as NELPCo Limited Partnership (NELPCo), was retained by Victoria Gold Corp. (VGCX) to provide geotechnical support for Phase 2 of the heap leach facility expansion (HLF Phase 2) at the Eagle Gold Mine located in Dublin Gulch north of Mayo, Yukon. Tetra Tech Canada Inc. (Tetra Tech) has prepared this report on behalf of NELPCo as their engineering service provider. Tetra Tech's role includes inspection of earthworks, header underdrain and lateral drain installation, compaction testing of berms, and testpitting to support the ground improvement plan.

VGCX retains JDS Energy and Mining Inc. (JDS) to oversee various Eagle Gold Mine construction works and coordinate Tetra Tech's site visits. As there are various ongoing construction activities at the mine, JDS has requested that Tetra Tech make periodic site visits to inspect the subgrade for HLF Phase 2.

This field report details Tetra Tech's inspection from August 24 to 25, 2022. All photos and test logs recorded during the site visit are attached below.

2.0 DAILY SUMMARY - FIELD INVESTIGATION

2.1 August 24, 2022

- Weather: Partly Cloudy, 16 °C
- Tetra Tech's field representative, Mr. Jacob Swartz, EIT, mobilized to the Eagle Gold Mine.
- Prior Tetra Tech to arriving, the excavation for the Header Drain and Lateral Drain #2 W was complete and ready for inspection.
  - The Header Drain section inspected was from 08V 459896.64 E 7102334.18 N to 08V 460038.31 E 7102321.71 N.
    - Tetra Tech approved the Header Drain subgrade and informed Ewing and JDS it is ready for the placement of backfill and pipe.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

  - The Lateral Drain #2 W section inspected was from 08V 459872.41 E 7102482.84 N to 08V 459848.97 E 7102529.10 N.
    - Lateral #2 W contained material with higher sand and silt content. Low rock content was present in the inspected section of the trench mentioned above.
    - Tetra Tech approved the Lateral Drain #2 W subgrade and informed Ewing and JDS it is ready for placement of backfill and pipe.
- Ewing started excavating the trench for Lateral Drain #3 W, starting at the Header Drain.

August 25, 2022

- Weather: Sunny
- It rained overnight at site, so Tetra Tech reinspected the open excavations.
  - Tetra Tech infomed Ewing and JDS that Lateral Drain #2 W needs to have the base of the trench cleaned up due to the rain washing loose material into the excavation.
- Ewing finished excavating Lateral Drain #3 W.
- Tetra Tech inspected Lateral Drain #3 W from 08V 459935.87 E 7102316.75 N to 08V 459937.87 E 7102557.84 N.
  - Tetra Tech approved Lateral Drain #3 W subgrade and informed Ewing and JDS it is ready for placement of backfill and pipe.
- Tetra Tech demobilized back to Whitehorse.
- Underhill Geomatics provided coordinates to Tetra Tech for the inspected sections via email August 26, 2022.

3.0 PHOTOGRAPHS

Figure 1: Header Drain Tie in From Phase 2A (August 24, 2022)

Figure 2: Header Drain Subgrade (August 24, 2022)

Figure 3: Header Drain/Lateral Drain #3 W Tie In (August 24, 2022)

Figure 4: Header Drain Test Pit Location TT-TP22-10 (August 24, 2022)

Figure 5: Header Drain Subgrade (August 24, 2022)

Figure 6: Header Drain Subgrade (August 24, 2022)

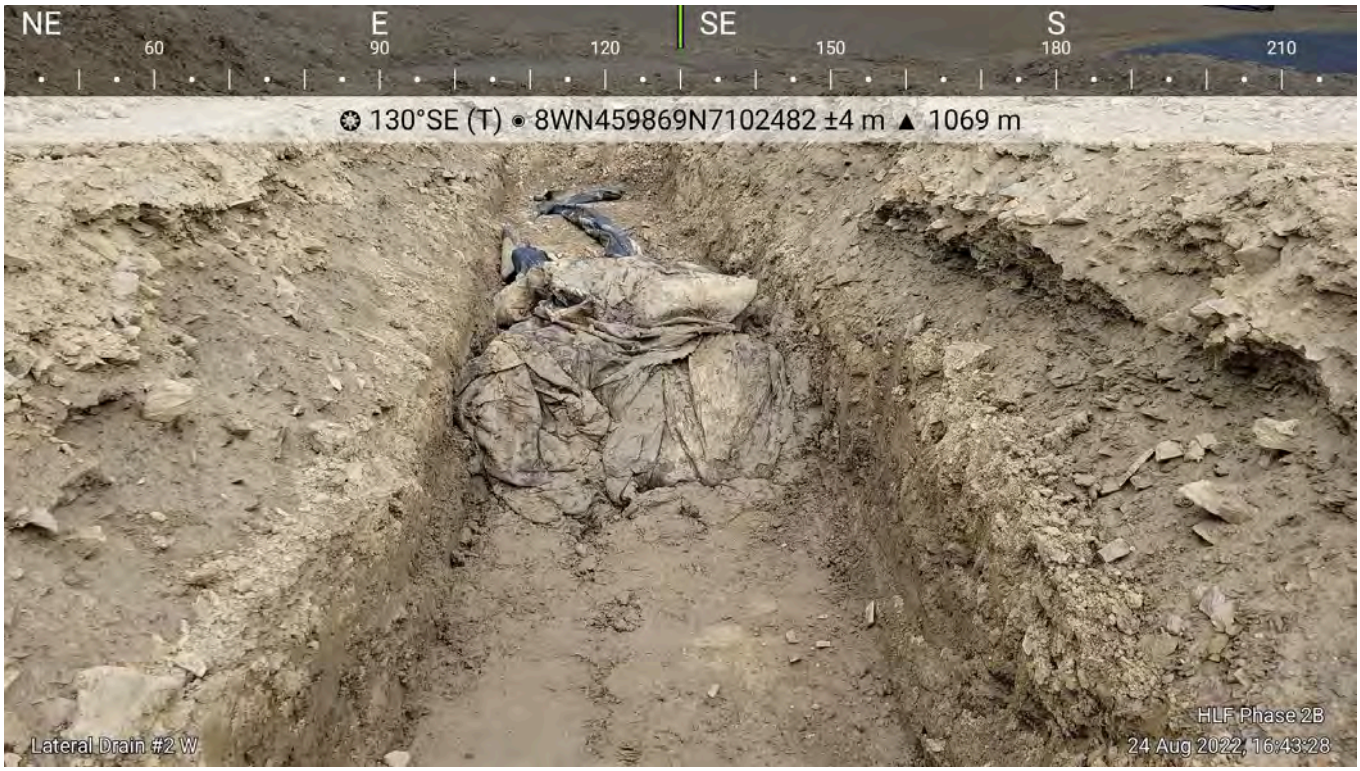


Figure 7: Lateral Drain #2 W Tie In to the Last Completed Section (August 24, 2022)

Figure 8: Lateral Drain #2 W Subgrade (August 24, 2022)

Figure 9: Lateral Drain #2 W Subgrade (August 24, 2022)

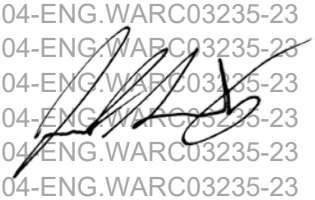
Figure 10: Lateral Drain #3 W Subgrade (August 25, 2022)

4.0 CLOSURE

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

704-ENG.WARC03235-23



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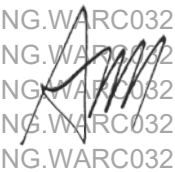

704-ENG.WARC03235-23

Prepared by:
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/cr

FIELD REPORT

ISSUED FOR REVIEW

Project:	VGCX HLF Phase 2 Subgrade Inspection – Lateral #4 West	**Date:**	September 8, 2022
Location:	Eagle Gold Mine, Yukon	**Contractor:**	Ewing Transport Ltd.
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing
Contact:	Cody Roberts, P.Eng.	**Contractor's Email:**	NA
Weather:	Clear	**Victoria Gold Representative:**	Reanna Roberts
Status:	Issued for Review		

1.0 FIELD INVESTIGATION

Lateral drain #4 West was excavated and graded between August 21 and September 1, 2022. The trench length was approximately 310m. JDS, Ewing and Victoria Gold representatives were on site for a field investigation to inspect and approve the subgrade conditions on September 1, 2022.

The entire trench was excavated to grade prior to arrival. The trench varied in depth from approximately 1.2m to 1.5m. This subgrade inspection started at the header drain, 460,009.505 E, 7,102,315.037 N, elevation 1093.746m and terminated at the west perimeter berm at 460,009.505 E, 7,102,315.037 N, elevation 1093.746m.

The majority of the trench was excavated in weathered phyllitic metasediment bedrock, which typically ranged from friable bedrock to more competent weak (R2), moderately weathered (W3) bedrock with small zones of medium strong (R3), moderately weathered (W3) material.

The exception to the above was a length of trench excavated partially into highly to completely weathered (residual soil), phyllitic metasediment bedrock. This material extended down sidewalls to depth of 0.3m to 0.6m at a distance along trench of ~100m to 150m (assuming trench started from the header drain and ending at the perimeter berm). Narrow, localized, intermittent zones of sandy clay, and/or clayey sand, was observed within about a half meter of the trench bottom for an extent of about 3 to 5 m in 3 locations.

Ponded water was observed on the trench floor over an ~15 m section at the West end if the trench. The area was monitored of the next couple days and the water began to recede. This was discussed with Roy Morlan (Forte) and accepted to continue the installation.

2.0 ACTION ITEMS

Minor sloughing was noted in localized sections of wall as a result of heavy rainfall the previous week. Ewing was instructed to clean out trench bottom of sloughed material and saturated fine material that had accumulated.

The trench subgrade was accepted under the foundation improvement plan and technical specifications

4.0 PHOTOGRAPHS

Photo 1: Tie in location to the header drain

Photo 2: minor areas that require a clean out prior to installation of geotextile

Photo 3: Highly to Completely weathered bedrock section

Photo 4: transition back to moderately fractured bedrock

Photo 5: Water spot location taken on August 28

Photo 6: Water spot location taken on September 1

Photo 7: Water spot location taken on September 3

5.0 Closure

Name: Cody Roberts
Company: JDS Energy & Mining
Position: Construction Superintendent
Signature: Cody Roberts Digitally signed by Cody Roberts DN: C=CA, E=codyr@jdsmining.ca, O=JDS Mining and Energy, OU=Construction Division, CN=Cody Roberts Date: 2022.09.20 17:41:54-07'00'

Name: Reanna Roberts
Company: Victoria Gold Corp.
Position: Senior Engineering Geologist, Technical Services Group
Signature:

FIELD REPORT

ISSUED FOR REVIEW

Project:	VGCX HLF Phase 2 Subgrade Inspection – Lateral #4 East	**Date:**	September 15, 2022
Location:	Eagle Gold Mine, Yukon	**Contractor:**	Ewing Transport Ltd.
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing
Contact:	Cody Roberts, P.Eng.	**Contractor's Email:**	NA
Weather:	Clear	**Victoria Gold Representative:**	Reanna Roberts
Status:	Issued for Review		

1.0 FIELD INVESTIGATION

Lateral drain #4 East was excavated and graded between September 6 and September 10, 2022. The trench length was approximately 313m.Ewing and Victoria Gold representatives were on site for a field investigation to inspect and approve the subgrade conditions on September 10, 2022.

The entire trench was excavated to grade prior to arrival. The trench varied in depth from approximately 1.2m to 1.5m. This subgrade inspection started at the header drain, 460,019.872 E, 7,102,308.057 N, Elevation 1095.6295m and terminated on the East slope at 460,019.872 E, 7,102,308.057 N, elevation 1095.629m

The majority of the trench was dry and in moderately- highly weathered metasediment bedrock. There was a approximately 50m section that contained completely weathered bedrock with a more fine clayey-silty rich matrix in the North Wall. This was found on the far east section.

No water was observed within the trench but a few areas had sloughed in from rainfall throughout the length of the trench.

2.0 ACTION ITEMS

Minor sloughing was noted in localized sections of wall as a result of heavy rainfall the previous week. Ewing was instructed to clean out trench bottom of sloughed material and saturated fine material that had accumulated.

The trench subgrade was accepted under the foundation improvement plan and technical specifications

4.0 PHOTOGRAPHS

Photo 1: Tie in location to the header drain

Photo 2: Areas requiring clean up and removal of silt accumulation

Photo 3: Highly weathered bedrock section

Photo 4: Trench termination point; looking North towards the header drain

5.0 Closure

Name: Cody Roberts
Company: JDS Energy & Mining
Position: Construction Superintendent
Signature: Cody Roberts Digitally signed by Cody Roberts DN: C=CA, E=codyr@jdsmining.ca, O=JDS Mining and Energy, OU=Construction Division, CN=Cody Roberts Date: 2022.09.20 17:41:54-07'00'

Name: Reanna Roberts
Company: Victoria Gold Corp.
Position: Senior Engineering Geologist, Technical Services Group
Signature:

FIELD REPORT

ISSUED FOR REVIEW

Project:	VGCX HLF Phase 2 Subgrade Inspection – Lateral #3 East	**Date:**	September 20, 2022
Location:	Eagle Gold Mine, Yukon	**Contractor:**	Ewing Transport Ltd.
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Marshall Ewing
Contact:	Cody Roberts, P.Eng.	**Contractor's Email:**	NA
Weather:	Clear	**Victoria Gold Representative:**	Reanna Roberts
Status:	Issued for Review		

1.0 FIELD INVESTIGATION

Lateral drain #3 East was excavated and graded between September 10 and September 17, 2022. The trench length was approximately 90m. Ewing and Victoria Gold representatives were on site for a field investigation to inspect and approve the subgrade conditions on September 17, 2022.

The entire trench was excavated to grade prior to arrival. The trench varied in depth from approximately 1.2m to 1.9m. This subgrade inspection started at the header drain, 459,943.353 E, 7,102,308.356 N, elevation 1075.199m and terminated on the East slope at 459,963.664E, 7,102,220.984 N, elevation 1076.398m

The trench was dry and in moderately weathered metasediment bedrock. Phyllitic bedrock was identified in very small trace amounts.

No water was observed within the trench.

2.0 ACTION ITEMS

The trench subgrade was accepted under the foundation improvement plan and technical specifications.

4.0 PHOTOGRAPHS

Photo 1: Tie in location at the header drain

Photo 2: dry moderately weathered metasediment bedrock

Photo 3: dry moderately weathered metasediment bedrock

Photo 4: Trace amounts of Phyllitic bedrock identified

5.0 Closure

Name: Cody Roberts
Company: JDS Energy & Mining
Position: Construction Superintendent
Signature:

Cody Roberts

Digitally signed by Cody Roberts
DN: C=CA, E=codyr@jdsmining.ca, O=JDS Mining and Energy, OU=Construction Division, CN=Cody Roberts
Date: 2022.09.20 17:38:42-07'00'

Name: Reanna Roberts
Company: Victoria Gold Corp.
Position: Senior Engineering Geologist, Technical Services Group
Signature:

APPENDIX 5: LABORATORY RESULTS

PARTICLE SIZE DISTRIBUTION

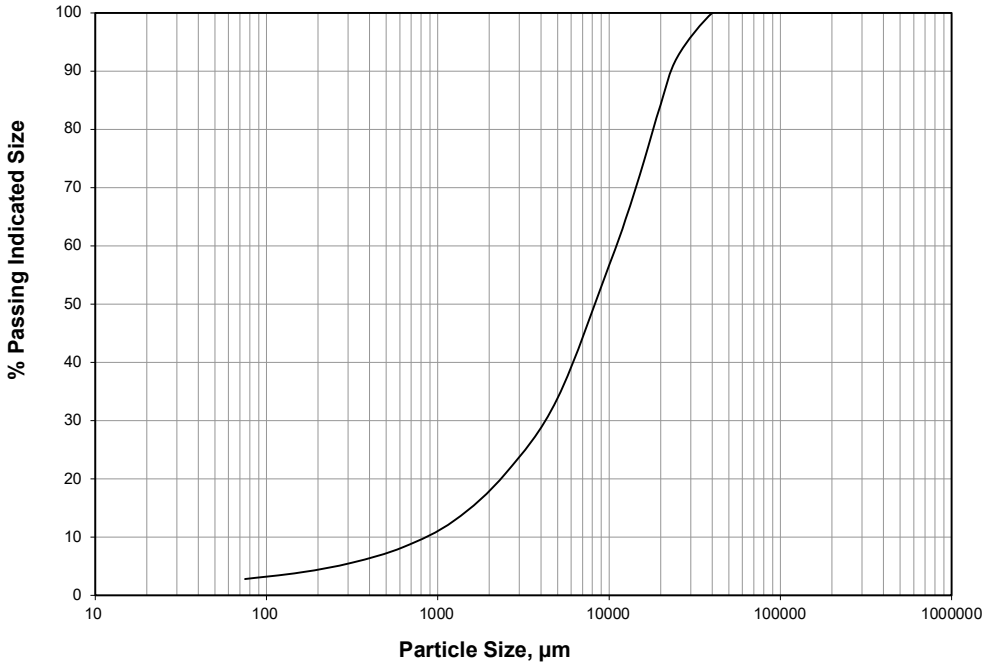
Test ID : 38 mm A

Victoria GOLD CORP

TOTAL SAMPLE WEIGHT, g ####### (Dry) Target P_{80} 16 mm

% Solid 100.00%

i	Mesh #	Mesh Opening µm	Retained Weight g	Retained Weight %	Cumm. Passing %
1		254000	0.0	0.0	100.0
2		203200	0.0	0.0	100.0
3		152400	0.0	0.0	100.0
4		127000	0.0	0.0	100.0
5		100000	0.0	0.0	100.0
6		80000	0.0	0.0	100.0
7		75000	0.0	0.0	100.0
8		50000	0.0	0.0	100.0
9		40000	0.0	0.0	100.0
10		25000	1167.0	7.6	92.4
11		20000	1257.0	8.2	84.3
12		16000	1493.0	9.7	74.6
13		12500	1549.5	10.0	64.5
14		10000	1211.4	7.9	56.7
15		5000	3533.2	22.9	33.8
16		2500	1968.5	12.8	21.0
17		1250	1256.8	8.2	12.9
18		630	703.5	4.6	8.3
19		315	415.2	2.7	5.6
20		160	253.7	1.6	4.0
21		75	173.0	1.1	2.8
22		0	438.2	2.8	
TOTAL			15420.0	100.0	



D_{80} = 18,182 µm

D_{50} = 8,452 µm

Notes:

PARTICLE SIZE DISTRIBUTION

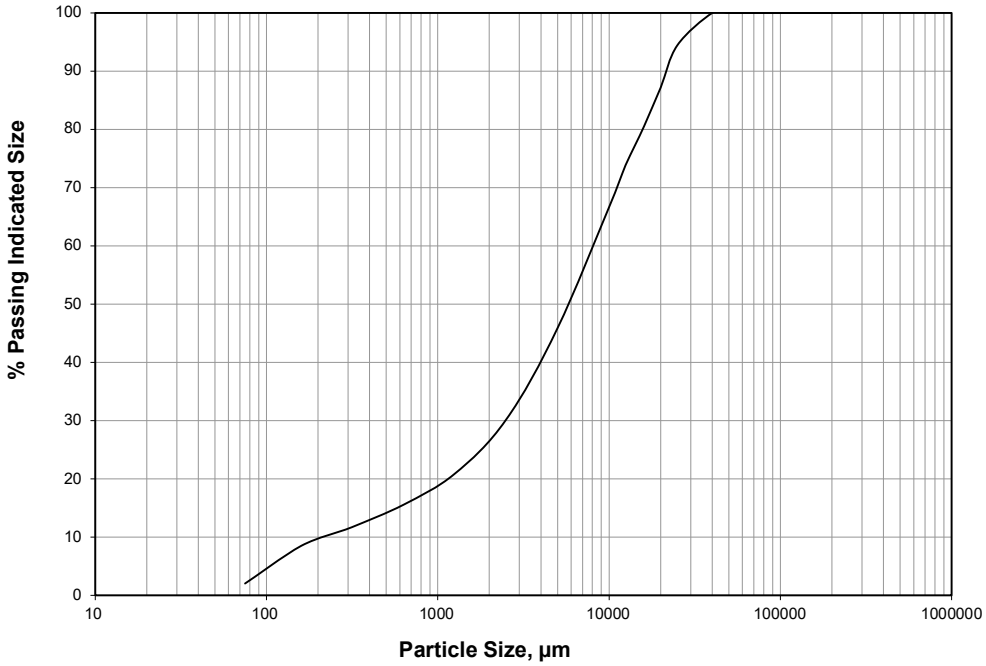
Test ID : 38 mm B

Victoria GOLD CORP

TOTAL SAMPLE WEIGHT, g ####### (Dry) Target P_{80} 16 mm

% Solid 100.00%

i	Mesh #	Mesh Opening µm	Retained Weight g	Retained Weight %	Cumm. Passing %
1		254000	0.0	0.0	100.0
2		203200	0.0	0.0	100.0
3		152400	0.0	0.0	100.0
4		127000	0.0	0.0	100.0
5		100000	0.0	0.0	100.0
6		80000	0.0	0.0	100.0
7		75000	0.0	0.0	100.0
8		50000	0.0	0.0	100.0
9		40000	0.0	0.0	100.0
10		25000	773.0	5.6	94.4
11		20000	996.0	7.2	87.2
12		16000	922.0	6.7	80.6
13		12500	926.7	6.7	73.9
14		10000	993.4	7.2	66.7
15		5000	2881.7	20.8	45.8
16		2500	2180.3	15.8	30.1
17		1250	1279.0	9.2	20.8
18		630	729.5	5.3	15.6
19		315	530.6	3.8	11.7
20		160	447.7	3.2	8.5
21		75	895.3	6.5	2.0
22		0	281.9	2.0	
TOTAL			13837.0	100.0	



D_{80} = 15,690 µm

D_{50} = 5,870 µm

Notes:

PARTICLE SIZE DISTRIBUTION

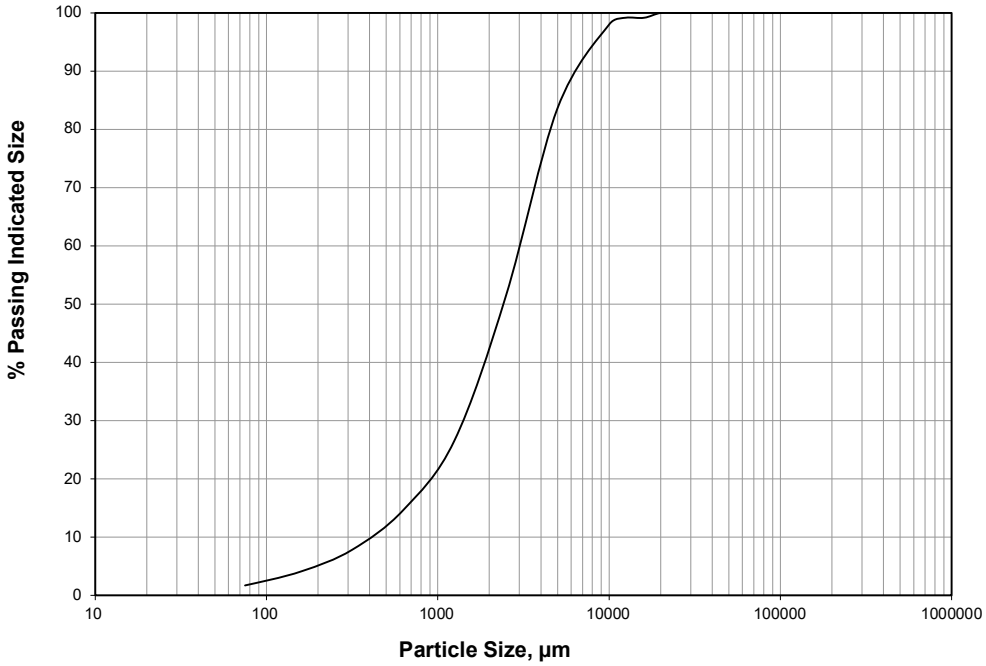
Test ID : Sand

Victoria GOLD CORP

TOTAL SAMPLE WEIGHT, g 1,619.00 (Dry) Target P_{80} 16 mm

% Solid #DIV/0!

i	Mesh #	Mesh Opening µm	Retained Weight g	Retained Weight %	Cumm. Passing %
1		254000	0.0	0.0	100.0
2		203200	0.0	0.0	100.0
3		152400	0.0	0.0	100.0
4		127000	0.0	0.0	100.0
5		100000	0.0	0.0	100.0
6		80000	0.0	0.0	100.0
7		75000	0.0	0.0	100.0
8		50000	0.0	0.0	100.0
9		40000	0.0	0.0	100.0
10		25000	0.0	0.0	100.0
11		20000	0.0	0.0	100.0
12		16000	14.0	0.9	99.1
13		12500	0.0	0.0	99.1
14		10000	18.0	1.1	98.0
15		5000	234.0	14.5	83.6
16		2500	521.0	32.2	51.4
17		1250	402.0	24.8	26.6
18		630	192.4	11.9	14.7
19		315	110.8	6.8	7.8
20		160	59.8	3.7	4.1
21		75	39.4	2.4	1.7
22		0	27.7	1.7	
TOTAL			1619.0	100.0	



D_{80} = 4,698 µm D_{50} = 2,429 µm

Notes:

APPENDIX 6: DAILY REPORTS

JDS	Victoria Gold Daily Construction Report				March 06, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-22C	-3°C	1 km/h	Snow / cloudy

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
First slab concrete pour	March 14, 2022	March 14, 2022	On track

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	1
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	**2**

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Mine operations support at the phase 1B dump remediation – Clearing snow off the extents of the slide

WTP Concrete – Nahnni

Installing formwork and tying rebar for the sump walls

Setting up and prepping for sump base pours

Constructing formwork for the slab pours

WTP Earthworks – Ewing

Clearing snow from the inside of the building footprint

Loading, hauling, placing, and forming berms on the outside of the WTP fill, filled approach ramps to reduce grade for concrete trucks

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	1	108	1,212
Nahanni	Concrete	16	576	768
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	-
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	7	588	3,768
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**1,272**	**11,364**

PROJECT PHOTOS

WTP – Delivery driveway sump floor rebar / formwork installation

WTP – Installaton of the rebar for the main collection sump walls

WTP – Snow removal from inside of the building extents

JDS	Victoria Gold Daily Construction Report				March 07, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-24C	-4°C	1 km/h	cloudy

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
First slab concrete pour	March 14, 2022	March 14, 2022	On track

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	1
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	**2**

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
General
Two GCL trucks received for the HLF expansion
WTP Concrete – Nahnni
Completed Installing formwork and tying rebar for the 3 sumps
Batched and poured ~3m3 for the sump floors
Setting up heating and hording for sump floors
Tying rebar for the slab transitions
WTP Earthworks – Ewing
Clearing snow from the inside of the building footprint
Relocating mechanics lay down from the west side of the pad, clearing snow off the trailer to prepare it for relocation
Grubbing's removal from the north side of the pad to establish perimeter road
Completed loading, hauling, placing, and forming berms on the outside of the WTP fill

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	1	108	1,224
Nahanni	Concrete	16	576	960
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	-
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	8	588	3,864
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**25**	**1,272**	**11,664**

PROJECT PHOTOS

WTP – improving the berms on the north side of the perimeter road

WTP – tying repar for thickened pad transistions

WTP – Pouring the main collection sump floor

WTP – Heating and hording set up at the filter press sump

JDS	Victoria Gold Daily Construction Report				March 08, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-25C	-4°C	1 km/h	Blue skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
First slab concrete pour	March 14, 2022	March 14, 2022	On track

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	1
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	**2**

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Removed materials from the wash bay to allow commissioning of the wash water pumps

WTP Concrete – Nahnni

Working on tying rebar and Installing formwork for the sump walls

Relocated materials and staging area to the east side of the pad

Continued Tying rebar for the slab transitions

WTP Earthworks – Ewing

Clearing snow from the inside of the building footprint

Fine grading 20mm base course on the north west side of the pad

Completed relocating mechanics lay down from the west side of the pad; removed snow and waste materials for new construction laydown

Site maintenance and housekeeping

HLF Earthworks – Ewing

Working on lateral #1 West – completed snow removal, started ripping alignment

MANPOWER ON SITE

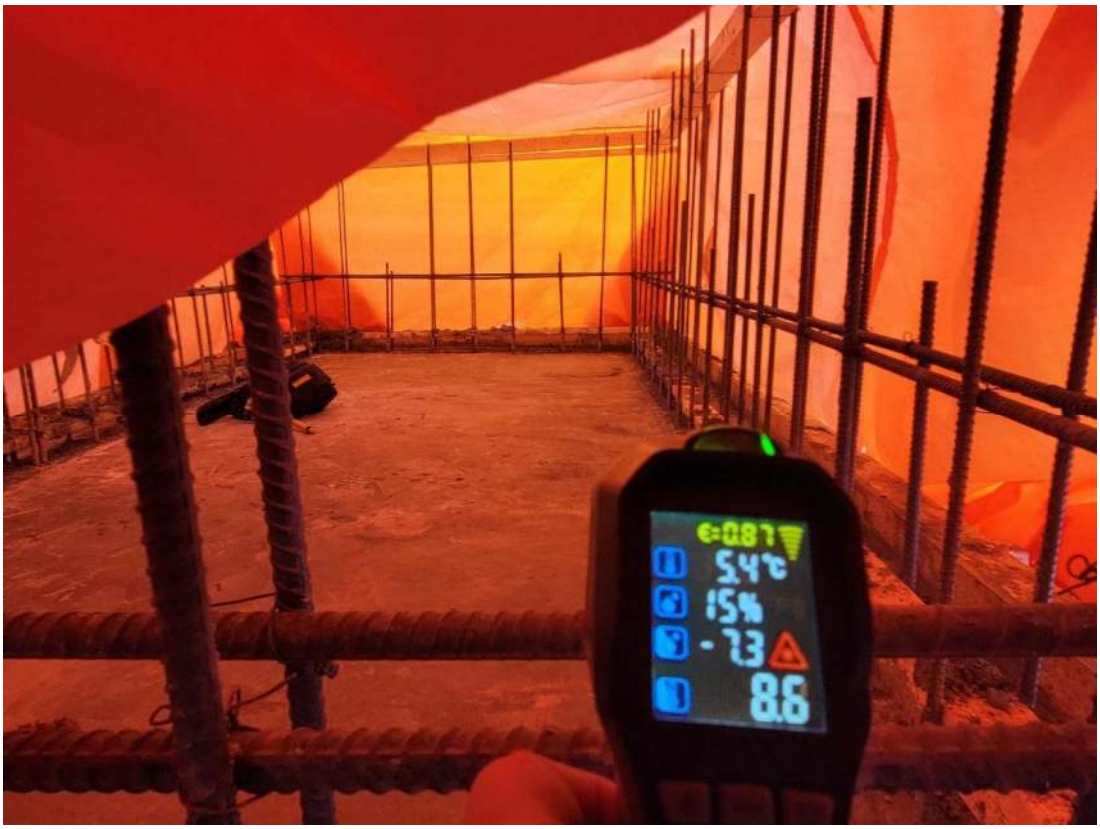
Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	1	108	1,236
Nahanni	Concrete	16	576	1,152
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	-
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	7	588	3,948
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**1,272**	**11,952**

PROJECT PHOTOS

WTP – Opening up east side of the WTP for construction laydown space

WTP – tying rebar and starting to install formwork on the main collection sump walls

WTP – Received first load of saddle plates



WTP – concrete temperature checks

JDS	Victoria Gold Daily Construction Report				March 9, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-23C	-4°C	1 km/h	Blue skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
First slab concrete pour	March 14, 2022	March 14, 2022	On track

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	1
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	**2**

Incidents:

- Nothing to Report

Other HSE Activities:

- JDS HSE representation on site
- Informal inspection completed

TODAYS ACTIVITIES

Activity

General

No update

WTP Concrete – Nahanni

Continued tying rebar and Installing formwork for the sump walls

Completed relocating materials and staging area to the east side of the pad

Fabricating pedestal formwork

Continued Tying rebar for the slab transitions

WTP Earthworks – Ewing

Fine grading 20mm base course on the southeast side of the pad – established 0.5% grade

HLF Earthworks – Ewing

Working on lateral #1 West – continued ripping alignment

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	108	1,284
Nahanni	Concrete	16	576	1,344
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	-
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	8	588	4,044
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**28**	**1,272**	**12,288**

PROJECT PHOTOS

WTP – Filter press sump wall rebar & formwork installation

WTP – working on 0.5% grading on southeast corner

JDS	Victoria Gold Daily Construction Report				March 11, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-21C	-3°C	1 km/h	Blue skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
First slab concrete pour	March 14, 2022	March 14, 2022	On track

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	1
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	**2**

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Received truck load of saddle plate and shims for the WTP

WTP Concrete – Nahanni

Completed constructing pre-cast sump formwork and rebar

Erecting heating and hording structures

Fabricating pedestal formwork

Installing and tying rebar for the Clarifier 16” thick slab – Started tying the second mat

WTP Earthworks – Ewing

Digging out saddle locations in preparation for install

Drilling out saddles anchor holes to 7/8”

HLF Earthworks – Ewing

Working on lateral #1 West – grading the trench bottom

Cleared snow around the additional lateral drain location to capture it within the underdrain system

Clearing snow around the Nuway pit, graded road to the bottom of the phase 1B dump

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	168	1,368
Nahanni	Concrete	16	1,152	1,728
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	-
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	4	468	4,152
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**1,788**	**12,864**

PROJECT PHOTOS

WTP – erecting the exterior walls of the hording structure

WTP – received another load of saddles and shims

WTP – Erection progress of the hording structure

HLF – Grading the lateral #1W

JDS	Victoria Gold Daily Construction Report				March 13, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-34C	-6°C	10 km/h	Blue skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
First slab concrete pour	March 14, 2022	March 15, 2022	Planning to pour first 40m3 on the southeast corner March 15m

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	1
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	**2**

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

No update

WTP Concrete – Nahanni

Set up and batch ~12m3 for the sump walls and precast sumps

Constructing a shed for the concrete pumping station

Clarifier 16” thickened slab – Continued installing pedestal rebar

Continued erecting heating and hording structures for the first slab pour on the southeast corner

WTP Earthworks – Ewing

Installed 12 saddles on the northwest corner, shimmed to final elevations

HLF Earthworks – Ewing

Working on lateral #1 West – grading the trench bottom

Continued Clearing snow around the Nuway pit and stockpile locations up in Phase 3

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	36	1,440
Nahanni	Concrete	15	180	2,088
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	-
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	5	60	4,272
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**276**	**13,416**

PROJECT PHOTOS

WTP - Steel Saddle placement

WTP – Frost fighters set up to heat up the concrete drums

PROJECT PHOTOS

WTP – Pouring the pre-cast sumps

WTP – Continued erection of the heating and hording structure on the southeast corner

	Victoria Gold Daily Construction Report				March 14, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-32C	-7°C	4 km/h	Blue skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
First slab concrete pour	March 14, 2022	March 16, 2022	Pour pushed out 1 day due to cold weather

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	1
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	**2**

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

1 GCL truck load received for the HLF expansion

WTP Concrete – Nahanni

Completed the shed for the concrete pumping station

Reaction tank 12" thickened slab – Started installing rebar for the tank Plinths

Continued erecting heating and hording structures for the first slab pour on the southeast corner

WTP Earthworks – Ewing

Drilled 36 anchor rod holes, blow & brushed holes, set anchors in adhesive

Backfilling 20mm aggregate on the thickened edge slab in the northwest corner, graded and packed

HLF Earthworks – Ewing

Working on lateral #1 West – grading the trench bottom

Tetra Tech on site for a lateral subgrade approval

Continued Clearing snow around the Nuway pit and stockpile locations up in Phase 3

MANPOWER ON SITE

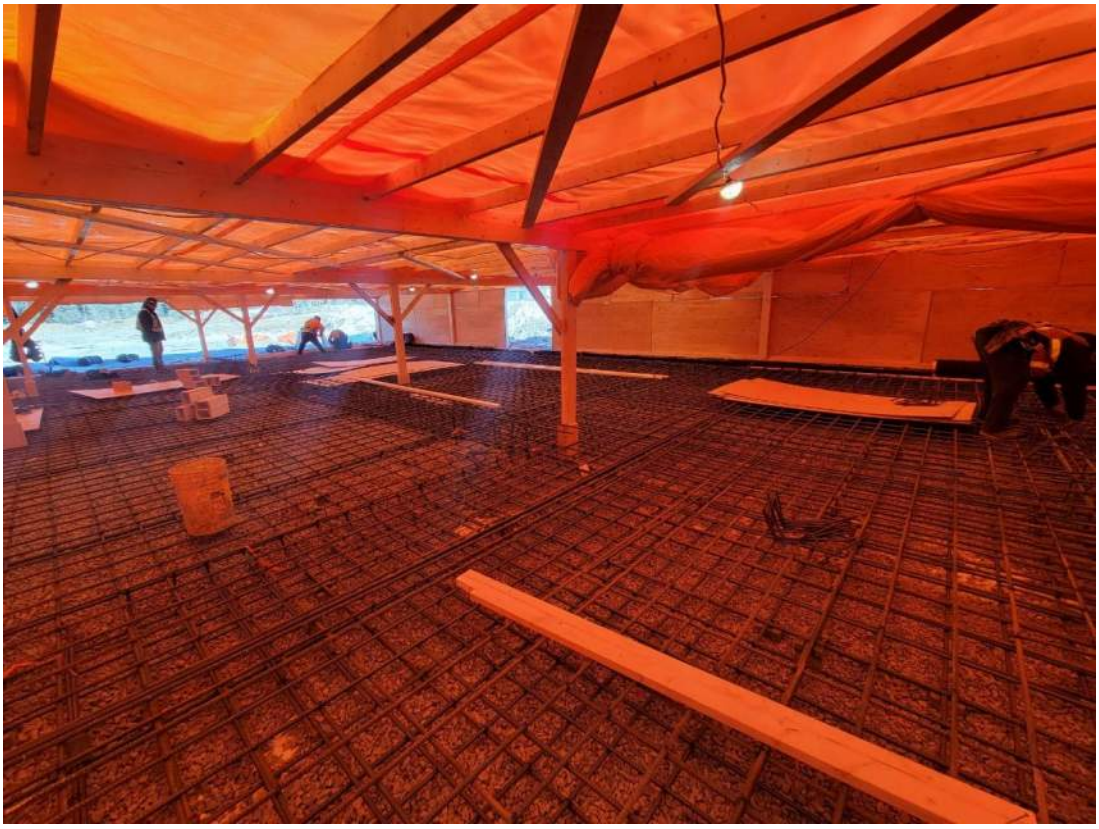
Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	72	1,476
Nahanni	Concrete	15	360	2,268
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	12	12
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	5	120	4,332
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**564**	**13,704**

PROJECT PHOTOS

WTP – Rebar installation for the reaction tank plinth

WTP – Completed construction of the concrete pumping shed

PROJECT PHOTOS



WTP – Rebar installation for the 12” thickened slab

JDS	Victoria Gold Daily Construction Report				March 15, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-23C	-8°C	7 km/h	Blue skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
First slab concrete pour	March 14, 2022	March 16, 2022	Pour pushed out 1 day due to cold weather

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	1
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	**2**

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Received Quote for Truck Shop Fire Pump – Passing onto Victoria Gold for Action

WTP Concrete – Nahanni

Preparing for First SOG section pour tomorrow

Reaction tank 12" thickened slab – Continued installing rebar for the tank Plinths

Continued erecting heating and hording structures for the first slab pour on the southeast corner

WTP Earthworks – Ewing

Continued installing Saddle Plates and Anchoring

Continued Excavating for Thickened Edge and placing 20mm Aggregate

HLF Earthworks – Ewing

Working on lateral #1 West – grading the trench bottom

Tetra Tech inspecting HLF Work

Continued Clearing Snow in Phase 2

Continued Clearing snow around the Nuway pit and stockpile locations up in Phase 3

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	96	1,500
Nahanni	Concrete	15	540	2,448
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	24	24
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	5	180	4,392
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**840**	**13,980**

PROJECT PHOTOS

WTP – Main Sump Heating and Hoarding Ongoing

WTP – Ongoing Saddle Plate Installation & Crush Backfill Grading

PROJECT PHOTOS

WTP – Ongoing Rebar Installation for Clarifier Area

JDS	Victoria Gold Daily Construction Report				March 16, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-10C	-1°C	7 km/h	Blue skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
First slab concrete pour	March 14, 2022	March 16, 2022	Pour pushed out 1 day due to cold weather

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	1
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	**2**

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Received Load of GCL – offloaded at 1B

WTP Concrete – Nahanni

Poured 55m3 of Concrete for Reaction Tank SOG

Continued installing Rebar for Clarifier Pedestal Areas

WTP Earthworks – Ewing

Continued installing Saddle Plates and Anchoring

Backfilled Around First Sump

HLF Earthworks – Ewing

Continued Clearing Snow in Phase 2

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	120	1,524
Nahanni	Concrete	20	900	2,808
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	24	24
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	5	240	4,452
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**27**	**1,284**	**14,424**

PROJECT PHOTOS

WTP – First Slab on Grade Pour – Reaction Tank Area

GCL Liner Received

PROJECT PHOTOS

Concrete Batch Plant

JDS	Victoria Gold Daily Construction Report				March 17, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-7C	-2°C	14 km/h	Light Snow

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 5, 2022	Ongoing Work
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 5, 2022	Proposals Received – Bid Evaluation Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	1
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	**2**

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
General
Received 2 Loads of GCL Liner – Offloaded at HLF
WTP Concrete – Nahanni
Preparing for Clarifier Slab Pour – Scheduled Tomorrow
Stripped Outside Formwork of 2 Sumps
Received 3 Loads of Concrete Powder
Ongoing Hoarding
WTP Earthworks – Ewing
Continued installing Saddle Plates and Anchoring
Backfilled Around First Sump
HLF Earthworks – Ewing
Continued Clearing Snow in Phase 2
Continue Preparing Lateral Drain Excavations

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	144	1,548
Nahanni	Concrete	20	1,140	3,048
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	24	24
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	5	300	4,512
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**27**	**1,608**	**14,748**

PROJECT PHOTOS

WTP – Reaction Tank Area – Covered to Maintain Hydration

First Sump Backfill

PROJECT PHOTOS

Main MWTP Sump Stripped – Ready For Backfill

Filter Press/Thickener Area Backfill Preparation and Compaction

JDS	Victoria Gold Daily Construction Report				March 18, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-6C	4°C	14 km/h	Overcast/Flurries

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 5, 2022	Ongoing Work
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 5, 2022	Proposals Received – Bid Evaluation Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	1
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	**2**

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

WTP Concrete – Nahanni

Poured Clarifier Slab Area – Approximately 120m^3

Continued Rebar/hoarding for Thickener and Filter press Area

Received 2 Loads of Concrete Powder

WTP Earthworks – Ewing

Torqued North Wall Saddles

Backfilled Around Final Two Sumps

Continued Placing ¾" Minus Stemming Material and Grading Around Main Slab Area

HLF Earthworks – Ewing

Continued Clearing Snow in Phase 2

Continue Preparing Lateral Drain Excavations

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	168	1,572
Nahanni	Concrete	20	1,380	3,288
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	24	24
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	5	360	4,572
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**27**	**1,932**	**15,072**

PROJECT PHOTOS

WTP – Clarifier Area Concrete Pour Completed

WTP - Main Sump Backfill

PROJECT PHOTOS

WTP – Thickener/Filter Press Area Pour

Ongoing Hoarding Panel Installation

JDS	Victoria Gold Daily Construction Report				March 19, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-3C	5°C	Calm	Overcast

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 5, 2022	Ongoing Work
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 5, 2022	Proposals Received – Bid Evaluation Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	1	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	**2**

Incidents:

- Worker Strained Wrist

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

WTP Concrete – Nahanni

Continued Rebar/hoarding for Thickener and Filter press Area

Placed Bar for Reaction Tank Thickener Area

WTP Earthworks – Ewing

Spray Foaming Around Saddle Plates & Backfilling

HLF Earthworks – Ewing

Continued Clearing Snow in Phase 2

Continue Preparing Lateral Drain Excavations

Placing Lateral Drain Filter Cloth and Installing Piping

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	192	1,596
Nahanni	Concrete	20	1,620	3,528
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	24	24
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	5	420	4,632
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**27**	**2,256**	**15,396**

PROJECT PHOTOS

WTP – Clarifier Area Concrete Pour Finishing Complete

WTP – Spray Foam around Saddle Plates for Future Grout

PROJECT PHOTOS

WTP – Thickener/Filter Press Area Rebar Ongoing

HLF Lateral Drain Installation

JDS	Victoria Gold Daily Construction Report				March 20, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-11C	4°C	Calm	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 5, 2022	Ongoing Work
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 5, 2022	Proposals Received – Bid Evaluation Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	**2**

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Received Load of GCL Liner – Offloaded at 1B

WTP Concrete – Nahanni

Received Three Loads Of Concrete Powder

Continued Rebar/hoarding for Thickener and Filter press Area

Continued Rebar for Air Compressor/PAL Filter Area

Poured 16m3 of Concrete for Reaction Tank Base and Trench Floor

WTP Earthworks – Ewing

No Work

HLF Earthworks – Ewing

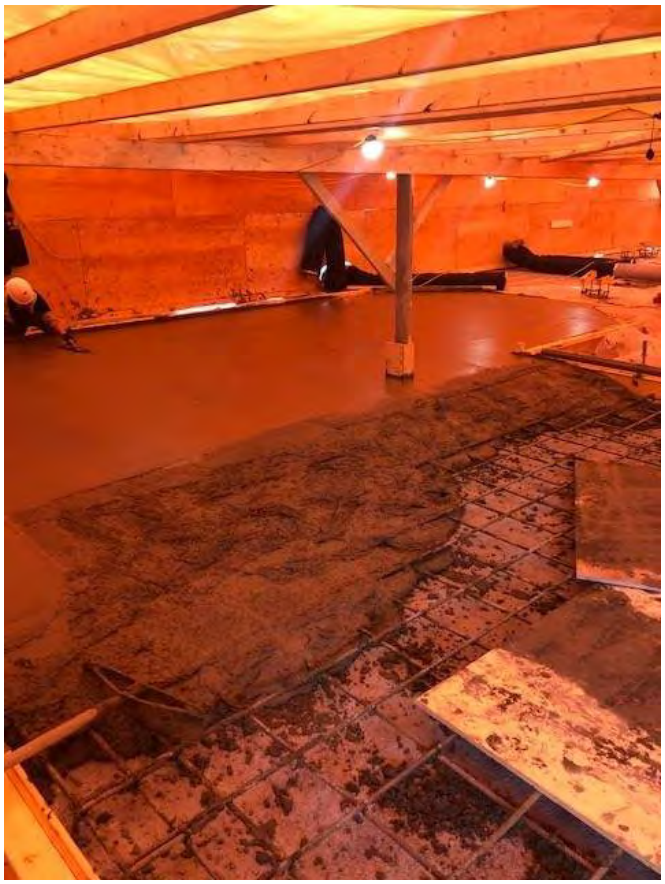
Continue Preparing Lateral Drain Excavations

Placing Lateral Drain Filter Cloth and Installing Piping

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	24	1,620
Nahanni	Concrete	20	240	3,768
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	24
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	3	36	4,668
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**25**	**300**	**15,696**

PROJECT PHOTOS



WTP – Reaction Tank Pad Poured

HLF Lateral Drain Installation

PROJECT PHOTOS

WTP – Thickener/Filter Press Area Rebar Ongoing

JDS	Victoria Gold Daily Construction Report				March 21, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-11C	4°C	Calm	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 5, 2022	Ongoing Work
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 5, 2022	Proposals Received – Bid Evaluation Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	**2**

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
General
Loaded out Damaged Rebar Trailer
WTP Concrete – Nahanni
Received Final Load of Rebar
Received Two Loads of Concrete Powder
Set Final Thickener Peds
Continued Rebar for Air Compressor/PAL Filter Area
Commenced Moving Hoarding Panels from First Pours to Next Work Area
WTP Earthworks – Ewing
No Work
HLF Earthworks – Ewing
Continue Preparing Lateral Drain Excavations
Placing Lateral Drain Filter Cloth and Installing Piping

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	48	1,644
Nahanni	Concrete	20	480	4,008
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	24
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	3	72	4,704
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**25**	**600**	**15,996**

PROJECT PHOTOS

WTP – Moving Hoarding Panels – Setup for Next Pours

WTP – Tying Rebar for Next Pours

PROJECT PHOTOS

HLF – Survey Ongoing Lateral Drain Piping

JDS	Victoria Gold Daily Construction Report				March 22, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-11C	-4°C	20-30km/h	Snow – Heavy at Times

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	Ongoing Work – Delays due to weather, and material supply/constructability
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 5, 2022	Proposals Received – Bid Evaluation Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	3

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Loaded out Damaged Rebar Trailer

WTP Concrete – Nahanni

Poured Thickener/Filter Press Area SOG – 80m3

Continued Rebar for Air Compressor/PAL Filter Area

Continued Moving Hoarding Panels from First Pours to Next Work Area

WTP Earthworks – Ewing

Preparing Final Grading for Inside Slab Area

HLF Earthworks – Ewing

Continue Preparing Lateral Drain Excavations

Placing Lateral Drain Filter Cloth and Installing Piping

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	72	1,668
Nahanni	Concrete	17	684	4,212
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	24
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	3	108	4,740
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**22**	**864**	**16,260**

PROJECT PHOTOS

WTP – Final Slab Grading

WTP – Covering Rebar to Prevent Snow Ingress

PROJECT PHOTOS

HLF – Thickener/Filter Press Pour Completed

JDS	Victoria Gold Daily Construction Report				March 23, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-13C	-6°C	Calm	Light Snow

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	Ongoing Work – Delays due to weather, and material supply/constructability
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 5, 2022	Proposals Received – Bid Evaluation Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	3

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
General
Received Two Loads of GCL – Staged at 1B
WTP Concrete – Nahanni
Preparing Hoarding Panels for PAL Filter Area
Continuing Rebar for Neutralized & Finished Water Tanks
Received Two Loads of Concrete Powder
WTP Earthworks – Ewing
Preparing Final Grading for Inside Slab Area
Installed Final Saddle Plates
HLF Earthworks – Ewing
Continue Preparing Lateral Drain Excavations
Placing Lateral Drain Filter Cloth and Installing Piping

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	96	1,692
Nahanni	Concrete	17	888	4,416
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	24
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	3	144	4,776
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**22**	**1,128**	**16,524**

PROJECT PHOTOS

WTP – Final Grading

WTP – Rebar Installation Progress

PROJECT PHOTOS

JDS	Victoria Gold Daily Construction Report				March 24, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-10C	-0°C	20km/h	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	Ongoing Work – Delays due to weather, and material supply/constructability
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 5, 2022	Proposals Received – Bid Evaluation Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	3

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Received One Loads of Liner – Staged at 1B

WTP Concrete – Nahanni

Preparing Hoarding Panels for PAL Filter Area

Continuing Rebar for Neutralized & Finished Water Tanks

Commenced Setting Clarifier Ped Formwork

WTP Earthworks – Ewing

No Work

HLF Earthworks – Ewing

Continue Preparing Lateral Drain Excavations

Placing Lateral Drain Filter Cloth and Installing Piping

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	120	1,716
Nahanni	Concrete	17	1,092	4,620
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	24
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	3	180	4,812
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**22**	**1,392**	**16,788**

PROJECT PHOTOS

WTP – Ongoing Rebar Work

WTP – Ongoing Rebar Work and Hoarding Panel Install

PROJECT PHOTOS

JDS	Victoria Gold Daily Construction Report				March 25, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-9C	2°C	Calm	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	Ongoing Work – Delays due to weather, and material supply/constructability
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 5, 2022	Proposals Received – Bid Evaluation Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	3

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
General
Assisting With Truck Shop Weir Installation
WTP Concrete – Nahanni
Preparing Bulkheads for PAL Area Concrete Pour Tomorrow
Continuing Rebar for Neutralized & Finished Water Tanks
Poured 4m3 of concrete for the Clarifier Pedestals
Set Sumps for Reagent Area
Hoarding Panel Erection for Finished Water Area
WTP Earthworks – Ewing
No Work
HLF Earthworks – Ewing
Continue Preparing Lateral Drain Excavations
Placing Lateral Drain Filter Cloth and Installing Piping

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	144	1,740
Nahanni	Concrete	22	1,356	4,884
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	24
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	5	240	4,872
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**29**	**1,740**	**17,136**

PROJECT PHOTOS

WTP – Clarifier Peds Concrete Pour

WTP – Reagent Area Sump Set in Place and Backfilled

PROJECT PHOTOS

WTP – Finished Water Area Hoarding Panel Erection

JDS	Victoria Gold Daily Construction Report				March 26, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-8C	3°C	Calm	Overcast

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	Ongoing Work – Delays due to weather, and material supply/constructability
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 5, 2022	Proposals Received – Bid Evaluation Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	3

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

WTP Concrete – Nahanni

Poured Concrete for PAL Filter Area – 66m3

Installing Rebar for Reagents Area

Continue Installing Hoarding Panels in Finished Water Area

WTP Earthworks – Ewing

No Work

HLF Earthworks – Ewing

Continue Preparing Lateral Drain Excavations

Placing Lateral Drain Filter Cloth and Installing Piping

Preparing for Nuway Crusher Move

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	168	1,764
Nahanni	Concrete	22	1,620	5,148
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	24
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	5	300	4,932
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**29**	**2,088**	**17,484**

PROJECT PHOTOS

WTP – PAL Filter Area Poured

WTP – Ongoing Hoarding Panel Install for Finished Water Area

PROJECT PHOTOS

WTP – Concrete Cylinder Sampling/Testing & QA/QC

JDS	Victoria Gold Daily Construction Report				March 27, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-8C	5°C	Calm	Overcast

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	Ongoing Work – Delays due to weather, and material supply/constructability
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 5, 2022	Proposals Received – Bid Evaluation Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	3

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Received Liner Load – Offloaded at Lower Road

WTP Concrete – Nahanni

Poured Final Clarifier Pedestals - 4m3

Installing Rebar For Oxidation Tank & Reagents Area

Completed Installing Hoarding Panels in Finished Water Area – Ready to Pour Tomorrow

WTP Earthworks – Ewing

No Work

HLF Earthworks – Ewing

Continue Preparing Lateral Drain Excavations

Placing Lateral Drain Filter Cloth and Installing Piping

Preparing for Nuway Crusher Move

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	24	1,788
Nahanni	Concrete	22	264	5,412
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	24
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	5	60	4,992
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**29**	**348**	**17,832**

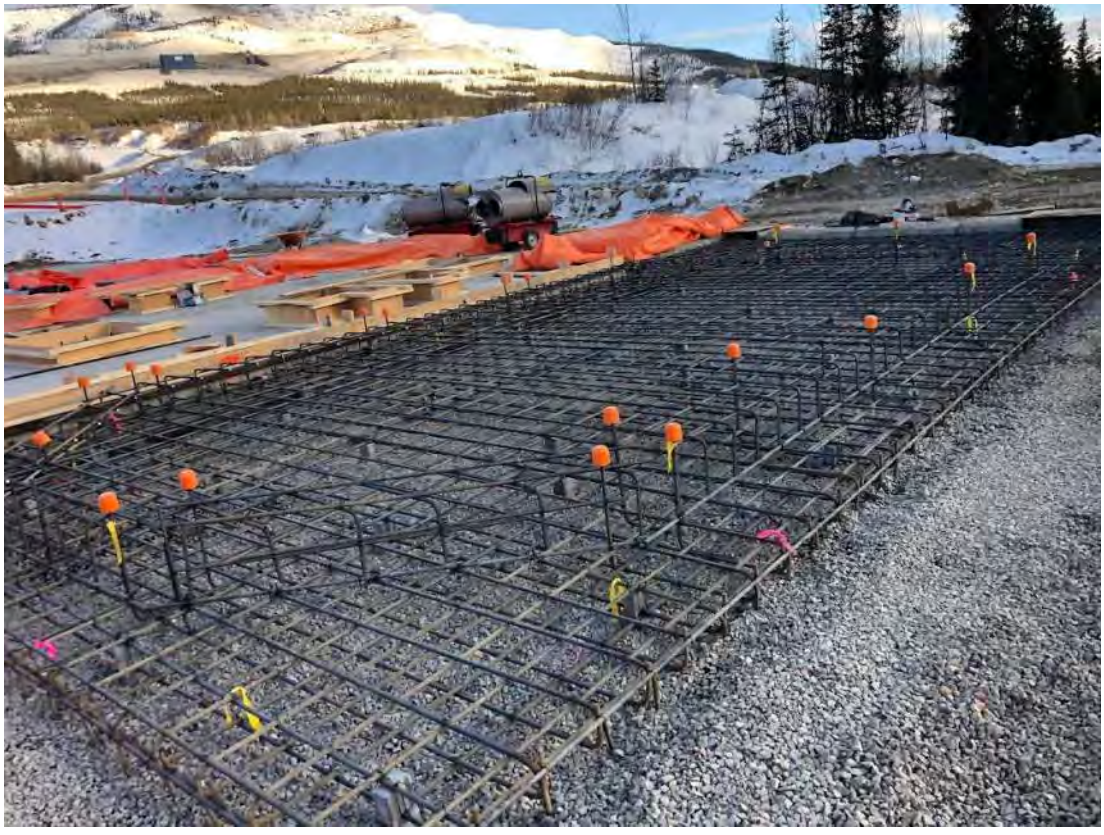
PROJECT PHOTOS

WTP – PAL Filter Area Poured – Covered for Hydration

WTP – Finished Water Area Ready for Pour Tomorrow

PROJECT PHOTOS

WTP – Pouring Concrete Peds for Clarifier/Thickener



WTP – Oxidation Tank Rebar

JDS	Victoria Gold Daily Construction Report				March 28, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-8C	3°C	Calm	Overcast

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	Ongoing Work – Delays due to weather, and material supply/constructability
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 5, 2022	Proposals Received – Bid Evaluation Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	3

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

WTP Concrete – Nahanni

Poured Concrete for Finished Water Area – 72m3

Installing Rebar for Reagents Area

WTP Earthworks – Ewing

No Work

HLF Earthworks – Ewing

Continue Preparing Lateral Drain Excavations

Placing Lateral Drain Filter Cloth and Installing Piping

Preparing for Nuway Crusher Move

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	48	1,812
Nahanni	Concrete	14	432	5,580
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	24
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	5	120	5,052
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**21**	**600**	**18,084**

PROJECT PHOTOS

WTP – Rebar Inspection

WTP – Finished Water Area Final Rebar Inspection and Work

PROJECT PHOTOS

JDS	Victoria Gold Daily Construction Report				March 29, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-11C	0°C	Calm	Overcast

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	Ongoing Work – Delays due to weather, and material supply/constructability
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 5, 2022	Proposals Received – LOI issued to AUL

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	3

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

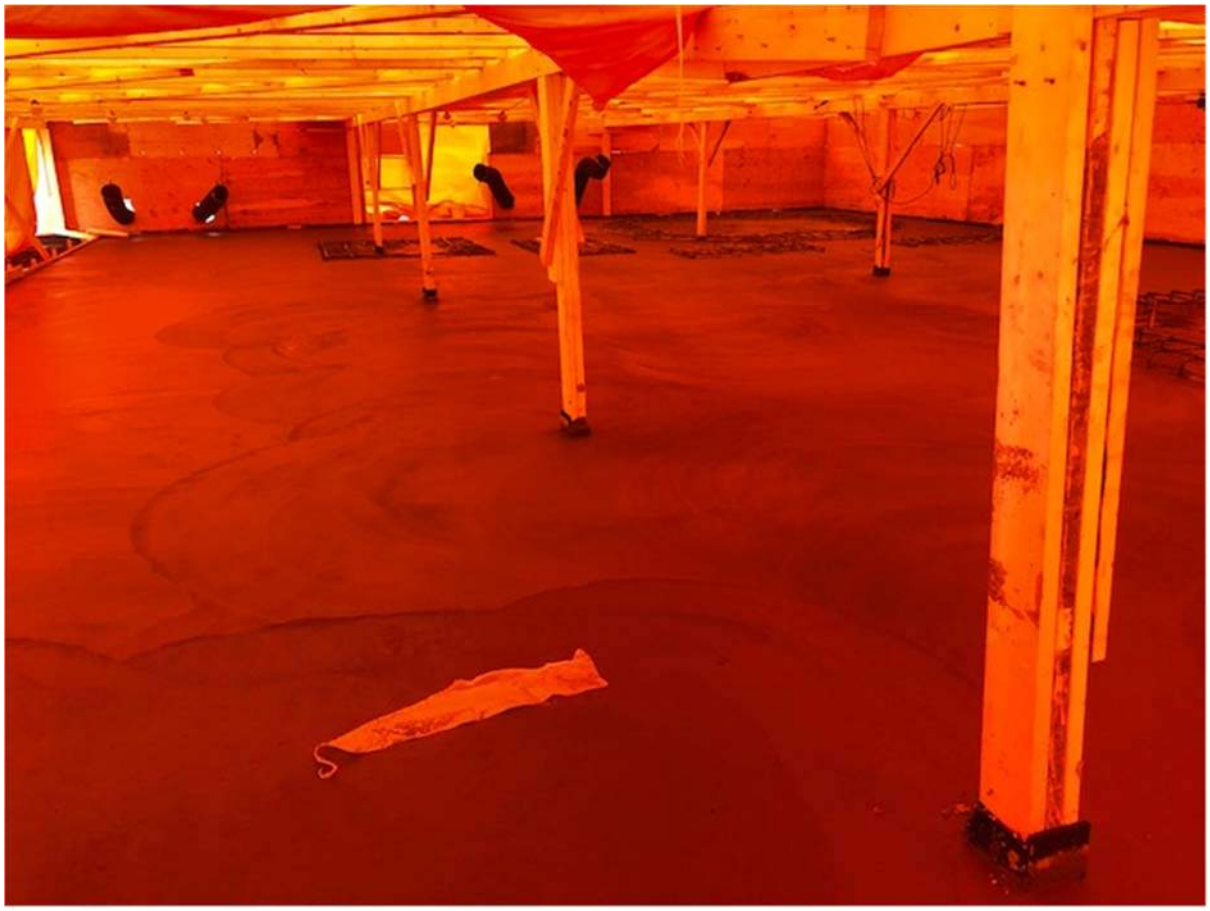
Activity
General
Received 1 load of GCL liner for the HLF expansion work
Ewing mobilized down to KM 31 to support truck retrieval from the ditch
WTP Concrete – Nahanni
Installing Rebar for Reagents Area – working on containment walls
Stripping forms from the clarifier pedestals
Relocating & reinstalling hording panels to the reagent area
WTP Earthworks – Ewing
No Work
HLF Earthworks – Ewing
Stockpiling blast rock in the phase 3 pit for Nuway
Installing diversion ditches on the phase 1B dump

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	72	1,836
Nahanni	Concrete	15	612	5,760
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	24
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	5	180	5,112
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**22**	**864**	**18,348**

PROJECT PHOTOS

WTP – relocation of hording on-going



WTP – Finished Water Area slab placed

JDS	Victoria Gold Daily Construction Report				March 30, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-12C	-2°C	Calm	Blue skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	Ongoing Work – Delays due to weather, and material supply/constructability
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 5, 2022	Proposals Received – LOI issued to AUL

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	0
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	3

Incidents:

- Nothing to Report

Other HSE Activities:

- Informal site inspection at the WTP

TODAYS ACTIVITIES

Activity

General

No update

WTP Concrete – Nahanni

Installing Rebar for Reagents Area – working on containment walls and sumps

House keeping and garbage clean up at the WTP and the batch plant area

Relocating & reinstalling hording panels to the reagents area

Mechanic on site diagnosing concrete pump issues

WTP Earthworks – Ewing

No Work

HLF Earthworks – Ewing

Stockpiling blast rock in the phase 3 pit for Nuway

Phase 1B interceptor ditch culvert maintenance – Discovered water was not flowing; A section of culvert was removed and the ditch was re-shaped

Installing diversion ditches on the phase 1B dump

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	96	1,860
Nahanni	Concrete	15	792	5,940
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	24
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	5	240	5,172
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**22**	**1,128**	**18,612**

PROJECT PHOTOS

HLF – Phase 1 interceptor ditch culvet removal

HLF – Windrowing diversion ditches at phase 1B

PROJECT PHOTOS

WTP – Major housekeeping and work zone clean up as identified during informal inspection

JDS	Victoria Gold Daily Construction Report				March 31, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-24C	-9°C	Wind gusts in the afternoon	Blue skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	Ongoing Work – Delays due to weather, and material supply/constructability
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 8, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	3

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
General
Tertiary Bin deconstruction – LOI issued to Clearview demolition, excavator with shear will be on route to site tomorrow morning
Tertiary Bin deconstruction – walk down with Esra (HATCH), Rodney (VG), Nick Smith (VG) and Sean (MSC); reviewed potential causes & deconstruction
WTP Concrete – Nahanni
Installing formwork on the filter press curb wall and remaining pump pedestals by the thickener
Continued installing rebar in the Reagent area
On going house keeping and garbage clean up at the WTP
Completed hording install for the first reagent area slab pour – currently waiting for concrete pump repairs for next large pour
Mechanic on site diagnosing concrete pump issues
WTP Earthworks – Ewing
No Work
HLF Earthworks – Ewing
Additional spring lateral drain – Mobilized Tetra Tech to oversee subgrade preparation
Additional spring lateral drain – Ewing mobilized and prepped area, exposed lateral drain tie in location, started excavating alignment up to the spring

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	120	1,884
Nahanni	Concrete	14	960	6,108
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	12	36
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	6	312	5,244
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**1,404**	**18,888**

PROJECT PHOTOS

HLF – Prepping area for additional lateral drain installation

HLF – Additional lateral drain alignment excavation

PROJECT PHOTOS

WTP – Reagent area rebar installation on going

WTP – Started formwork on remaining pedestals by the thickener

JDS	Victoria Gold Daily Construction Report				April 1, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-26C	-5°C	Calm	Blue skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	Ongoing Work – Delays due to weather, and material supply/constructability
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 8, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Tertiary Bin deconstruction – Excavator w/ shear attachment loaded and on the road to site, expected Monday evening

WTP Concrete – Nahanni

Installing formwork on the filter press curb wall and remaining pump pedestals by the thickener

Continued installing rebar in the Reagent area

Preparing for pedestal pour tomorrow

Mechanic on site diagnosing concrete pump issues

WTP Earthworks – Ewing

No Work

HLF Earthworks – Ewing

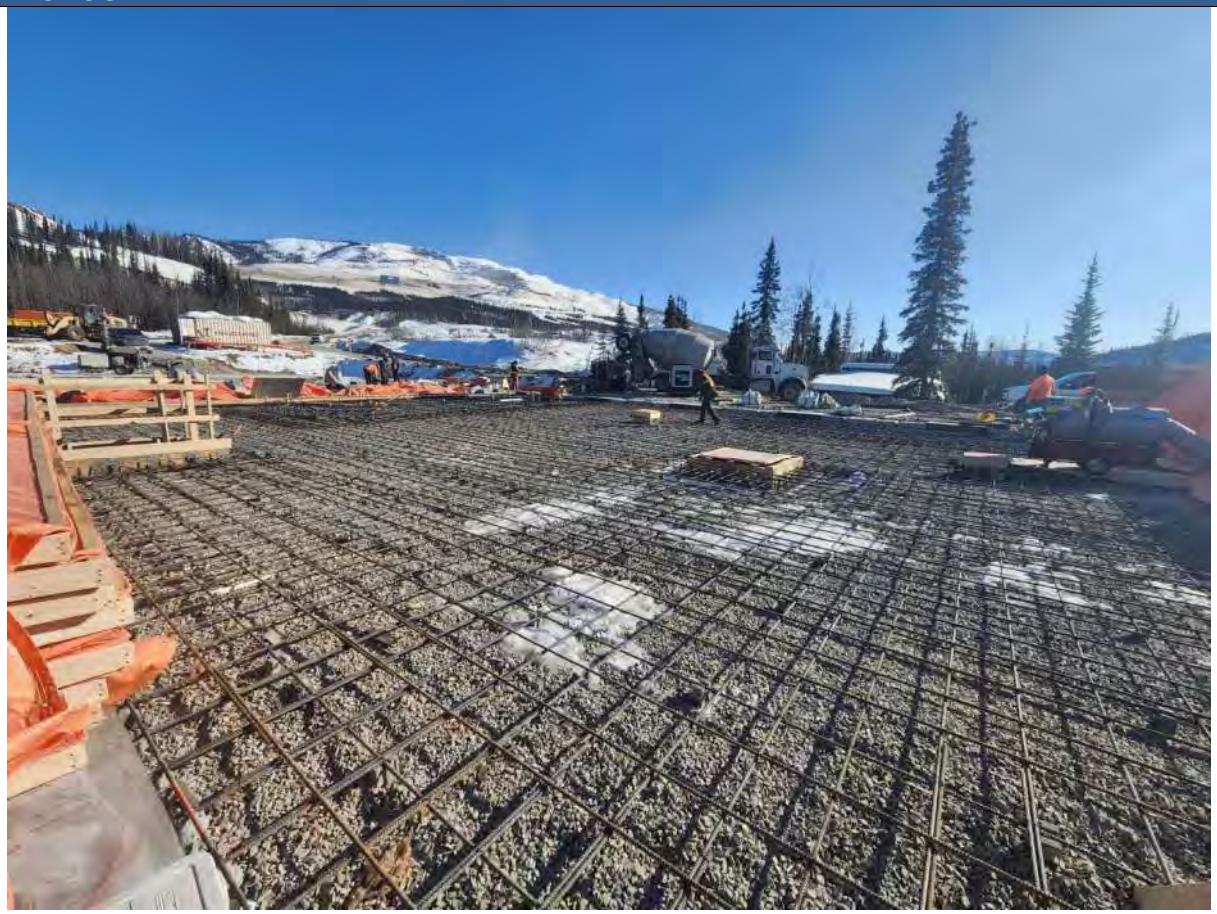
Additional spring lateral drain – saturated / unsuitable material discovered within the lateral excavation

Additional spring lateral drain – started ripping and breaking up unsuitable material in preparation for removal

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	144	1,908
Nahanni	Concrete	14	1,128	6,276
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	24	48
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	6	384	5,316
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**1,680**	**19,164**

PROJECT PHOTOS



HLF – Reagent area slab rebar installation

HLF – Unsuitable material discovered during the lateral excavation

PROJECT PHOTOS

WTP – filter press containment wall formwork installation

HLF – D10 set up to start ripping extents of unsuitable material

	Victoria Gold Daily Construction Report				April 2, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-19C	-5°C	Calm	Blue skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	Ongoing Work – 2 slab on grade pours remaining
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 8, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Tertiary Bin deconstruction – Excavator w/ shear attachment loaded and on the road to site, expected April 4th evening, 2 Clearview Demolition employees expected on site April 3

WTP Concrete – Nahanni

Installed bulkhead for tomorrow's slab pour, completed formwork for the filter press containment wall

Continued installing rebar in the Reagent area – extended the rebar for the containment walls, started slab rebar tie in at the sumps

Poured ~ 7m3 for the remaining Clarifier pedestals

Preparing for tomorrows 75m3 pour

WTP Earthworks – Ewing

No Work

HLF Earthworks – Ewing

Additional spring lateral drain – saturated / unsuitable material discovered within the lateral excavation, Tetra Tech on site to advise for soil classification

Additional spring lateral drain – Loaded out 20 trucks (~280m3) of waste soil and hauled it up to the phase 3 waste dump

Additional spring lateral drain – clearing snow, loaded out 40 trucks of stockpiled snow from within the low points and stockpiled on the west end close to the interceptor discharge

Additional spring lateral drain – started ripping a diversion ditch to direct all the water around the spring and away from the low point collection areas

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	168	1,932
Nahanni	Concrete	16	1,320	6,468
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	36	60
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	6	456	5,388
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**25**	**1,980**	**19,464**

PROJECT PHOTOS

HLF – clearing snow below 1065m, preparing to establish diversion ditch

WTP – casting cyclinders from the pedestal pour

PROJECT PHOTOS

HLF – ripping and stockpiling frozen material

WTP- Placement and vibration of concrete for the remaining clarifier pedestals

JDS	Victoria Gold Daily Construction Report				April 3, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-20C	-1°C	Calm	Flurries

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 8, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Tertiary Bin deconstruction – Excavator w/ shear attachment loaded and on the road to site, expected April 4th evening, two Clearview Demolition employees expected on site April 3

WTP Concrete – Nahanni

Set up and pour 72m3 for the reagent area slab

Continued installing rebar in the Reagent area – extending the rebar for the containment walls, continued slab rebar tie in at the sumps

Started constructing hording structure for the next slab on grade pour

Engineering Support – Tetra Tech

Oversaw the concrete pour today, supported casting cylinders

Supporting the ongoing HLF material removal

HLF Earthworks – Ewing

Additional spring lateral drain – Loaded out 48 trucks (~672m3) of waste soil and hauled it up to the phase 3 waste dump; Haul Road was shut down at 4pm due to slippery conditions

Additional spring lateral drain – continued stockpiling waste material to get hauled away

Additional spring lateral drain – continued ripping a diversion ditch to direct all the water around the spring and away from the low point collection areas

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	24	1,956
Nahanni	Concrete	16	192	6,660
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	12	72
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	6	72	5,460
Superior	Propane	-	-	-
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**25**	**300**	**19,764**

PROJECT PHOTOS

HLF – loading out waste material from the north slope

WTP – Reagent area slab on grade pour

PROJECT PHOTOS

HLF – ripping the 1065m diversion ditch

WTP- Waterstop installed around the sumps

PROJECT PHOTOS

WTP – Concrete pouring temperature records

WTP- Reagent area thickened slab double mat

JDS	Victoria Gold Daily Construction Report				April 4, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-12C	2°C	Calm	Cloudy w/ flurries

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 8, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Tertiary Bin deconstruction – Excavator w/ shear attachment in Whitehorse; counterweight and attachment removed to meet road bans; expected at the access road tonight;

Tertiary Bin deconstruction – JHA developed, and site walk down with Clear Stream; team reviews and support requirements established

WTP Concrete – Nahanni

Set up and pour 12m3 for the finished water pedestal pads and the filter press containment wall

Started tying in rebar for the MF feed area

Continued installing hording panels for tomorrows slab pour

Site housekeeping

Engineering Support – Tetra Tech

Supporting the ongoing HLF material removal; demobilized in the afternoon

HLF Earthworks – Ewing

Additional spring lateral drain – Loaded out 54 trucks (~756m3) of waste soil and hauled it up to the phase 3 waste dump

Additional spring lateral drain – continued stockpiling waste material to get hauled away

Additional spring lateral drain – continued ripping a diversion ditch to direct all the water around the spring and away from the low point collection areas

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	48	1,980
Nahanni	Concrete	16	384	6,852
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	24	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	6	144	5,532
Clear Stream	Demolition	2	24	24
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**27**	**624**	**20,088**

PROJECT PHOTOS

HLF – ripping diversion ditch on north west slope to divert water away from the low point

WTP – cleaning out tank bases prior to pour

PROJECT PHOTOS

HLF – Loading out waste material from the HLF phase 2A extents

WTP – Pouring the finished water area tank pads

PROJECT PHOTOS

HLF – Phase 3 waste material dump

WTP- Pouring the finished water area tank pads

JDS	Victoria Gold Daily Construction Report				April 5, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-10C	3°C	Calm	Clear with some clouds

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 8, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

First load of WTP building columns arrived at site

WTP Concrete – Nahanni

Set up and poured 65m3 for the second reagent area pour

Continued tying in rebar for the MF feed area

Started layout and formwork on the brine disposal and neutralization tank pads

Tertiary Bin Deconstruction Support

Excavator w/ shear attachment arrived at site; counterweight and attachment re-installed with Victoria Gold support;

JHA review with demolition team; Ewing mobilized the support excavator, Site services providing roll off bin for waste steel transport

Removal of first bay completed second bay purlins currently being removed;

HLF Earthworks – Ewing

Additional spring lateral drain – Loaded out 50 trucks (~700m3) of waste soil and hauled it up to the phase 3 waste dump

Additional spring lateral drain – Loaded out 12 trucks of ice/snow and hauled it up to the phase 3 waste dump

Additional spring lateral drain – Started shaping the diversion ditch to direct all the water around the spring and away from the low point collection areas

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	72	2,004
Nahanni	Concrete	16	576	7,044
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	24	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	6	216	5,604
Clear Stream	Demolition	2	48	48
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**26**	**936**	**20,400**

PROJECT PHOTOS

WTP – First load of building columns arrived to site

WTP – heat maintained on first reagent slab pour

PROJECT PHOTOS

HLF – 380 excavator & shear mobilized

WTP – shearing out the Purlins to faciltate truss removal

PROJECT PHOTOS

Tertiary Bin Deconstruction – First bay removed

WTP – Second Reagent area pour

JDS	Victoria Gold Daily Construction Report				April 6, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-12C	-1°C	Calm	Clear

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 7, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

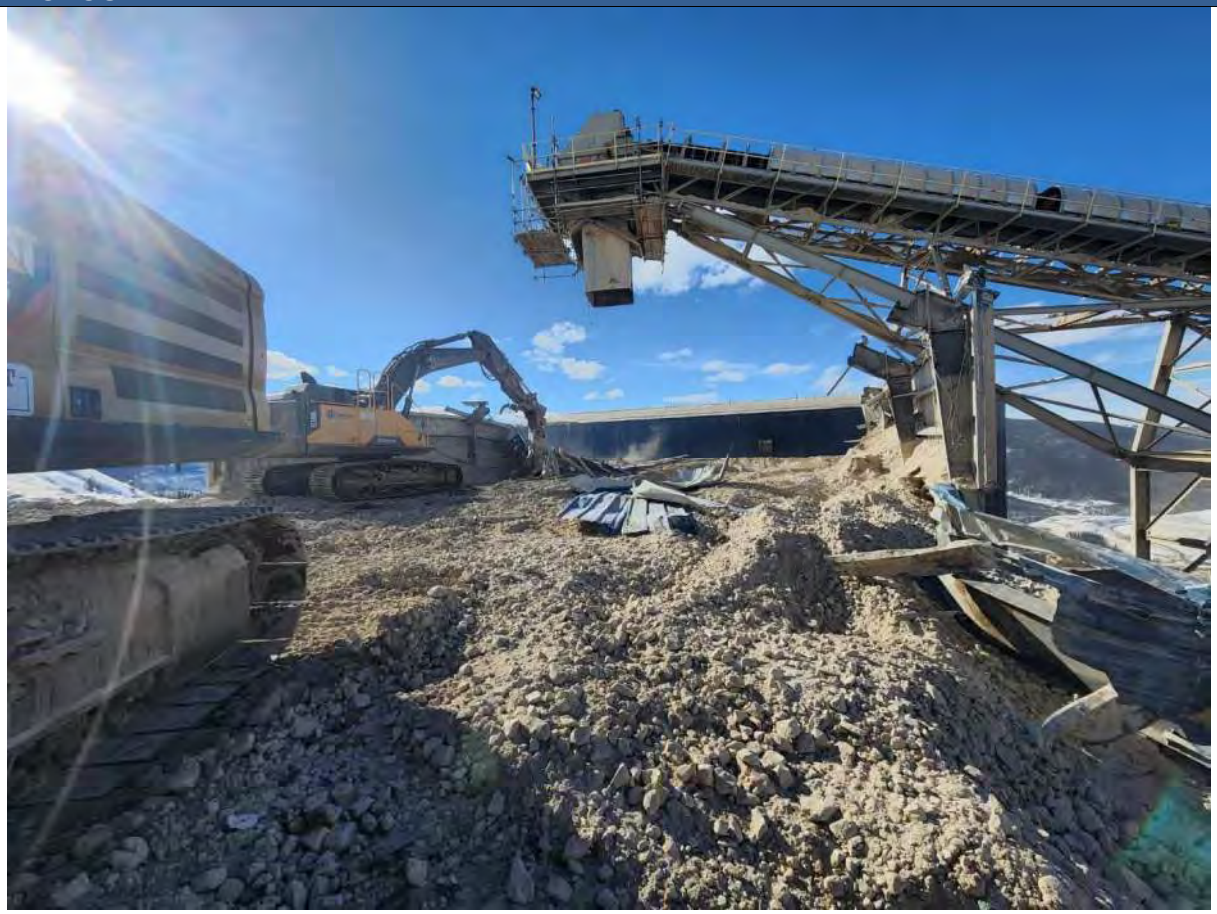
TODAYS ACTIVITIES

Activity
General
First load of WTP building columns arrived at site
WTP Concrete – Nahanni
Relocating heating and hording panels for final slab on grade pour
Continued tying in rebar for the MF feed area
Installing formwork around collection trenches
Continued bush hammering the brine disposal pad
Tertiary Bin Deconstruction Support
Building removal completed at 7:00pm; columns left in place to not damage the anchor bolts
Ewing loading out stockpiled material removed from the bin
HLF Earthworks – Ewing
Additional spring lateral drain – Loaded out 61 trucks (~854m3) of waste soil and hauled it up to the phase 3 waste dump
Continued shaping the diversion ditch to direct all the water around the spring and away from the low point collection area

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	72	2,004
Nahanni	Concrete	16	576	7,044
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	24	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	-	-	-
EWING	Earthworks	6	216	5,604
Clear Stream	Demolition	2	48	48
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**26**	**936**	**20,400**

PROJECT PHOTOS



Tertiary Bin – Removal of the East wall

WTP – heat maintained on the second reagent slab pour

PROJECT PHOTOS

HLF – Loading out waste material

WTP – relcoating the hording panels for the MF feed area slab pour

JDS	Victoria Gold Daily Construction Report				April 7, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-12C	2°C	4km/hr	Clear

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	
Mobilize CS002 Contractor – Phase 1 Tank Installation	April 5, 2022	April 7, 2022	AUL Mobilized to site for WTP Phase 1 mechanical/structural contract

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Second load of WTP building columns arrived at site

4 loads of HDPE liner received for the HLF expansion

WTP Phase 1 Mechanical – AUL Industrial

AUL industrial mobilized to site

WTP Concrete – Nahanni

Set up and poured ~60m3 for the MF feed area slab; slab on grade concrete completed

Completed tying in rebar and water stop installation for the MF feed area and water

Continued bush hammering the brine disposal pad

Tertiary Bin Deconstruction Support

Ewing loading out stockpiled material removed from the bin

HLF Earthworks – Ewing

Additional spring lateral drain – Loaded out 57 trucks (~798m3) of waste soil and hauled it up to the phase 3 waste dump

MANPOWER ON SITE

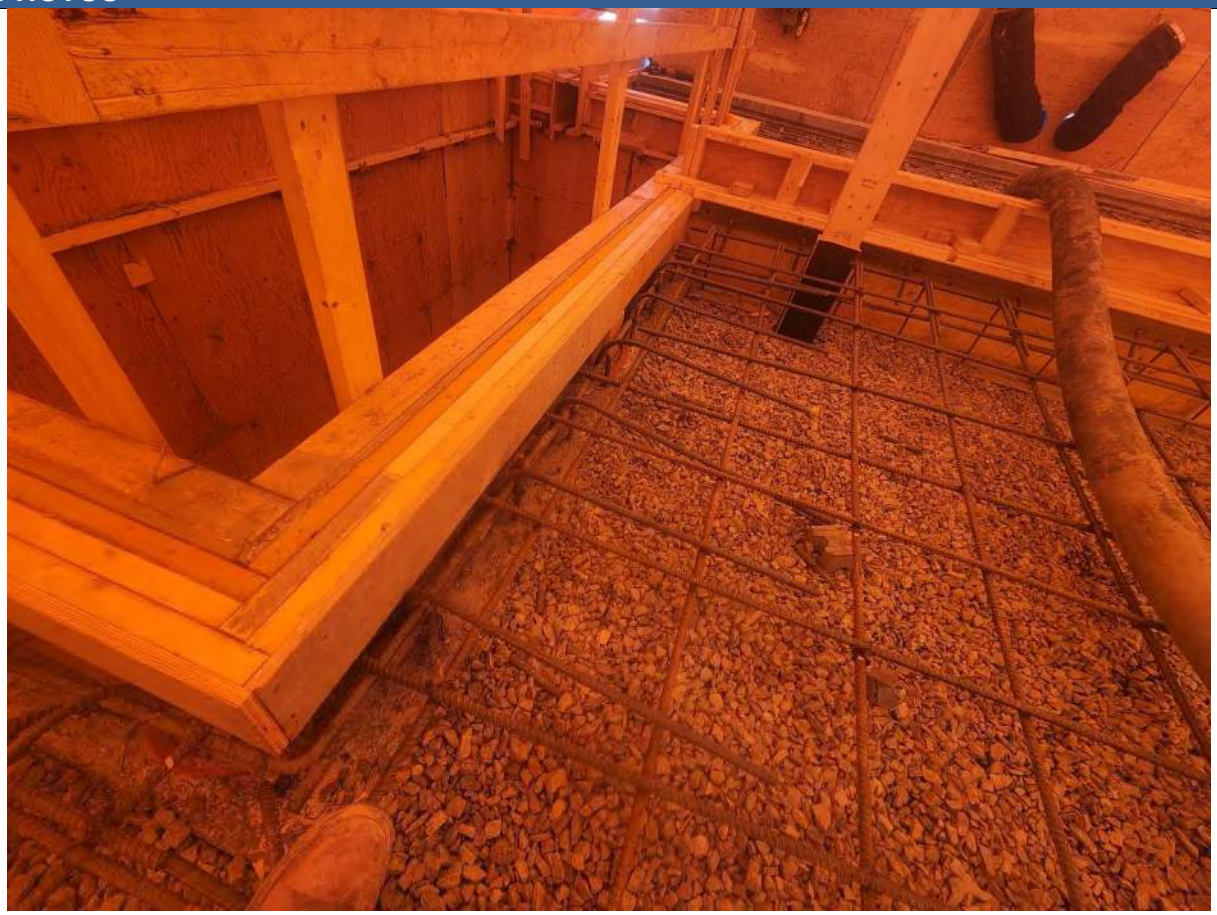
Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	120	2,052
Nahanni	Concrete	13	888	7,356
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	24	84
Mueller	Electrical	-	-	3,384
Winfield/ⱮETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	60	60
EWING	Earthworks	6	360	5,748
Clear Stream	Demolition	2	96	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**28**	**1,548**	**21,012**

PROJECT PHOTOS

WTP – MF Feed area slab pour

WTP – Batching for the MF Feed area slab pour

PROJECT PHOTOS



WTP – Main sump and collection trench formwork and rebar

JDS	Victoria Gold Daily Construction Report				April 8, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-12C	-1°C	Calm	Cloudy w/flurries

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	AUL Mobilized to site for WTP Phase 1 mechanical/structural contract

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

No update

WTP Phase 1 Mechanical – AUL Industrial

AUL shaking out thickener steel, offloading gear and equipment

Receiving supplies and equipment

WTP Concrete – Nahanni

Site housekeeping around the pad and at the batch plant

Prepping the decant tank pad and water softener pad for rebar

Continued bush hammering the brine disposal pad

Tertiary Bin Deconstruction Support

Ewing loading out stockpiled material removed from the bin; demobilized from the area

HLF Earthworks – Ewing

Additional spring lateral drain – Loaded out 42 trucks (~588m3) of waste soil and hauled it up to the phase 3 waste dump

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	144	2,076
Nahanni	Concrete	13	1,044	7,512
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	24	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	120	120
EWING	Earthworks	6	432	5,820
Clear Stream	Demolition	-	96	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**26**	**1,860**	**21,324**

PROJECT PHOTOS

HLF – ongoing unsuitable material stockpiling

HLF – Loading out of the stockpiled unsuitable material

PROJECT PHOTOS

WTP – Cleaning/prepping the decant tank pad for rebar

HLF – 1065 diversion ditch

	Victoria Gold Daily Construction Report				April 9, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-9C	1°C	Calm	Cloudy

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	AUL Mobilized to site for WTP Phase 1 mechanical/structural contract

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

No update

WTP Phase 1 Mechanical – AUL Industrial

AUL Completed Mobilization

Moving Materials From Laydown to Workfront

Started Layout and Setting of Thickener Legs

WTP Concrete – Nahanni

Housekeeping Around Batch Plant

Saw Cutting Control Joints

Preparing Brine Disposal/Water Softening Area Housekeeping pad

Preparing Reagent Area Curb Formwork

Tearing Down Hoarding Around Reagent Area #2 Pour

HLF Earthworks – Ewing

Additional spring lateral drain – Loaded out ~1036m3 of waste soil and hauled it up to the phase 3 waste dump

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	168	2,100
Nahanni	Concrete	13	1,200	7,668
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	24	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	180	180
EWING	Earthworks	6	504	5,892
Clear Stream	Demolition	-	96	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**26**	**2,172**	**21,636**

PROJECT PHOTOS

HLF – Ongoing Unsuitable Material Loadout

WTP – AUL Setting and Welding Thickener Legs

PROJECT PHOTOS

WTP – Nahanni Saw Cutting Control Joints

WTP – Overall Progress

	Victoria Gold Daily Construction Report				April 10, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-15C	-4°C	Calm	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 15, 2022	
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	AUL Mobilized to site for WTP Phase 1 mechanical/structural contract

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Reviewed P250 Earthworks Plan with Tyler Christian and Ryan Noble

WTP Phase 1 Mechanical – AUL Industrial

Commenced Assembly of Thickener Tank Bottom

Continued Setting/Welding of Thickener Legs

WTP Concrete – Nahanni

Demobilized 2 Concrete Trucks

Continued Saw Cutting Control Joints

Preparing Brine Disposal/Water Softening Area Housekeeping pad

Preparing Reagent Area Curb Formwork

Preparing Various Housekeeping Pads for Pouring

HLF Earthworks – Ewing

Additional spring lateral drain – Loaded out ~1300m3 of waste soil and hauled it up to the phase 3 waste dump (700m3 hauled to Inert Waste for Site Services)

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	24	2,100
Nahanni	Concrete	13	120	7,668
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	60	180
EWING	Earthworks	6	72	5,892
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**26**	**276**	**21,636**

PROJECT PHOTOS

WTP – Starting on Thickener Tank Bottom

WTP – Ongoing work on Formwork for Reagent Curb

PROJECT PHOTOS

JDS	Victoria Gold Daily Construction Report				April 11, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-21C	-8°C	Calm	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 16, 2022	Main SOG complete, remaining housekeeping pads and curbs ongoing
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	First Loads of Building Steel Have Arrived
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	AUL Mobilized to site for WTP Phase 1 mechanical/structural contract

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Reviewed Potential New Camp Location with Mike Gooseney and Christian Brown

WTP Phase 1 Mechanical – AUL Industrial

Continued Assembly of Thickener Tank Bottom

Continued Welding of Thickener Legs

WTP Concrete – Nahanni

Continued Preparing Reagent Area Curb Formwork

Continued Saw Cutting Control Joints

Preparing Brine Disposal/Water Softening Area Housekeeping pad

Poured 12m3 of Reagent Curb

Preparing Various Housekeeping Pads for Pouring

HLF Earthworks – Ewing

Additional spring lateral drain – Loaded out ~1176m3 of waste soil and hauled it up to the phase 3 waste dump

Completed 2 Test Pits

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	48	2,148
Nahanni	Concrete	10	240	7,908
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	120	300
EWING	Earthworks	6	144	6,036
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**552**	**22,188**

PROJECT PHOTOS

WTP – Welding on Thickener Tank Bottom

WTP – Welding Thickener Legs

PROJECT PHOTOS

WTP - Heating and Hoarding for Concrete Pours

JDS	Victoria Gold Daily Construction Report				April 12, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-23C	-4°C	Calm	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 16, 2022	Main SOG complete, remaining housekeeping pads and curbs ongoing
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	First Loads of Building Steel Have Arrived
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	AUL Mobilized to site for WTP Phase 1 mechanical/structural contract

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Nothing To Note

WTP Phase 1 Mechanical – AUL Industrial

Continued Assembly of Thickener Tank Bottom & Stiffener Ring

Completed Welding of Thickener Legs

WTP Concrete – Nahanni

Continued Preparing Reagent Area Curb Formwork

Continued Saw Cutting Control Joints

Preparing Brine Disposal/Water Softening Area Housekeeping pad

Preparing Various Housekeeping Pads for Pouring

HLF Earthworks – Ewing

Additional spring lateral drain – Loaded out ~390m3 of waste soil and hauled it up to the phase 3 waste dump

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	72	2,172
Nahanni	Concrete	6	312	7,980
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	180	360
EWING	Earthworks	6	216	6,108
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**19**	**780**	**22,416**

PROJECT PHOTOS

WTP – Thickener Tank Stiffener Ring Install

WTP – Stiffener Ring Install

PROJECT PHOTOS

WTP – Trenches & Sumps Stripped

JDS	Victoria Gold Daily Construction Report				April 13, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-18C	0°C	Calm	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 16, 2022	Main SOG complete, remaining housekeeping pads and curbs ongoing
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	First Loads of Building Steel Have Arrived
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	AUL Mobilized to site for WTP Phase 1 mechanical/structural contract

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Nothing To Note

WTP Phase 1 Mechanical – AUL Industrial

Continued Assembly of Thickener Tank Bottom & Stiffener Ring

Completed Welding of Thickener Legs

WTP Concrete – Nahanni

Continued Stripping Formworks and General Housekeeping

Continued Saw Cutting Control Joints

Preparing Brine Disposal/Water Softening Area Housekeeping pad

Preparing Reagent Area Tank Formworks/Rebar

Preparing Various Housekeeping Pads for Pouring

HLF Earthworks – Ewing

Additional spring lateral drain – Loaded out 994m3 of waste soil and hauled it up to the phase 3 waste dump

Organized Tetratech to come to site tomorrow to review work completed on HLF

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	96	2,196
Nahanni	Concrete	6	384	8,052
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	240	420
EWING	Earthworks	6	288	6,180
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**19**	**1,008**	**22,644**

PROJECT PHOTOS

HLF – Ongoing Unsuitable Material Loadout

PROJECT PHOTOS

WTP – Brine Area Preparation for Pouring

JDS	Victoria Gold Daily Construction Report				April 14, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-11C	2°C	Calm	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 16, 2022	Main SOG complete, remaining housekeeping pads and curbs ongoing
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	First Loads of Building Steel Have Arrived
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	AUL Mobilized to site for WTP Phase 1 mechanical/structural contract

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Received First Load of Clarifier Material

WTP Phase 1 Mechanical – AUL Industrial

Continued Assembly of Thickener Tank Bottom & Stiffener Ring

Flipped Tank Bottom and Continued Welding

WTP Concrete – Nahanni

Continued Stripping Formworks and General Housekeeping

Continued Saw Cutting Control Joints

Preparing Brine Disposal/Water Softening Area Housekeeping pad

HLF Earthworks – Ewing

Additional spring lateral drain – Loaded out 1022m3 of waste soil and hauled it up to the phase 3 waste dump

Reviewed Spring Bottom Excavation with Tetratech – Approval Given for Backfill Commencement

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	120	2,220
Nahanni	Concrete	6	456	8,124
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	7	324	504
EWING	Earthworks	6	360	6,252
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**21**	**1,260**	**22,896**

PROJECT PHOTOS

WTP – Flipped Tank Bottom – Continued Welding

PROJECT PHOTOS

WTP – Received Clarifier First Load

JDS	Victoria Gold Daily Construction Report				April 15, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-16C	0°C	Calm	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 19, 2022	Main SOG complete, remaining housekeeping pads and curbs ongoing
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	First Loads of Building Steel Have Arrived
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	AUL Mobilized to site for WTP Phase 1 mechanical/structural contract

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Received Second Load of Clarifier Material – Lamella Plates

WTP Phase 1 Mechanical – AUL Industrial

Continued Assembly of Thickener Tank Bottom & Stiffener Ring

Flipped Tank Bottom Again – Commenced Installing Wall Sections

Layout and Drilling of Holes for Building Columns

WTP Concrete – Nahanni

Continued Stripping Formworks and General Housekeeping

Continued Saw Cutting Control Joints

Preparing Brine Disposal/Water Softening Area Housekeeping pad

Preparing PAL Filter Housekeeping Pads

HLF Earthworks – Ewing

Commenced Hauling in new Backfill and compacting lifts – Completed 1st and 2nd Lift of Backfill

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	168	2,268
Nahanni	Concrete	7	576	8,244
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	7	408	588
EWING	Earthworks	6	432	6,324
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**1,584**	**23,220**

PROJECT PHOTOS

HLF – First Lift Completed – Second Lift Ongoing

WTP – Thickener Tank First Wall Section Tacking in Place

PROJECT PHOTOS

WTP – Drilling Column Holes in Saddle Plates

	Victoria Gold Daily Construction Report				April 16, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-18C	-4°C	Calm	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 19, 2022	Main SOG complete, remaining housekeeping pads and curbs ongoing – 672m^3 of 715m^3 Completed
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	First 2 Loads of Building Steel Have Arrived
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	Ongoing Erection of Thickener Tank – Receiving Loads of Clarifier Tank Package

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Nothing to Note

WTP Phase 1 Mechanical – AUL Industrial

Continued Assembly of Thickener Tank Wall Sections – Tack/Stitch Welding in Place

Continued Layout and Drilling of Holes for Building Columns

WTP Concrete – Nahanni

Continued Stripping Formworks and General Housekeeping

Continued Saw Cutting Control Joints

Preparing PAL Filter Housekeeping Pads

Poured Brine Disposal/Water Softening Area Housekeeping pad & First PAL Filter Pad – 24m^3

HLF Earthworks – Ewing

Commenced Hauling in new Backfill and compacting lifts – Completed 3rd Lift of Backfilling

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	204	2,304
Nahanni	Concrete	7	660	8,328
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	7	492	672
EWING	Earthworks	7	516	6,408
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**1,872**	**23,508**

PROJECT PHOTOS

HLF – Second Lift Completed – Packing Prior to Third Lift

WTP – Thickener Tank Wall Sections Ongoing

PROJECT PHOTOS

WTP – Concrete Finishing

	Victoria Gold Daily Construction Report				April 17, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-18C	-4°C	Calm	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 19, 2022	Main SOG complete, remaining housekeeping pads and curbs ongoing – 672m^3 of 715m^3 Completed
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	First 2 Loads of Building Steel Have Arrived
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	Ongoing Erection of Thickener Tank – Receiving Loads of Clarifier Tank Package

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Nothing to Note

WTP Phase 1 Mechanical – AUL Industrial

Continued Assembly of Thickener Tank Wall Sections

Commenced Installation of Launder Ring

Continued Layout and Drilling of Holes for Building Columns

WTP Concrete – Nahanni

Continued Stripping Formworks and General Housekeeping

Continued Saw Cutting Control Joints

Preparation for H2SO4 Reagent Area Rebar/Formwork

Poured 2nd and 3rd PAL Filter Housekeeping Pads

HLF Earthworks – Ewing

Commenced Hauling in new Backfill and compacting lifts – Commenced 4th Lift of Backfilling

Walking Excavator from Site to KM 32 for Test Pits

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	36	2,340
Nahanni	Concrete	7	84	8,412
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	7	84	756
EWING	Earthworks	7	84	6,492
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**288**	**23,796**

PROJECT PHOTOS

WTP – Clarifier Area Cleaned

WTP – PAL Filter Pour #2

PROJECT PHOTOS

WTP – Thickener Tank Wall Sections Complete

	Victoria Gold Daily Construction Report				April 18, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-19C	4°C	Calm	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 19, 2022	Main SOG complete, remaining housekeeping pads and curbs ongoing – 672m^3 of 715m^3 Completed
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	First 2 Loads of Building Steel Have Arrived
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	Ongoing Erection of Thickener Tank – Receiving Loads of Clarifier Tank Package

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Nothing to Note

WTP Phase 1 Mechanical – AUL Industrial

Commenced Final Welding of Tank Seams In and Out

Continued Layout and Drilling of Holes for Building Columns

WTP Concrete – Nahanni

Continued Stripping Forms

Preparing Polymer Make down Area Formwork

Poured for H2SO4 Reagent Area Housekeeping Pad

HLF Earthworks – Ewing

Commenced Hauling in new Backfill and compacting lifts – Commenced 4th Lift of Backfilling

Walking Excavator from Site to KM 32 for Test Pits

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	72	2,376
Nahanni	Concrete	7	168	8,496
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	7	168	840
EWING	Earthworks	7	168	6,576
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**576**	**24,084**

PROJECT PHOTOS

WTP – Reagent Area Stripping/Housekeeping

WTP – Thickener Tank Final Heating/Welding of All Seams

PROJECT PHOTOS

HLF – Lift #4 Ongoing

	Victoria Gold Daily Construction Report				April 19, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-11C	4°C	Calm	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete MWTP Concrete Scope	April 4, 2022	April 19, 2022	CONCRETE COMPLETE
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	First 2 Loads of Building Steel Have Arrived
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	Ongoing Erection of Thickener Tank – Receiving Loads of Clarifier Tank Package

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
General
Received Load #3 of Building Structural Steel
WTP Phase 1 Mechanical – AUL Industrial
Continued Final Welding of Tank Seams In and Out
Continued Layout and Drilling of Holes for Building Columns
Materials for Anchors/Epoxy Arrived on Site
WTP Concrete – Nahanni
Poured Polymer Makedown Area – $2m^3$
Departed Site
HLF Earthworks – Ewing
Continued Hauling in new Backfill and compacting lifts – 4th Lift of Backfilling Completed – 5th Lift Commenced
Dug/Sampled Test Pits at 32km Quarry

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	108	2,412
Nahanni	Concrete	4	216	8,544
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	7	252	924
EWING	Earthworks	7	252	6,660
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**21**	**828**	**24,336**

PROJECT PHOTOS

WTP – Receiving Building Steel

WTP – Thickener Tank Final Heating/Welding of All Seams

PROJECT PHOTOS

JDS	Victoria Gold Daily Construction Report				April 20, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-11C	5°C	Calm	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	First 3 Loads of Building Steel Have Arrived
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	Ongoing Erection of Thickener Tank – Receiving Loads of Clarifier Tank Package

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Took samples from Phase 3 Pit for Concrete Aggregate Source

P250 HAZOP

WTP Phase 1 Mechanical – AUL Industrial

Continued Final Welding of Tank Seams In and Out

Commenced epoxying of anchors for building columns

HLF Earthworks – Ewing

Continued Hauling in new Backfill and compacting lifts – 5th Lift of Backfilling Completed

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	156	2,460
Nahanni	Concrete	-	216	8,544
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	7	336	1,008
EWING	Earthworks	7	336	6,744
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**18**	**1,044**	**24,552**

PROJECT PHOTOS

WTP – Thickener Tank Welding Ongoing

WTP – Concrete Complete

PROJECT PHOTOS

WTP – Concrete Complete

JDS	Victoria Gold Daily Construction Report				April 21, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-10C	6°C	Calm	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	First 3 Loads of Building Steel Have Arrived
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	Ongoing Erection of Thickener Tank – Receiving Loads of Clarifier Tank Package

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Conducting Major Cleanup of Slab/Workfront

WTP Phase 1 Mechanical – AUL Industrial

Continued Final Welding of Tank Seams In and Out

Continued epoxying of anchors for building columns

Assembling Bridge Platform for Thickener

Installing Thickener Drive Assembly

HLF Earthworks – Ewing

Continued Hauling in new Backfill and compacting lifts – 6th Lift ongoing

Commenced Installation of Lateral Drain

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	252	2,508
Nahanni	Concrete	-	216	8,544
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	8	516	1,104
EWING	Earthworks	7	504	6,828
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**19**	**1,488**	**24,780**

PROJECT PHOTOS

WTP – Thickener Tank Welding Ongoing

WTP – Final Form Stripping

PROJECT PHOTOS

JDS	Victoria Gold Daily Construction Report				April 22, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-5C	10°C	Calm	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	First 5 Loads of Building Steel Have Arrived
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	Ongoing Erection of Thickener Tank – Receiving Loads of Clarifier Tank Package

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Received 2nd Load of Clarifier Steel – Final Hopper

Received 4th & 5th Loads of Building Steel

WTP Phase 1 Mechanical – AUL Industrial

Hoisted and Set Thickener Tank on Legs

Continued Welding Thickener Tank Rings

Pre-Assembled all Thickener Mechanical/Iron Components

HLF Earthworks – Ewing

Continued Hauling in new Backfill and compacting lifts – 6th Lift ongoing

Continued Installation of Lateral Drain – L2 West

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	240	2,544
Nahanni	Concrete	-	216	8,544
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	8	528	1,200
EWING	Earthworks	7	504	6,912
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**18**	**1,488**	**24,996**

PROJECT PHOTOS

WTP – Thickener Tank Set on Legs

WTP – Thickener Tank Set on Legs

PROJECT PHOTOS

WTP – 3rd Clarifier Hopper Received

WTP – 4th & 5th Load of Building Erection Steel Received

JDS	Victoria Gold Daily Construction Report				April 23, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-5C	5°C	Mild Wind	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	First 5 Loads of Building Steel Have Arrived
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	Ongoing Erection of Thickener Tank – Receiving Loads of Clarifier Tank Package

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

AUL Assisting with Demobilizing Nahanni Rebar to Laydown

WTP Phase 1 Mechanical – AUL Industrial

Welding on Thickener Tank Wall Stiffeners

Continued Welding Thickener Tank Walls and Launder Ring

Pre-Assembled all Thickener Mechanical/Iron Components

Installed Underflow Cone on Thickener Tank

HLF Earthworks – Ewing

Continued Hauling in new Backfill and compacting lifts – 6th Lift ongoing

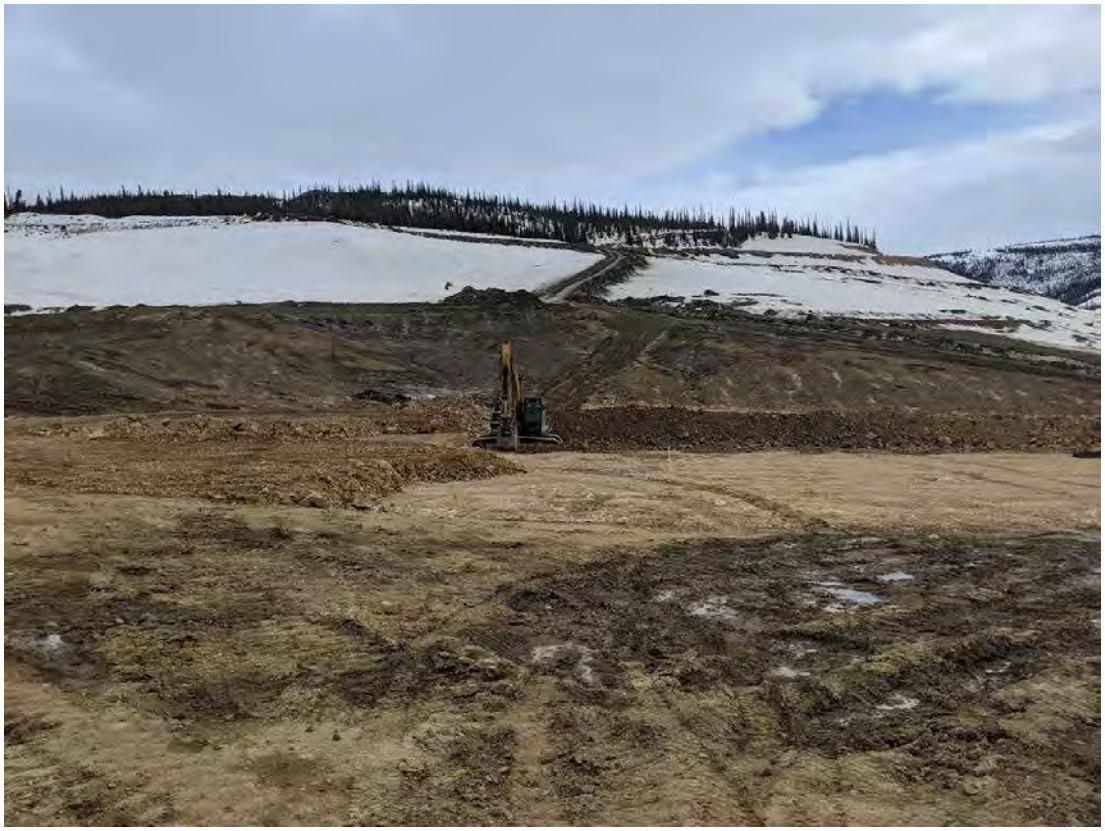
Continued Installation of Lateral Drain – L2 West

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	264	2,568
Nahanni	Concrete	-	216	8,544
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	8	624	1,296
EWING	Earthworks	7	588	6,996
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**17**	**1,692**	**25,200**

PROJECT PHOTOS

WTP – Thickener Tank Components Preassembled and Staged



HLF – Ongoing Backfill/Lateral Work

PROJECT PHOTOS

HLF – Ongoing Lateral Work

JDS	Victoria Gold Daily Construction Report				April 24, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Notes
		-5C	8°C	Mild Wind	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	First 5 Loads of Building Steel Have Arrived
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	Ongoing Erection of Thickener Tank – Receiving Loads of Clarifier Tank Package

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

AUL Assisting with Demobilizing Nahanni Rebar to Laydown

WTP Phase 1 Mechanical – AUL Industrial

Welding on Thickener Tank Wall Stiffeners

Continued Welding Thickener Tank Walls and Launder Ring

Moved Oxidation Tank from Security to Workfront

HLF Earthworks – Ewing

Continued Hauling in new Backfill and compacting lifts – 6th Lift ongoing

Completed Installation of Lateral Drain – L2 West

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	24	2,592
Nahanni	Concrete	-	-	8,544
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	8	96	1,392
EWING	Earthworks	7	84	7,080
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**17**	**204**	**25,404**

PROJECT PHOTOS

WTP – Oxidation Tank Moved to Workfront

WTP – Cleaned & Ready for Building Erection

PROJECT PHOTOS

WTP – Cleaned & Ready for Building Erection

	Victoria Gold Daily Construction Report				April 25, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-3C	7°C	Calm	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	Norseman Mobilized and started shaking out steel
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	Ongoing Erection of Thickener Tank – Receiving Loads of Clarifier Tank Package Oxidation tank set in place

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Received truck 4 of 8 for the clarifiers (flocculant tank)
AUL assisted with weld repairs on 90T crane outriggers
Ewing assisting with sump construction for silt management
General housekeeping around the water treatment plant
Received truck of steel columns for WTP structure

WTP Phase 1 Mechanical – AUL Industrial

Spray foaming saddle plates in preparation for grout
RGA on site for NDT
Interior welds for overflow drain in thickener
Relocated clarifier hoppers on concrete pad

HLF Earthworks – Ewing

Continued Hauling in new Backfill and compacting lifts – 6th Lift ongoing
6th lift completed starting lift number 7

MANPOWER ON SITE

Clear Stream	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	72	2,640
Nahanni	Concrete	-	-	8,544
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	10	216	1,512
EWING	Earthworks	7	168	7,164
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**21**	**456**	**25,656**
Visitors		-	-	-
Total - Site		**21**	**456**	**25,656**

PROJECT PHOTOS

WTP - General housekeeping around water treatment plant

WTP - Offloading steel beams for Norseman

WTP – Relocating clarifier hoppers

HLF – Progressing through 6th lift

JDS	Victoria Gold Daily Construction Report				April 26, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		0°C	9°C	Calm	Blue Skies

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	Norseman Mobilized and started shaking out steel
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	Ongoing Erection of Thickener Tank

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Received one load of Norseman building steel

Ewing assisting with sump construction for silt management

Received truck of steel columns for WTP structure

Nahanni mobilizing for WTP concrete deficiencies

WTP Phase 1 Mechanical – AUL Industrial

NDT completed all visual inspection and testing on thickener tank welds

Conducted weld repairs identified by RGA

Installed thickener rake

Blowing out saddle plates in preparation for grout

HLF Earthworks – Ewing

6th lift completed starting lift number 7

MANPOWER ON SITE

PBS	Clear Stream	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
	EPCM Construction Contractors				
	JDS	EPCM	4	120	2,688
CB001	Nahanni	Concrete	-	-	8,544
CA201	Western Canadian Steel	Pre-Eng	-	-	-
0	Tetratech Eba	Geotech	-	-	84
CE001	Mueller	Electrical	-	-	3,384
0	Winfield/VETS	Mech/Pipe	-	-	1,944
	AUL	Structural	10	336	1,632
0	EWING	Earthworks	7	252	7,248
0	Clear Stream	Demolition	-	-	96
0	JDS McCaw	Drilling	-	-	288
0	RC	Crane	-	-	-
0	Hatch	Engineering	-	-	-
	Subtotal - EPCM Construction Contractors		**21**	**708**	**25,908**
	Visitors		-	-	-
	Total - Site		**21**	**708**	**25,908**

PROJECT PHOTOS

WTP – NDT Testing being conducted on thickener tank welds

Silt management sumps

JDS	Victoria Gold Daily Construction Report				April 27, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-1°C	8°C	Calm	Slight overcast

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	Norseman Mobilized and started shaking out steel
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	Ongoing Erection of Thickener Tank

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Received one load of assembly hardware for Norseman

Received one load of trusses for Norseman

Ewing assisting with silt management sumps

WTP Phase 1 Mechanical – AUL Industrial

RGA completed NDT and demobilized

Rough set and tacked on platform, staircase, and handrails

WTP Concrete – Nahanni

Started removing tie rods on concrete forms

Cleaned up edges and chamfers on concrete

Working on deficiency list

HLF Earthworks – Ewing

Continued hauling in new backfill and compacting lifts – 7th lift ongoing

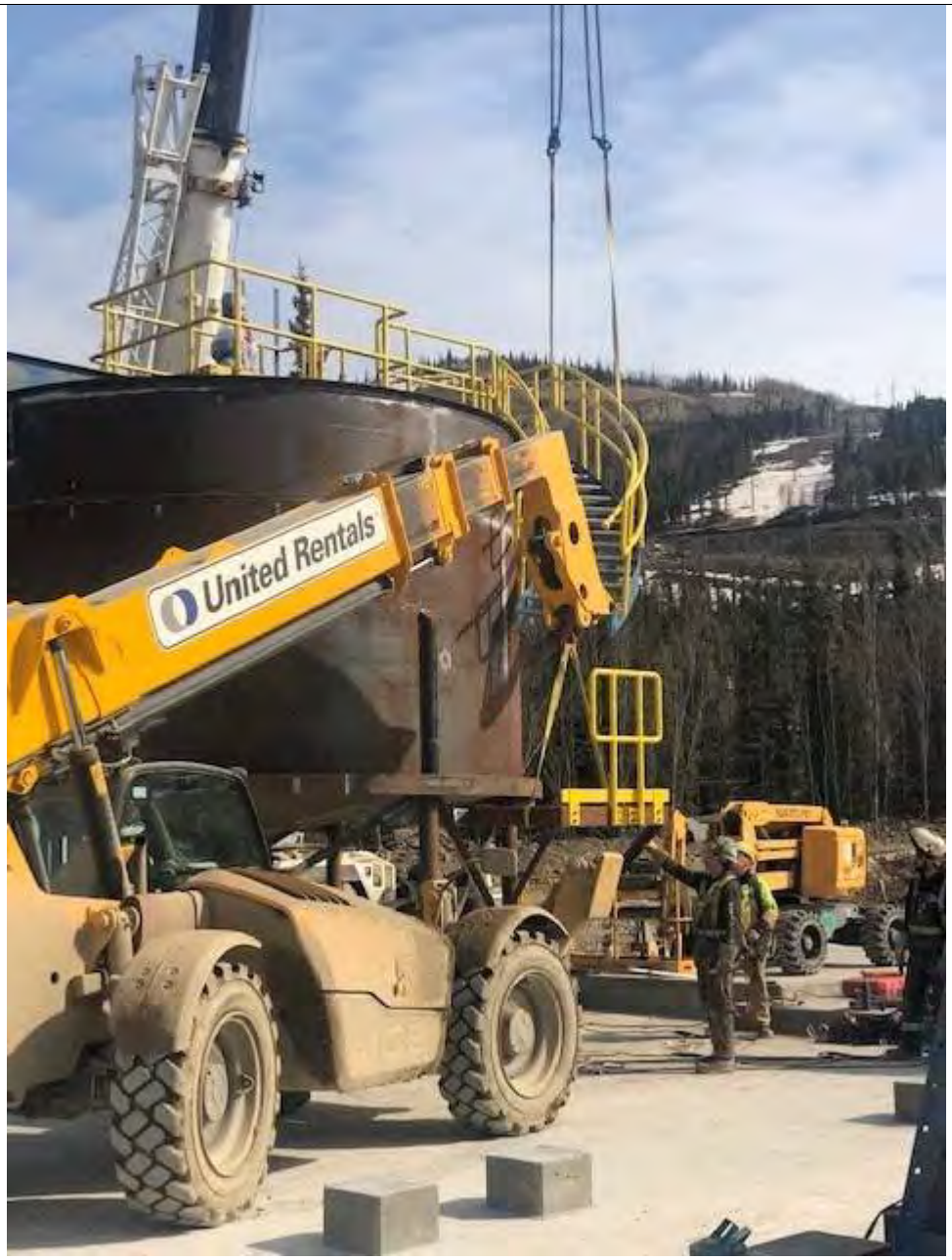
Phase one interceptor ditch maintenance

MANPOWER ON SITE

PBS	Clear Stream	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
	EPCM Construction Contractors				
	JDS	EPCM	4	168	2,736
CB001	Nahanni	Concrete	4	48	8,592
CA201	Western Canadian Steel	Pre-Eng	-	-	-
0	Tetratech Eba	Geotech	-	-	84
CE001	Mueller	Electrical	-	-	3,384
0	Winfield/VETS	Mech/Pipe	-	-	1,944
	AUL	Structural	10	456	1,752
0	EWING	Earthworks	7	336	7,332
0	Clear Stream	Demolition	-	-	96
0	JDS McCaw	Drilling	-	-	288
0	RC	Crane	-	-	-
0	Hatch	Engineering	-	-	-
	Subtotal - EPCM Construction Contractors		**25**	**1,008**	**26,208**
	Visitors		-	-	-
	Total - Site		**25**	**1,008**	**26,208**

PROJECT PHOTOS

HLF – Progressing through 7th lift



WTP - Installation of platform & handrails on thickener

WTP - Installing lower portion of stairs on thickener

JDS	Victoria Gold Daily Construction Report				April 28, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-1°C	7°C	Calm	Light snow

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	Norseman Mobilized and started shaking out steel
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	Ongoing Erection of Thickener Tank

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
General
Received flocculation tank for MWTP
Started bolting together trusses
Ewing assisting with silt management sumps
WTP Phase 1 Mechanical – AUL Industrial
Setting oxidation tank on coordinates
Started leveling rakes
Finishing installation of stairs to thickener tank
WTP Concrete – Nahanni
Continuing removing snap ties on concrete forms
Continued cleaning up edges and chamfers on concrete
Working on deficiency list
HLF Earthworks – Ewing
Continued hauling in new backfill and compacting lifts – 8th lift ongoing
Silt and water management

MANPOWER ON SITE

PBS	Clear Stream	Scope of Work	Personnel On Site	Hours This Week	Total Project Hou Date
	EPCM Construction Contractors				
	JDS	EPCM	4	216	
CB001	Nahanni	Concrete	4	96	
CA201	Western Canadian Steel	Pre-Eng	-	-	
0	Tetratech Eba	Geotech	-	-	
CE001	Mueller	Electrical	-	-	
0	Winfield/VETS	Mech/Pipe	-	-	
	AUL	Structural	5	516	1,812
0	EWING	Earthworks	7	420	
0	Clear Stream	Demolition	-	-	
0	JDS McCaw	Drilling	-	-	
0	RC	Crane	-	-	
0	Hatch	Engineering	-	-	
	Subtotal - EPCM Construction Contractors		**20**	**1,248**	**26,448**
	Visitors		-	-	
	Total - Site		**20**	**1,248**	**26,448**

PROJECT PHOTOS

WTP – Received flocculation tank

WTP – Cleaning up edges and chamfers on concrete

WTP – Hoisting and assembling trusses

JDS	Victoria Gold Daily Construction Report				April 29, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-1°C	9°C	Calm	Slightly cloudy

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	Norseman Mobilized and started shaking out steel
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	Ongoing Erection of Thickener Tank

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Relocated batch plant concrete to covered storage

Ewing assisting with silt management sumps

WTP Phase 1 Mechanical – AUL Industrial

Set floc tank upright

Started anchoring oxidation tank

WTP Building Erection – Norseman

Continued bolting together trusses

WTP Concrete – Nahanni

Continued removing snap ties on concrete forms

Continued cleaning up edges and chamfers on concrete

Working on deficiency list

HLF Earthworks – Ewing

Continued hauling in new backfill and compacting lifts – 8th lift ongoing

Silt and water management

MANPOWER ON SITE

PBS	Clear Stream	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
	EPCM Construction Contractors				
	JDS	EPCM	4	264	2,832
CB001	Nahanni	Concrete	4	144	8,688
CA201	Western Canadian Steel	Pre-Eng	-	-	-
0	Tetratech Eba	Geotech	-	-	84
CE001	Mueller	Electrical	-	-	3,384
0	Winfield/VETS	Mech/Pipe	-	-	1,944
	AUL	Structural	5	576	1,872
0	EWING	Earthworks	7	504	7,500
0	Clear Stream	Demolition	-	-	96
0	JDS McCaw	Drilling	-	-	288
0	RC	Crane	-	-	-
0	Hatch	Engineering	-	-	-
	Subtotal - EPCM Construction Contractors		**20**	**1,488**	**26,688**
	Visitors		-	-	-
	Total - Site		**20**	**1,488**	**26,688**

PROJECT PHOTOS

WTP – Standing flocculation tank

WTP – Bolting together trusses

Premix concrete for batch plant relocated to covered storage

JDS	Victoria Gold Daily Construction Report				April 30, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-1°C	10°C	Calm	Slightly cloudy

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Norseman Mobilization for MWTP Building Erection	April 22, 2022	April 25, 2022	Norseman Mobilized and started shaking out steel
Phase 1 Tank Installation Completion	May 15, 2022	May 15, 2022	Ongoing Erection of Thickener Tank

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
General
Ewing assisting with repairing roadways
Ewing assisting with silt management sumps
WTP Phase 1 Mechanical – AUL Industrial
Finished anchoring oxidation tank
Received and unloaded clarifier hopper and support steel
Prepping to stand clarifier
WTP Building Erection – Norseman
Continued bolting together trusses (5 completed)
WTP Concrete – Nahanni
Finished removing snap ties on concrete forms
Continued cleaning up edges and chamfers on concrete
Working on deficiency list
HLF Earthworks – Ewing
Continued hauling in new backfill and compacting lifts – completed final lift
Silt and water management

MANPOWER ON SITE

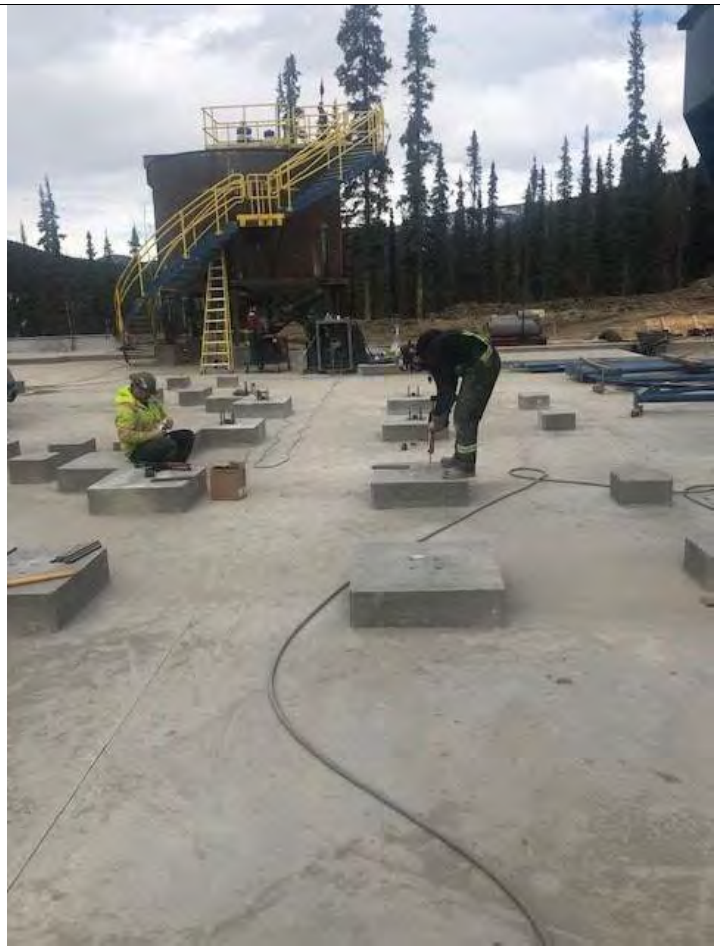
Clear Stream	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	312	2,880
Nahanni	Concrete	4	192	8,736
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	636	1,932
Norseman	Building erection	7	504	504
EWING	Earthworks	8	600	7,596
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**28**	**2,244**	**27,444**
Visitors		-	-	-
Total - Site		**28**	**2,244**	**27,444**

PROJECT PHOTOS

WTP – Received clarifier hopper and support steel

WTP – Anchored oxidation tank & stood second floc tank

WTP – Assembling trusses



WTP – prepping to stand clarifier

Ewing repairing roads

JDS	Victoria Gold Daily Construction Report				May 01, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		1°C	8°C	Slightly windy	Slightly cloudy

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 19, 2022	8 Trusses currently assembled
Bulk clarifier components installed	May 10, 2022	May 10, 2022	AUL standing and installing supporting steel

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Ewing assisting with water and silt management for phase 1B roads

WTP Phase 1 Mechanical – AUL Industrial

Started standing and installing support steel for clarifier

WTP Building Erection – Norseman

Continued bolting together trusses (8 completed)

WTP Concrete – Nahanni

Completed deficiency list

Started demobilizing

HLF Earthworks – Ewing

Continued hauling in new backfill and compacting lifts – completed final lift

Started loading, hauling, and stockpiling blast rock by the spring

MANPOWER ON SITE

Clear Stream	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	48	2,928
Nahanni	Concrete	4	48	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	60	1,992
Norseman	Building erection	7	84	588
EWING	Earthworks	8	96	7,692
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**28**	**336**	**27,780**
Visitors		-	-	-
Total - Site		**28**	**336**	**27,780**

PROJECT PHOTOS

WTP – Standing and installing clarifier support steel

WTP – Nahanni relocating seacans to lower laydown

JDS	Victoria Gold Daily Construction Report				May 02, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		1°C	8°C	Windy	Cloudy & intermittent rain

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 19, 2022	8 Trusses currently assembled
Bulk clarifier components installed	May 10, 2022	May 10, 2022	AUL reaming out clarifier mounting hoes

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Ewing assisting with water and silt management for phase 1B roads

WTP Phase 1 Mechanical – AUL Industrial

Finished standing support steel for clarifier

Continued reaming out mating plate holes

Temporary settling tank support assembled for installation

WTP Building Erection – Norseman

Continued bolting together trusses (8 completed)

WTP Concrete – Nahanni

Finished Demobilizing

HLF Earthworks – Ewing

Started loading, hauling, and stockpiling blast rock by the spring

Started excavating and installing finger drain by the spring

Removing snow piles of the east slope

MANPOWER ON SITE

Clear Stream	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	96	2,976
Nahanni	Concrete	-	48	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	120	2,052
Norseman	Building erection	7	168	672
EWING	Earthworks	8	192	7,788
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**624**	**28,068**
Visitors		-	-	-
Total - Site		**24**	**624**	**28,068**

PROJECT PHOTOS

Received 150T crane

HLF – Installing finger drain by the spring

HLF - Removing snow pile of the east slope

JDS	Victoria Gold Daily Construction Report				May 03, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		1°C	9°C	Slightly windy	Cloudy

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 19, 2022	10 Trusses currently assembled
Bulk clarifier components installed	May 10, 2022	May 10, 2022	Settling tank and hopper placed on support steel for clarifier 2

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Ewing assisting with water and silt management for phase 1B roads

WTP Phase 1 Mechanical – AUL Industrial

Received final clarifier settling tank

Finished reaming out clarifier mounting holes

Placed settling tank and hopper on steel supports for clarifier number two

WTP Building Erection – Norseman

Continued bolting together trusses (10 completed)

HLF Earthworks – Ewing

Continued loading, hauling, and stockpiling blast rock by the spring

Completed installing finger drain by spring

MANPOWER ON SITE

Clear Stream	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	144	3,024
Nahanni	Concrete	-	48	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	8	216	2,148
Norseman	Building erection	-	168	672
EWING	Earthworks	8	288	7,884
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**20**	**864**	**28,308**
Visitors		-	-	-
Total - Site		**20**	**864**	**28,308**

PROJECT PHOTOS

WTP – Received final clarifier settling tank

WTP – Clarifier settling tank support steel and hopper support assembled

WTP – Setting clarifier hopper on temporary support

WTP – Placing settling tank on support steel

JDS	Victoria Gold Daily Construction Report				May 04, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-1°C	9°C	Calm	Slightly cloudy

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 19, 2022	10 Trusses currently assembled
Bulk clarifier components installed	May 10, 2022	May 10, 2022	Bulk components placed for clarifier #1 & #2

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Ewing assisting with water and silt management for phase 1B roads

WTP Phase 1 Mechanical – AUL Industrial

Bolted settling tank onto hopper, and set floc tank for clarifier #2

Placed settling tank and hopper assembly onto support steel for clarifier #1

WTP Building Erection – Norseman

Finished bolting together trusses (10 completed), waiting for bulk clarifier components to be installed to bolt together remaining trusses.

HLF Earthworks – Ewing

Finished loading, hauling, and stockpiling blast rock by the spring

Completed installing finger drain by spring

MANPOWER ON SITE

Clear Stream	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	192	3,072
Nahanni	Concrete	-	48	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	8	312	2,244
Norseman	Building erection	-	168	672
EWING	Earthworks	6	360	7,956
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**18**	**1,080**	**28,524**
Visitors		-	-	-
Total - Site		**18**	**1,080**	**28,524**

PROJECT PHOTOS

WTP – Bolted settling tank onto hopper and placed floc tank for clarifier #2

WTP – Setting and bolting together hopper and settling tank for clarifier #1

WTP – Placed settling tank and hopper assembly on support steel for clarifier #1

HLF – Completed installing finger drain by spring

JDS	Victoria Gold Daily Construction Report				May 05, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-1°C	7°C	Calm	Slightly cloudy, intermittent snow

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 19, 2022	10 Trusses currently assembled
Bulk clarifier components installed	May 10, 2022	May 10, 2022	Bulk components placed and torqued for clarifier 1 & 2. Settling tank and hopper placed for clarifier 3.

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
General
Ewing assisting with water and silt management for phase 1B roads
WTP Phase 1 Mechanical – AUL Industrial
Bulk components installed for clarifier #2 & #1
Placed settling tank and hopper for clarifier #3
WTP Building Erection – Norseman
Finished bolting together trusses (10 completed), waiting for bulk clarifier components to be installed to bolt together remaining trusses.
Received last load of steel
HLF Earthworks – Ewing
Finished loading, hauling, and stockpiling blast rock by the spring
Completed installing finger drain by spring

MANPOWER ON SITE

Clear Stream	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	240	3,120
Nahanni	Concrete	-	48	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	8	408	2,340
Norseman	Building erection	-	252	756
EWING	Earthworks	2	336	7,932
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**14**	**1,284**	**28,728**
Visitors		-	-	-
Total - Site		**14**	**1,284**	**28,728**

PROJECT PHOTOS

WTP – Setting and bolting together floc tank for clarifier #1

WTP – Placed settling tank and hopper assembly on support steel for clarifier #3

JDS	Victoria Gold Daily Construction Report				May 06, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-1°C	6°C	Calm	Intermittent snow

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 19, 2022	10 Trusses currently assembled
Bulk clarifier components installed	May 10, 2022	May 10, 2022	Bulk components placed and torqued for clarifier 1 & 2. Settling tank and hopper torqued for clarifier 3.

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Ewing assisting with water and silt management for phase 1B roads

WTP Phase 1 Mechanical – AUL Industrial

Started torquing bulk components together for clarifier #3

Started pre-assembling filters for installation in settling tanks

WTP Building Erection – Norseman

Finished bolting together trusses required to start standing trusses, waiting for bulk clarifier components to be installed to continue.

HLF Earthworks – Ewing

Started shaping the east slope for phase 2A

MANPOWER ON SITE

Clear Stream	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	288	3,168
Nahanni	Concrete	-	48	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	9	516	2,448
Norseman	Building erection	-	252	756
EWING	Earthworks	2	360	7,956
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**15**	**1,464**	**28,908**
Visitors		-	-	-
Total - Site		**15**	**1,464**	**28,908**

PROJECT PHOTOS

Crew assembling 150T crane for use by Norseman

WTP – Pre-fabricating filters into sets of three, for installation in settling tanks

HLF – Shaping east slope

JDS	Victoria Gold Daily Construction Report				May 07, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-1°C	10°C	Calm	Intermittent snow

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 19, 2022	10 Trusses currently assembled
Bulk clarifier components installed	May 10, 2022	May 10, 2022	Bulk components placed and torqued for clarifier 1 & 2. Settling tank and hopper torqued for clarifier 3.

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Finished assembling 150T crane

Ewing assisting with silt management sump for environment

Ewing providing dust control with water truck

WTP Phase 1 Mechanical – AUL Industrial

Continued pre-assembling filters for installation in settling tanks

Started installing filters into settling tank #1

WTP Building Erection – Norseman

Finished bolting together trusses required to start standing trusses, waiting for bulk clarifier components to be installed to continue.

HLF Earthworks – Ewing

Continued shaping the east slope for phase 2A

MANPOWER ON SITE

Clear Stream	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	300	3,180
Nahanni	Concrete	-	48	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	3	504	2,436
Norseman	Building erection	-	252	756
EWING	Earthworks	2	384	7,980
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**8**	**1,488**	**28,932**
Visitors		-	-	-
Total - Site		**8**	**1,488**	**28,932**

PROJECT PHOTOS

Crew assembling 150T crane for use by Norseman

150T crane boom installed

	Victoria Gold Daily Construction Report				May 08, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-1°C	12°C	Calm	Slightly cloudy

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 19, 2022	Norseman mobilizing on May 11th
Bulk clarifier components installed	May 10, 2022	May 10, 2022	Bulk components placed and torqued for clarifier 1 & 2. Floc tank placed for clarifier #3.

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Ewing assisting with silt management sump for environment

Ewing providing dust control with water truck

WTP Phase 1 Mechanical – AUL Industrial

Continued installing filters into settling tank #1

Stood and placed floc tank for clarifier #3

WTP Building Erection – Norseman

Norseman mobilizing on May 11th

HLF Earthworks – Ewing

Repairing stress cracks on phase 1B dump

Ditching and water management on phase 3 access road

MANPOWER ON SITE

Clear Stream	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	36	3,216
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	3	36	2,472
Norseman	Building erection	-	-	756
EWING	Earthworks	2	24	8,004
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**8**	**96**	**29,028**
Visitors		-	-	-
Total - Site		**8**	**96**	**29,028**

PROJECT PHOTOS

WTP – Stood and placed floc tank for clarifier #3

WTP – Continued installing filters in clarifier #1

Phase 1B silt management sumps

HLF – Repairing phase 1B dump

JDS	Victoria Gold Daily Construction Report				May 09, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-2°C	10°C	Calm	Overcast

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 19, 2022	Norseman mobilizing on May 12th
Bulk clarifier components installed	May 10, 2022	May 10, 2022	Bulk components installed

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Ewing assisting with silt management sump for environment

Ewing providing dust control with water truck

WTP Phase 1 Mechanical – AUL Industrial

Floc tank installed for clarifier #3

Continued installing filters into settling tank #1

WTP Building Erection – Norseman

Norseman mobilizing on May 12th

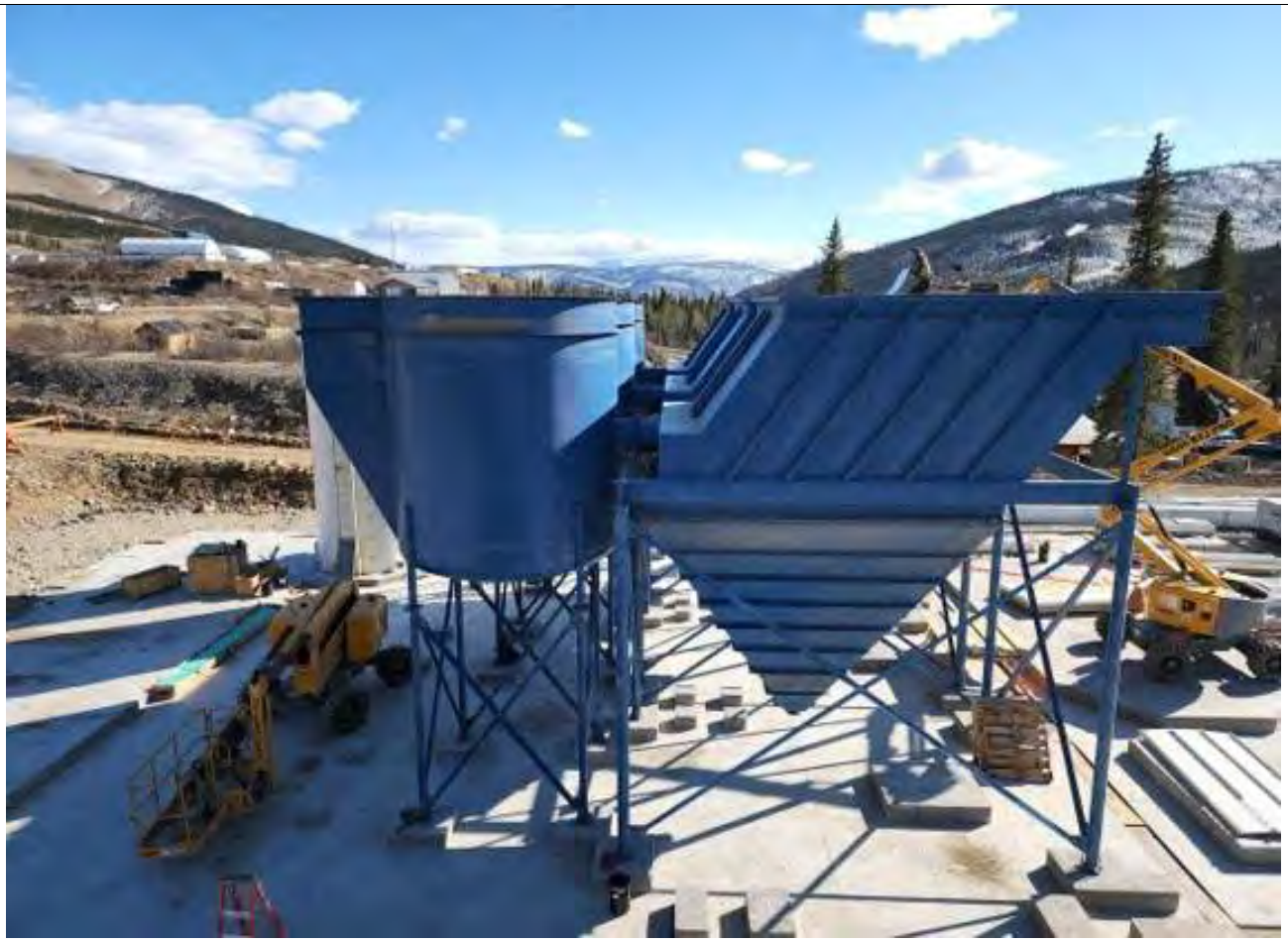
HLF Earthworks – Ewing

Ditching and water management on phase 3 access road

MANPOWER ON SITE

Clear Stream	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	72	3,252
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	3	72	2,508
Norseman	Building erection	-	-	756
EWING	Earthworks	2	48	8,028
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**8**	**192**	**29,124**
Visitors		-	-	-
Total - Site		**8**	**192**	**29,124**

PROJECT PHOTOS



WTP – Floc tank installed for clarifier #3

WTP – Continued installing filters in settling tank #1

JDS	Victoria Gold Daily Construction Report				May 10, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-3°C	6°C	Slightly windy	Snow

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 19, 2022	Norseman mobilizing on May 12th
Settling tank filter plate installation	May 20, 2022	May 20, 2022	Continuing installing filter plates on clarifier #1

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Ewing assisting with silt management sump for environment

Ewing providing dust control with water truck

WTP Phase 1 Mechanical – AUL Industrial

Continued installing filters into settling tank #1

WTP Building Erection – Norseman

Norseman mobilizing on May 12th

HLF Earthworks – Ewing

Continued ditching and water management on phase 3 access road

MANPOWER ON SITE

Clear Stream	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	5	132	3,312
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	132	2,568
Norseman	Building erection	-	-	756
EWING	Earthworks	2	72	8,052
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**12**	**336**	**29,268**
Visitors		-	-	-
Total - Site		**12**	**336**	**29,268**

PROJECT PHOTOS

WTP – Continued installing filters in settling tank for clarifier #1

HLF – Ditching and water management on phase 3 access roads

JDS	Victoria Gold Daily Construction Report				May 11, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-3°C	8°C	Calm	Light snow

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 19, 2022	Norseman mobilizing on May 12th
Settling tank filter plates installed	May 20, 2022	May 20, 2022	Continuing installing filter plates on clarifier #1

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Ewing assisting with silt management sump for environment

Ewing providing dust control with water truck

WTP Phase 1 Mechanical – AUL Industrial

Continued installing filters into settling tank #1

Grinding galvanizing off base plates

WTP Building Erection – Norseman

Norseman mobilizing on May 12th

HLF Earthworks – Ewing

Continued ditching and water management on phase 3 access road

MANPOWER ON SITE

Clear Stream	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	180	3,360
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	84
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	192	2,628
Norseman	Building erection	-	-	756
EWING	Earthworks	2	96	8,076
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**11**	**468**	**29,400**
Visitors		-	-	-
Total - Site		**11**	**468**	**29,400**

PROJECT PHOTOS

WTP – Continued installing filters in settling tank for clarifier #1

JDS	Victoria Gold Daily Construction Report				May 12, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-2°C	12°C	Calm	Overcast

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 25, 2022	Norseman mobilizing on May 12th
Settling tank filter plates installed	May 20, 2022	May 20, 2022	Continuing installing filter plates on clarifier #1

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

General

Ewing assisting with silt management sump for environment

Ewing providing dust control with water truck

WTP Phase 1 Mechanical – AUL Industrial

Completed installing filters into settling tank #1

Installed Settling tank #1 Weir Plates

Ground galvanizing off base plates of Building Columns

WTP Building Erection – Norseman

Norseman mobilized back to site

Moved 80' Manlifts from Security to Workfront

HLF Earthworks – Ewing

Continued ditching and water management on phase 3 access road

Tetratech on Site to Witness Lateral Drain Work

Excavated L2 Lateral Drain, completed header and backfilled

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	5	276	3,420
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	12	96
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	312	2,688
Norseman	Building erection	-	96	756
EWING	Earthworks	2	144	8,100
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	12	-
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**13**	**852**	**29,556**

PROJECT PHOTOS

WTP – Grinding Galvanizing from Baseplates

WTP – Settling Tank #1 FRP Plates Complete – Weirs Installed

JDS	Victoria Gold Daily Construction Report				May 13, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-2°C	12°C	Calm	Sun and Cloud

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 25, 2022	Norseman 66% completed erection of building's northern columns
Settling tank filter plates installed	May 20, 2022	May 20, 2022	Began installing filter plates on clarifier #2

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

Ewing continuing to provide dust control with water truck

WTP Phase 1 Mechanical – AUL Industrial

50% of FRP plates installed in Settling Tank #2

WTP Building Erection – Norseman

Erected 10 of 15 columns on the northern side of the building

Leveled out a crane pad on the road at the south side of the building to facilitate column erection for the following day

HLF Earthworks – Ewing

Tetratech on site to witness lateral drain work

D10 dozer cutting in the 1065 bench

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	312	3,456
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	36	108
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	372	2,748
Norseman	Building erection	8	192	852
EWING	Earthworks	7	288	8,184
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	1	24	12
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**25**	**1,224**	**29,856**

PROJECT PHOTOS

WTP – Erection of Northern Building Columns

HLF – D10 Cutting 1065 Bench

JDS	Victoria Gold Daily Construction Report				May 14, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-3°C	15°C	Calm	Sunny

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 25, 2022	Norseman 66% completed erection of building's southern columns
Settling tank filter plates installed	May 20, 2022	May 20, 2022	Continuing installation of filter plates on clarifier #2

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

Ewing continuing to provide dust control with water truck
Received first load of WTP tanks from Polyprocessing

WTP Phase 1 Mechanical – AUL Industrial

Continuation of installation of FRP plates in Settling Tank #2

WTP Building Erection – Norseman

Erected 10 of 15 columns on the southern side of the building. 5 remaining columns to be installed on south and north ends once AUL completes clarifiers

HLF Earthworks – Ewing

Tetratech on site to witness lateral drain work

D10 dozer cutting in the 1065 bench

Lateral Drain Installation complete/ Backfill ongoing

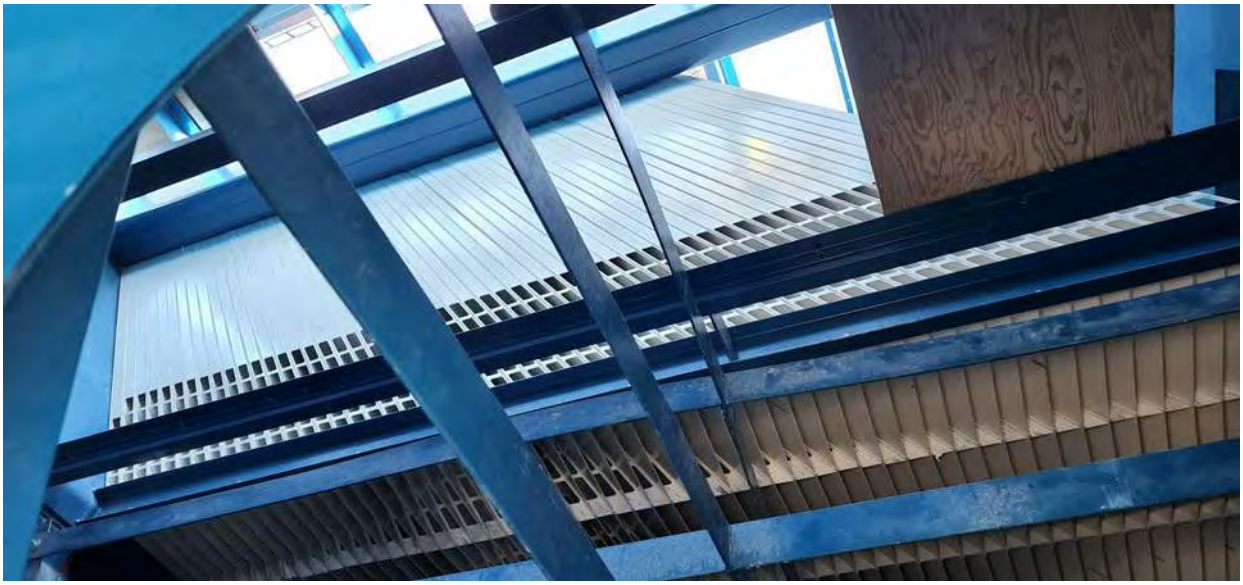
Backfill compaction testing completed – (Method Spec)

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	312	3,492
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	36	120
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	372	2,808
Norseman	Building erection	8	192	948
EWING	Earthworks	7	288	8,268
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	1	24	24
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**25**	**1,224**	**30,156**

PROJECT PHOTOS

WTP – Erection of Southern Building Columns



WTP – Ongoing FRP Filter Plates in Clarifier 102 (Bottom View)

JDS	Victoria Gold Daily Construction Report				May 15, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-1°C	13°C	Moderate	Light Snow/Sun

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 25, 2022	Norseman prepping columns for truss erection and assembling remaining trusses
Settling tank filter plates installed	May 20, 2022	May 20, 2022	Completed installation of filter plates on clarifier #2

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

Ewing continuing to provide dust control with water truck
Received/offloaded two Reaction Tanks (TK-101,TK-102), Filtrated Decant Tank (TK-501), CIP Tank (TK-201)

WTP Phase 1 Mechanical – AUL Industrial

Completed installation of FRP plates in Settling Tank #2

Began installation of baffles in Flocculation Tanks

Shaking out motors for agitators

Preparing for first oil fills on the agitator gear boxes

WTP Building Erection – Norseman

Plumbed and leveled columns in preparation of truss installation

Assembled 3 truss sections (3 remaining)

HLF Earthworks – Ewing

Minimal progress today due to ground material saturation

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	72	3,528
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	120
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	120	2,868
Norseman	Building erection	8	192	1,044
EWING	Earthworks	7	168	8,352
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	1	24	36
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**576**	**30,444**

PROJECT PHOTOS

WTP – Offloading of Tanks (Reaction - 101 & 102, CIP - 204, Filtrate - 501)

WTP – Installation of Baffle in Flocculation Tank of TK-103

WTP – Assembly of Truss Sections

JDS	Victoria Gold Daily Construction Report				May 16, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		0°C	14°C	Calm	Sun & Cloud

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 25, 2022	Erected 2 trusses with purlins
Settling tank filter plates installed	May 20, 2022	May 20, 2022	Completed installation of weir plates on clarifier #2

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

Ewing continuing to provide dust control with water truck

WTP Phase 1 Mechanical – AUL Industrial

Completed installation of weir plates in Settling Tank #2

Leveled weir plates in Settling Tank #1&2 – Still need to silicone the plates at height but that will happen during commissioning

Assembled agitators in preparation for installation

Confirmed motor specs and rotation was the proper direction for the agitators

WTP Building Erection – Norseman

Erected two truss sections

Installed purlins between the two trusses

HLF Earthworks – Ewing

Completed the 1065 East Bench road

Completed the last of the phase 2 lateral drain backfills

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	108	3,564
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	120
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	180	2,928
Norseman	Building erection	8	288	1,140
EWING	Earthworks	7	252	8,436
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	1	36	48
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**864**	**30,732**

PROJECT PHOTOS

WTP – Installation of First Truss Sections and Purlins

HLF – 1065 Bench

HLF – Lateral Drain Backfill

JDS	Victoria Gold Daily Construction Report				May 17, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		2°C	11°C	Calm	Overcast

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 22, 2022	Erected 2 trusses with purlins
Exterior building skin installation	June 6, 2022	May 31, 2022	Pending truss erection completion
Settling tank filter plates installed	May 20, 2022	May 20, 2022	Completed installation of weir plates on clarifier #2

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
Ewing continuing to provide dust control with water truck
Supporting the design and build of the TCP (Temporary Control Pond)
WTP Phase 1 Mechanical – AUL Industrial
Installed agitators in the Flocculation Tanks – (inclusive of motors and gearboxes)
Installed additional stair support leg to provide required support on the Thickener Tank
WTP Building Erection – Norseman
Erected six truss sections
Installed purlins between these six trusses
HLF Earthworks – Ewing
Hauled 500 m^3 down from Phase 3 to begin shaping of Phase 2

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	144	3,600
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	120
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	240	2,988
Norseman	Building erection	8	384	1,236
EWING	Earthworks	7	336	8,520
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	1	48	60
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**1,152**	**31,020**

PROJECT PHOTOS

WTP – Installation of Truss Sections and Purlins

HLF – Progress View From Camp

WPT – Flocculation Tank Agitators Installed

JDS	Victoria Gold Daily Construction Report				May 18, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		0°C	9°C	Calm	Overcast

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 22, 2022	Remaining North and South columns erected
Exterior building skin installation	June 6, 2022	May 31, 2022	Pending truss erection completion
Settling tank filter plates installed	May 20, 2022	May 22, 2022	Workfront paused to allow for building erection to carry out overhead

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
Ewing continuing to provide dust control with water truck
Began ground preparation of the TCM (Temporary Control Pond)
WTP Phase 1 Mechanical – AUL Industrial
Began installing the raker on the Thickener Tank
Prepared end plates for Norseman columns (East & West)
Cut shim plates for Norseman columns (remaining 6 to be erected)
Installed FRP Plate angle supports in Clarifier #3
WTP Building Erection – Norseman
Did not have a 150 Ton crane operator on site due to shift change until the afternoon resulting in no progress on truss installation
Focus today was to touch up purlin installation and perform installations that could be completed with a telehandler
Stayed 20 minutes late to finish installation of the 3 North and South columns
HLF Earthworks – Ewing
Removing coarse material from Phase 2
Preparing for two remaining lateral drains on the East slope. *May 16th there was a misinterpretation in information in saying that all lateral drain work was complete

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	180	3,636
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	120
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	300	3,048
Norseman	Building erection	8	480	1,332
EWING	Earthworks	7	420	8,604
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	1	60	72
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**1,440**	**31,308**

PROJECT PHOTOS

WTP – Remaining Six Columns Erected

TCP – Ground Preparation Before Excavation Begins

WPT – Offloading Clarifier Platform Steel

JDS	Victoria Gold Daily Construction Report				May 19, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-1°C	11°C	Calm	Sun & Cloud

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 22, 2022	Three trusses remaining to be erected
Exterior building skin installation	June 6, 2022	May 31, 2022	Pending truss erection completion
Settling tank filter plates installed	May 20, 2022	May 22, 2022	50% complete FRP plate installation in Clarifier #3

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
Ewing continuing to provide dust control with water truck
Shaping and extending the front end of the ETP – excavation to begin tomorrow
Offloaded one truckload of structural steel for the Clarifier work platform
WTP Phase 1 Mechanical – AUL Industrial
50% complete FRP plate installation in Clarifier #3
Began to weld the South wall columns down onto the foundation saddle plates along with the winches
WTP Building Erection – Norseman
Installed four trusses with purlins – three remaining
Laid out location for the winches to be welded down to the foundation saddle plates by AUL
HLF Earthworks – Ewing
Extended the header drain – see photo below
Continuing lateral drain installation
Began shaping of the East slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	216	3,672
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	120
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	360	3,108
Norseman	Building erection	8	576	1,428
EWING	Earthworks	7	504	8,688
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	1	72	84
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**1,728**	**31,596**

PROJECT PHOTOS

WTP – Columns and Building Fabric Winches Welded to Foundation Saddle Plate

HLF – Header Extension Denoted with Freshly Laid 38mm Aggregate

JDS	Victoria Gold Daily Construction Report				May 20, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		0°C	16°C	Calm	Sunny

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Trusses assembled and erected	May 19, 2022	May 22, 2022	Truss erection completed with cross bracing to follow
Exterior building skin installation	June 6, 2022	May 31, 2022	Pending cross bracing installation
Settling tank filter plates installed	May 20, 2022	May 22, 2022	50% complete FRP plate installation in Clarifier #3

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
Ewing continuing to provide dust control with water truck
Excavation has begun on the front end of the TCP
Offloaded the last of the reaction tanks (TK-103)
WTP Phase 1 Mechanical – AUL Industrial
Completed 50% of welding of the South wall columns down onto the foundation saddle plates along with the winches
Installed 50% of tarp tie downs along South wall
WTP Building Erection – Norseman
All trusses have been erected
Installation of remaining cross cables to follow – 40% complete to date
HLF Earthworks – Ewing
Continuing lateral drain excavation
Beginning to backfill 1B interceptor ditch

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	252	3,708
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	120
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	420	3,168
Norseman	Building erection	8	672	1,524
EWING	Earthworks	7	588	8,772
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	1	84	96
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**2,016**	**31,884**

PROJECT PHOTOS

HLF – Lateral Drain Work Excavation on 1065 Bench

TCP – Excavation Beginning on Front End of Pond

WTP – All Trusses Have Been Erected with Cross Bracing to Follow

WTP – Offloading of Reaction Tank #3 (TK-103)

JDS	Victoria Gold Daily Construction Report				May 21, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		0°C	20°C	Calm	Sunny

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkaways and platforms	May 25, 2022	May 31, 2022	Beginning to assemble platform support steel
Exterior building skin installation	June 6, 2022	May 31, 2022	Pending completion of building steel erection
Settling tank filter plates installed	May 20, 2022	May 22, 2022	85% complete FRP plate installation in Clarifier #3
CM-201 main mechanical contract award	May 30, 2022	May 30, 2022	Currently reviewing bid submissions from AUL, Gisborne and Winfield

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

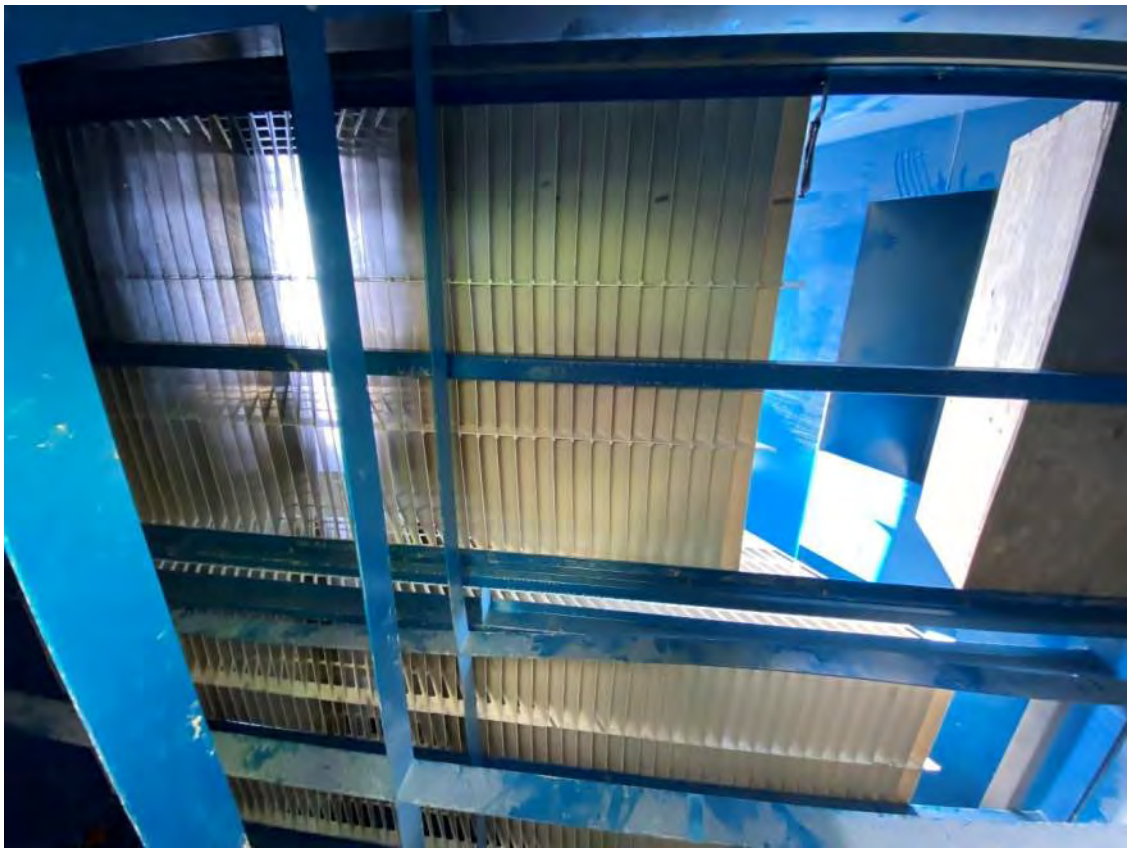
Activity
Ewing continuing to provide dust control with water truck
TCP – Continuing front end excavation while shaping the side walls as work proceeds
WTP Phase 1 Mechanical – AUL Industrial
85% of Clarifier #3 FRP plates have been installed
Began shake out of Clarifier work platform steel
Clarifier work platform supports being assembled in advance of installation while crane was being used for the East end wall column installation
WTP Building Erection – Norseman
Began installation of East end wall columns
Installing remaining side wall girts
HLF Earthworks – Ewing
Completed lateral drain 2 East
Continued shaping of East slope and packing soil

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	252	3,744
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	120
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	5	420	3,228
Norseman	Building erection	8	672	1,620
EWING	Earthworks	7	588	8,856
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	1	84	108
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**2,016**	**32,172**

PROJECT PHOTOS

WTP – Erection of East End Wall Columns



WTP – Installation of FRP Plates in Clarifier #3 (TK-103)

WTP – Assembly of Clarifier Work Platform Supports

TCP – Ongoing Excavation of the Front End and Shaping of Side Walls

JDS	Victoria Gold Daily Construction Report				May 22, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		3°C	15°C	Calm	Sunny

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkaways and platforms	May 25, 2022	May 31, 2022	Continuing to assemble platform support steel
Exterior building skin installation	June 6, 2022	May 31, 2022	Pending completion of building steel erection
Settling tank filter plates installed	May 20, 2022	May 22, 2022	FRP plates and weir plates completed in Clarifier #3
CM-201 main mechanical contract award	May 30, 2022	May 30, 2022	Currently reviewing bid submissions from AUL, Gisborne and Winfield

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
Ewing continuing to provide dust control with water truck
TCP – As Ewing continues to excavate deeper, they are running into material consisting of large boulders and sand
WTP Phase 1 Mechanical – AUL Industrial
Completed Clarifier #3 FRP plates and weir plate installation
Began erecting stair stringers and supports for the Clarifier work platform
Welded 13/15 North columns down to the foundation saddle plates
Began installing 1” ball valve sample lines on each of the Clarifiers
WTP Building Erection – Norseman
Installed all West end wall column steel
Installed 8/10 brace purlins on West end wall
HLF Earthworks – Ewing
Completed subgrade preparation of lateral drain #2 East and beginning to backfill
Continued shaping of East slope and packing soil

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	72	3,780
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	120
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	7	168	3,312
Norseman	Building erection	8	192	1,716
EWING	Earthworks	7	168	8,940
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	1	24	120
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**26**	**624**	**32,484**

PROJECT PHOTOS

WTP – Completed Installation of FRP Plates in Clarifier #3 (TK-103)

HLF – Lateral #2 East Subgrade Preparation

WTP – Clarifier Work Platform Stair Stringer Installation

JDS	Victoria Gold Daily Construction Report				May 23, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		0°C	12°C	Calm	Overcast

Site Designate: Please contact codyr@jdsmining.ca or bramk@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkaways and platforms	May 25, 2022	May 31, 2022	Continuing to install stair stringers and platform supports
Exterior building skin installation	June 6, 2022	May 31, 2022	Pending completion of building steel erection
CM-201 main mechanical contract award	May 30, 2022	May 30, 2022	Currently reviewing bid submissions from AUL, Gisborne and Winfield

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
Ewing continuing to provide dust control with water truck
TCP – As requested by Victoria Gold, excavation has finished before the entire excavation has been completed to bring survey in to sign off on an As-Built drawing
TCP – Planned to test pond with a test fill to evaluate it's capacity upon the receipt of an As-Built drawing
Compiling CE-201 (Electrical and Instrumentation Installation) RFP package to go out for bid this week
WTP Phase 1 Mechanical – AUL Industrial
Completed inspection of Thickener Tank rake – all measurements were within tolerance
Drilled and installed baseplate anchors for clarifier structural support steel installation
Installed Clarifier stair stringer #2 and assembled #3 to be ready for when remainder of material arrives
WTP Building Erection – Norseman
Installed girts between West end wall columns
Ensured that there would be ample open space between the East end wall columns to be able to bring the reaction tanks in.
HLF Earthworks – Ewing
Lined lateral drain #2 East and laid pipe in over fill material (10cm) before covering pipe with fill (30cm) - Ongoing

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	72	3,780
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	120
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	7	168	3,312
Norseman	Building erection	8	192	1,716
EWING	Earthworks	7	168	8,940
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	1	24	120
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**26**	**624**	**32,484**

PROJECT PHOTOS

WTP – Completed Inspection of Thickener to Confirm Dimensional Tolerance Conformance

HLF – Lateral #2 East Inlay of Drain Pipe

WTP – Receiving First Truckload of Module Rack Components

TCP – Surveyed Pond Prior to Obtaining an As- Built Drawing and Test Filling

JDS	Victoria Gold Daily Construction Report				May 24, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		3°C	12°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkaways and platforms	May 25, 2022	May 31, 2022	Continuing to install stair stringers and platform supports
Exterior building skin installation	June 6, 2022	May 31, 2022	Pending completion of building steel erection
CM-201 main mechanical contract award	May 30, 2022	May 30, 2022	Currently reviewing bid submissions from AUL, Gisborne and Winfield

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
Ewing continuing to provide dust control with water truck
TCP – Survey of the pond complete and As-Built received
TCP – Victoria Gold to decide when they want to test the pond prior to use
Compiling CE-201 (Electrical and Instrumentation Installation) RFP package to go out for bid this week
WTP Phase 1 Mechanical – AUL Industrial
Completed welding of North columns to the foundation saddle plates – made sure to sweat the moisture out of the plates due to the previous night's rain
Installing HSS along the base of the building for building fabric tie down points
WTP Building Erection – Norseman
Continued installing secondary steel
HLF Earthworks – Ewing
Removing riprap from Phase 1A interceptor ditch
Continuing to shape East slope of Phase 2
Beginning to cut 1065 Bench on the West slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	156	3,852
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	120
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	7	336	3,480
Norseman	Building erection	8	396	1,908
EWING	Earthworks	7	336	9,108
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	24	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**25**	**1,248**	**33,096**

PROJECT PHOTOS

WTP – Welding of North Columns to Foundation Saddle Plates

WTP – Building Fabric HSS Tie Down

WTP – West End Wall Secondary Steel Installation

JDS	Victoria Gold Daily Construction Report				May 25, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		3°C	10°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkaways and platforms	May 25, 2022	May 31, 2022	Continuing to install stair stringers and platform supports
Exterior building skin installation	June 6, 2022	May 31, 2022	Pending completion of building steel erection
CM-201 main mechanical contract award	May 30, 2022	May 30, 2022	Currently reviewing bid submissions from AUL, Gisborne and Winfield

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
Ewing continuing to provide dust control with water truck
Electrical and Instrumentation Installation RFP package out for bid
WTP Phase 1 Mechanical – AUL Industrial
Completed Installation of HSS along the base of the building for building fabric tie down points
Started grouting under column saddle plates
WTP Building Erection – Norseman
Continued installing secondary steel in preparation of liner pull
HLF Earthworks – Ewing
Continued inlay of lateral east #2 perforated drainage pipe and geotextile
Continued backfilling lateral east #2
Removing riprap from Phase 1B interceptor ditch and started backfilling
Continued general shaping of phase 2 East slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	156	3,900
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	120
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	3	288	3,516
Norseman	Building erection	9	396	2,016
EWING	Earthworks	11	384	9,240
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	24	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**27**	**1,248**	**33,420**
Visitors		-	-	-
Total - Site		**27**	**1,248**	**33,420**

PROJECT PHOTOS

WTP – Neutralization Tank Set on Pedestal

WTP – Grouting Underneath Saddle Plates

HLF – Continued Inlay of Lateral #2 East Drain Pipe and Geotextile fabric

JDS	Victoria Gold Daily Construction Report				May 26, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		3°C	10°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkaways and platforms	May 25, 2022	May 31, 2022	Continuing to install stair stringers and platform supports
Exterior building skin installation	June 6, 2022	May 31, 2022	Started pulling exterior fabric over building trusses
CM-201 main mechanical contract award	May 30, 2022	May 30, 2022	Currently reviewing bid submissions from AUL, Gisborne and Winfield

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity

Ewing continuing to provide dust control with water truck

Electrical and Instrumentation Installation RFP package out for bid

WTP Phase 1 Mechanical – AUL Industrial

Continued grouting under column saddle plates

WTP Building Erection – Norseman

Started pulling exterior layer of fabric on building trusses, 5 of 14 completed

HLF Earthworks – Ewing

Completed inlay of Lateral East #2 perforated drainage pipe, geotextile, and backfilled up to grade

Removing riprap from Phase 1B interceptor ditch up to Phase 2 interceptor – Ongoing

Continued general shaping of Phase 2 East slope

Prepping Lateral East #1 lateral for excavation

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	204	3,948
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	120
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	3	372	3,600
Norseman	Building erection	9	504	2,124
EWING	Earthworks	11	516	9,372
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	24	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**27**	**1,620**	**33,792**
Visitors		-	-	-
Total - Site		**27**	**1,620**	**33,792**

PROJECT PHOTOS

WTP – First Fabric Pull on Building Trusses

WTP – Continuing to Pull Fabric

WTP – Continued Grouting Underneath Column Saddle Plates

JDS	Victoria Gold Daily Construction Report				May 27, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		3°C	14°C	Slightly Windy	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkaways and platforms	May 25, 2022	May 31, 2022	Continuing to install stair stringers and platform supports
Exterior building skin installation	June 6, 2022	May 31, 2022	Continuing to pull exterior fabric over building trusses
CM-201 main mechanical contract award	May 30, 2022	May 30, 2022	Currently reviewing bid submissions from AUL, Gisborne and Winfield

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
Ewing continuing to provide dust control with water truck
WTP Phase 1 Mechanical – AUL Industrial
Continued grouting under column saddle plates
WTP Building Erection – Norseman
Continued pulling exterior layer of fabric over building trusses, 9 of 14 completed
HLF Earthworks – Ewing
Removing riprap from Phase 1B interceptor ditch up to Phase 2 interceptor – Ongoing
Continued general shaping of Phase 2 East slope
Started backfilling the underdrain header collection pipe
Established bench for lateral and started Lateral #1 East excavation
Repairs and water management on Phase 2 Interceptor access road

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	252	3,996
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	120
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	4	420	3,648
Norseman	Building erection	8	600	2,220
EWING	Earthworks	11	648	9,504
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	24	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**27**	**1,944**	**34,116**
Visitors		-	-	-
Total - Site		**27**	**1,944**	**34,116**

PROJECT PHOTOS

WTP – Pulling Exterior Layer of Fabric Over Trusses

HLF – Backfilling the Underdrain header Collection Pipe

HLF – Started Excavating and Grading Lateral #1 East

JDS	Victoria Gold Daily Construction Report				May 28, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		3°C	16°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkaways and platforms	May 25, 2022	June 7, 2022	Delayed, waiting for final delivery from Mexico. Expected June 3
Roof Interior and Exterior building skin installation	June 6, 2022	June 3, 2022	Completed pulling exterior fabric over trusses. Waiting on truss banding to be completed before installing interior fabric under trusses.
CM-201 main mechanical contract award	May 30, 2022	May 30, 2022	Currently reviewing bid submissions from AUL, Gisborne and Winfield

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Informal HSE Inspection Completed at the WTP

TODAYS ACTIVITIES

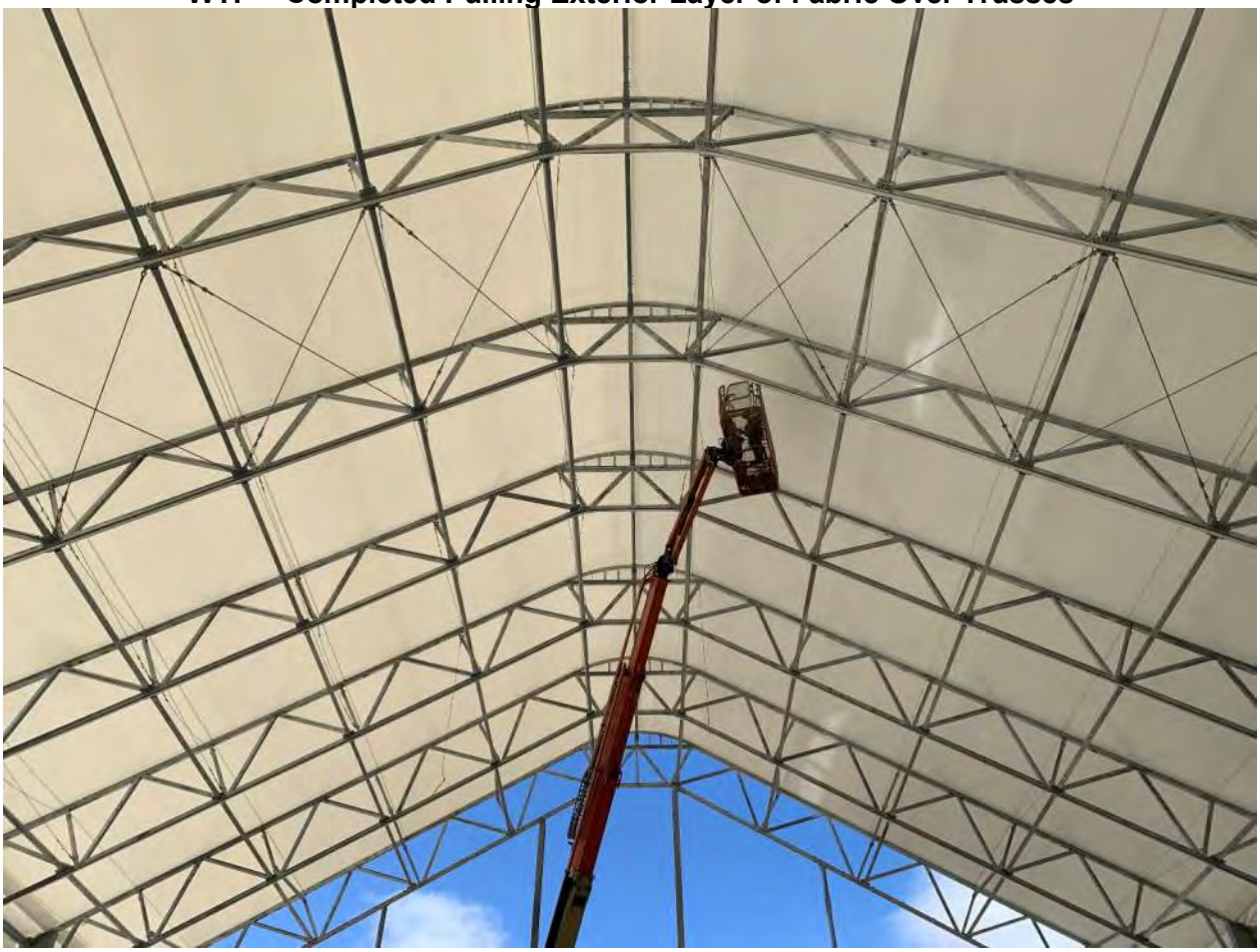
Activity
Received 2 loads of HDPE overland piping, 16” and 12”
Received three reagent tanks, TK-801, TK-1201, TK-701
WTP Phase 1 Mechanical – AUL Industrial
Continued grouting under column saddle plates
WTP Building Erection – Norseman
Completed pulling exterior layer of fabric over building trusses
Started installing banding in between trusses
HLF Earthworks – Ewing
Removing silt buildup from Phase 1B interceptor ditch
Cleaning out silts and mud from Phase 1 header collection pipe tie in location
Continued general shaping of Phase 2 West slope
Completed backfilling the underdrain header collection pipe up to 1066m elevation
Continued repairing and water management on Phase 2 Interceptor access road

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	300	4,044
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	120
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	4	468	3,696
Norseman	Building erection	8	696	2,316
EWING	Earthworks	11	780	9,636
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	24	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**27**	**2,268**	**34,440**
Visitors		-	-	-
Total - Site		**27**	**2,268**	**34,440**

PROJECT PHOTOS

WTP – Completed Pulling Exterior Layer of Fabric Over Trusses



WTP – Installing Banding Between Trusses

HLF – Installation of Geotextile in Phase 2 Interceptor Ditch

HLF – Continuing to Excavate and Grade Lateral #1 East

JDS	Victoria Gold Daily Construction Report				May 29, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		2°C	19°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkaways and platforms	May 25, 2022	June 7, 2022	Delayed, waiting for final delivery from Mexico. Expected June 3
Roof Interior and Exterior building skin installation	June 6, 2022	June 5, 2022	Completed pulling exterior fabric over trusses. Waiting on truss banding to be completed before installing interior fabric under trusses.
CM-201 main mechanical contract award	May 30, 2022	May 30, 2022	Currently reviewing bid submissions from AUL, Gisborne and Winfield

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAYS ACTIVITIES

Activity
Received 1 load of HDPE overland piping
WTP Phase 1 Mechanical – AUL Industrial
Continued grouting under column saddle plates
Started building grout forms around column bases
WTP Building Erection – Norseman
Continued installing banding in-between trusses
HLF Earthworks – Ewing
Continuing to remove silt buildup from Phase 1B interceptor ditch
Received subgrade approval for Lateral #1 East and started laying geotextile and drainpipe
Ewing assisting process at the 336
Completed header tie in location for final fuse and connection
Continued general shaping of Phase 2 West slope
Repairing and water management on Phase 2 Interceptor access road on hold, waiting for road to dry up

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	36	4,080
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	12	132
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	4	48	3,744
Norseman	Building erection	8	96	2,412
EWING	Earthworks	11	132	9,768
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**27**	**324**	**34,764**
Visitors		-	-	-
Total - Site		**27**	**324**	**34,764**

PROJECT PHOTOS

WTP – Continuing to Install Banding In-between Trusses

HLF – Excavating Interceptor Ditch

HLF – Excavating Lateral #1

JDS	Victoria Gold Daily Construction Report				May 30, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		2°C	23°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkaways and platforms	May 25, 2022	June 7, 2022	Delayed, waiting for final delivery from Mexico. Expected June 3
Roof Interior and Exterior building skin installation	June 6, 2022	June 5, 2022	Completed pulling exterior fabric over trusses. Waiting on truss banding to be completed before installing interior fabric under trusses.
CM-201 main mechanical contract award	May 30, 2022	May 30, 2022	Currently reviewing bid submissions from AUL, Gisborne, and Winfield

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity
Received microfiltration modules and skids
WTP Phase 1 Mechanical – AUL Industrial
Completed grouting under column saddle plates
Continued building grout forms around column bases
WTP Building Erection – Norseman
Continued installing banding in-between trusses
Started trimming excess fabric hanging over roof trusses
HLF Earthworks – Ewing
Completed removal of silt buildup and started backfilling Phase 1B interceptor ditch
Continued laying geotextile and drainpipe for Lateral #1 East
Continued assisting process with preg pump repairs
Backfilling phase 1 interceptor ditch
Continued general shaping of Phase 2 West slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	72	4,116
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	12	132
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	4	96	3,792
Norseman	Building erection	8	192	2,508
EWING	Earthworks	11	264	9,900
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**26**	**636**	**35,076**
Visitors		-	-	-
Total - Site		**26**	**636**	**35,076**

PROJECT PHOTOS

WTP – Poured Concrete Underneath Clarifier Stairs

WTP – Column Base Forms Installed and Level

HLF – Backfilling Phase 1 Interceptor Ditch

JDS	Victoria Gold Daily Construction Report				May 31, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		10°C	24°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkaways and platforms	May 25, 2022	June 7, 2022	Delayed, waiting for final delivery from Mexico. Expected June 3
Roof Interior and Exterior building skin installation	June 6, 2022	June 5, 2022	Completed pulling exterior fabric over trusses. Waiting on truss banding to be completed before installing interior fabric under trusses.
CM-201 main mechanical contract award	May 30, 2022	May 30, 2022	Currently reviewing bid submissions from AUL, Gisborne, and Winfield

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity
Started building concrete form for tepid water skid
WTP Phase 1 Mechanical – AUL Industrial
Continued building grout forms around column bases and adding pour strips
WTP Building Erection – Norseman
Continued installing banding in-between trusses
Continued trimming excess fabric hanging over roof trusses
HLF Earthworks – Ewing
Continued backfilling Phase 1B interceptor ditch
Continued laying geotextile and drainpipe for Lateral #1 East
Continued general shaping of Phase 2 West slope
Continued Installing riprap in phase 2 interceptor ditch

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	108	4,152
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	12	132
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	4	144	3,840
Norseman	Building erection	8	288	2,604
EWING	Earthworks	11	396	10,032
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**26**	**948**	**35,388**
Visitors		-	-	-
Total - Site		**26**	**948**	**35,388**

PROJECT PHOTOS

WTP – Continued Trimming Excess Truss Fabric

WTP – Installing Banding In-between Trusses

HLF – Continued Backfilling Phase 1B Interceptor

HLF – Laying Pipe and Geotextile for Lateral 1 East

JDS	Victoria Gold Daily Construction Report				June 1, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		10°C	24°C	Slightly Windy	Intermittent rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkaways and platforms	May 25, 2022	June 7, 2022	Delayed, waiting for final delivery from Mexico. Expected June 3
CM-201 main mechanical contract award	May 30, 2022	May 30, 2022	Currently reviewing bid submissions from AUL, Gisborne, and Winfield

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity

Completed building concrete form for tepid water skid

WTP Phase 1 Mechanical – AUL Industrial

Continued building grout forms around column bases and adding pour strips

WTP Building Erection – Norseman

Completed installing banding in-between trusses

Continued trimming excess fabric hanging over roof trusses, south wall completed

HLF Earthworks – Ewing

Completed backfilling Phase 1B interceptor ditch

Completed Installation of Lateral #1 East geotextile and drainpipe up to current subgrade approval

Continued general shaping of Phase 2 West slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	144	4,188
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	12	132
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	1	156	3,852
Norseman	Building erection	8	384	2,700
EWING	Earthworks	11	528	10,164
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**1,224**	**35,664**
Visitors		-	-	-
Total - Site		**23**	**1,224**	**35,664**

PROJECT PHOTOS

WTP – Continued Trimming Excess Truss Fabric

WTP – Grout Forms and Chamfer Strips Installed Underneath Columns

WTP – Installing Rebar in Concrete Form for Tepid Water Skid

JDS	Victoria Gold Daily Construction Report				June 2, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		11°C	24°C	Slightly Windy	Intermittent rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkaways and platforms	May 25, 2022	June 15, 2022	Delayed, waiting for final delivery from Mexico. Expected June 7. AUL to start working on column bracing before walkways to avoid getting in Norseman's way.
CM-201 main mechanical contract award	May 30, 2022	May 30, 2022	Currently reviewing bid submissions from AUL, Gisborne, and Winfield

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

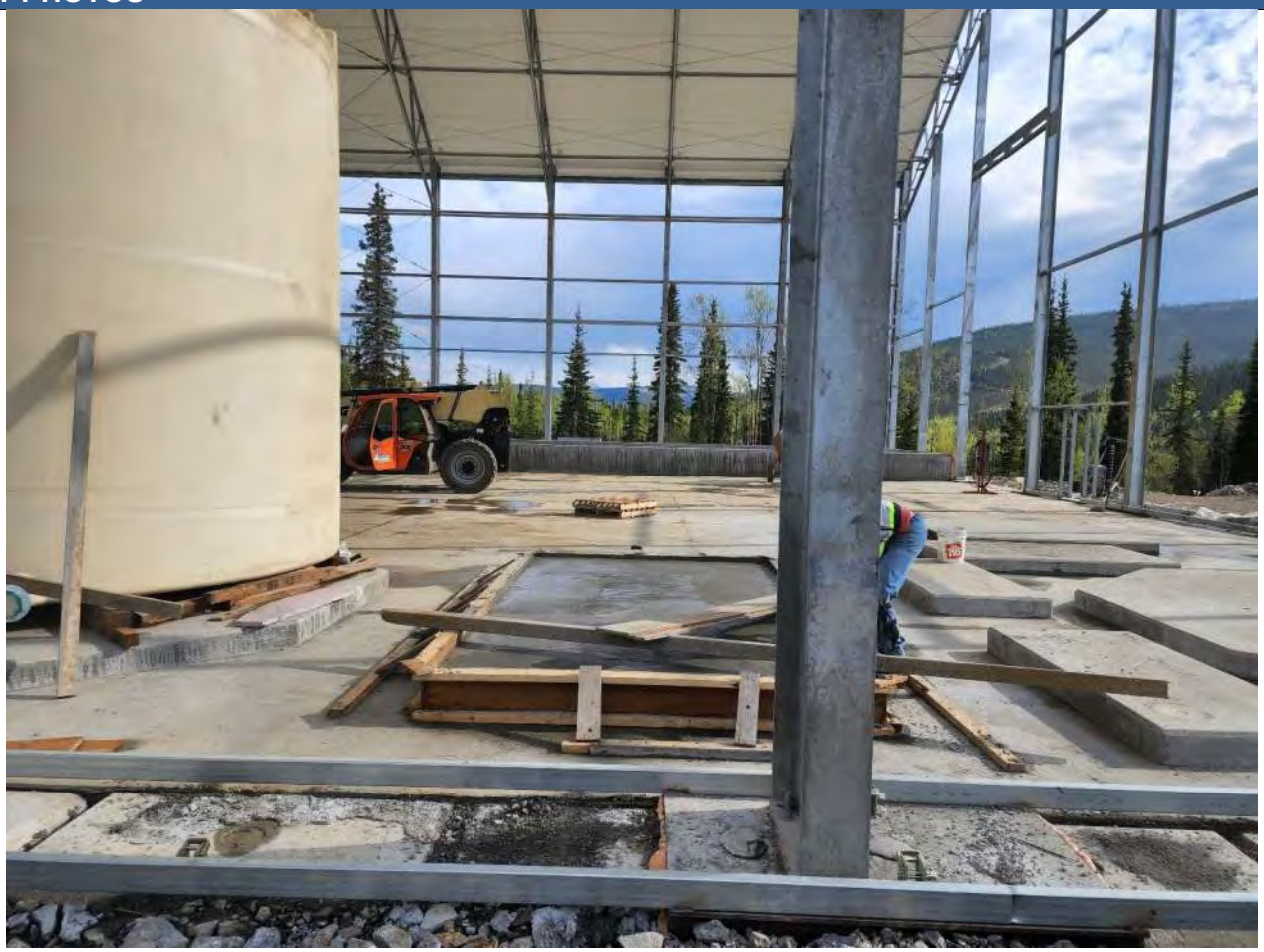
TODAY'S ACTIVITIES

Activity
Completed pouring concrete for tepid water skid
WTP Phase 1 Mechanical – AUL Industrial
Continued building grout forms around column bases and adding pour strips
WTP Building Erection – Norseman
Completed trimming fabric hanging over edge of roof trusses
HLF Earthworks – Ewing
Tetratch on-site for final subgrade approval on lateral #1 East
Continued installing Lateral #1 East geotextile and drainpipe
Working on 1065 key in bench
Loading and hauling 38mm drain rock

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	180	4,224
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	24	144
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	1	168	3,864
Norseman	Building erection	-	384	2,700
EWING	Earthworks	11	660	10,296
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**16**	**1,416**	**35,856**
Visitors		-	-	-
Total - Site		**16**	**1,416**	**35,856**

PROJECT PHOTOS



WTP – Completed Tepid Water Skid Concrete Pour

HLF – Tetratech Final Subgrade Approval on Lateral #1 East

WTP – Continued Installing Lateral #1 East Geotextile and Drainpipe

JDS	Victoria Gold Daily Construction Report				June 3, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		11°C	23°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkaways and platforms	May 25, 2022	June 15, 2022	Delayed, waiting for final delivery from Mexico. Expected June 7. AUL to start working on column bracing before walkways to avoid getting in Norseman's way.
CM-201 main mechanical contract award	May 30, 2022	May 30, 2022	Currently reviewing bid submissions from AUL, Gisborne, and Winfield

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity
Poured 0.5 m3 of concrete for the transformer pad

WTP Phase 1 Mechanical – AUL Industrial

Completed building grout forms around column bases and adding pour strips

HLF Earthworks – Ewing

Continued installing Lateral #1 East geotextile and drainpipe

Continued shaping the Phase 2 East slope

Completed working on 1065 key in bench

Loading and hauling 38mm drain rock – ongoing

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	216	4,260
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	24	144
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	1	180	3,876
Norseman	Building erection	-	384	2,700
EWING	Earthworks	11	792	10,428
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**15**	**1,596**	**36,036**
Visitors		-	-	-
Total - Site		**15**	**1,596**	**36,036**

PROJECT PHOTOS

WTP – Received TK-901

HLF – Installing Geotextile for Lateral #1 East

WTP – Continued Installing Lateral #1 East Geotextile and Drainpipe

JDS	Victoria Gold Daily Construction Report				June 4, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		11°C	22°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkaways and platforms	May 25, 2022	June 15, 2022	Delayed, waiting for final delivery from Mexico. Expected June 7. AUL to start working on column bracing before walkways to avoid getting in Norseman's way.
CM-201 main mechanical contract award	May 30, 2022	May 30, 2022	Currently reviewing bid submissions from AUL, Gisborne, and Winfield

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity

WTP Phase 1 Mechanical – AUL Industrial

Started pouring grout around column bases

HLF Earthworks – Ewing

Continued installing Lateral #1 East geotextile and drainpipe

Continued shaping the Phase 2 East slope

Loading and hauling 38mm drain rock – ongoing

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	252	4,296
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	24	144
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	1	192	3,888
Norseman	Building erection	-	384	2,700
EWING	Earthworks	11	924	10,560
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**15**	**1,776**	**36,216**
Visitors		-	-	-
Total - Site		**15**	**1,776**	**36,216**

PROJECT PHOTOS

WTP – Pre-soaking Column Bases in Preparation for Grout

HLF – Packing and Slope Shaping on Phase 2 East Slope

HLF – Removing Soft spots on East Slope

JDS	Victoria Gold Daily Construction Report				June 5, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		12°C	21°C	Slightly Windy	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkaways and platforms	May 25, 2022	June 15, 2022	Delayed, waiting for final delivery from Mexico. Expected June 7. AUL to start working on column bracing before walkways to avoid getting in Norseman's way.
CM-201 main mechanical contract award	May 30, 2022	May 30, 2022	Contract awarded to Winfield.

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity

WTP Phase 1 Mechanical – AUL Industrial

Completed pouring grout around clarifier column bases

HLF Earthworks – Ewing

Installed electrofusion sleeves on phase 2 header drain to phase 1 header drain

Completed installing Lateral #1 East geotextile and drainpipe, continuing to backfill

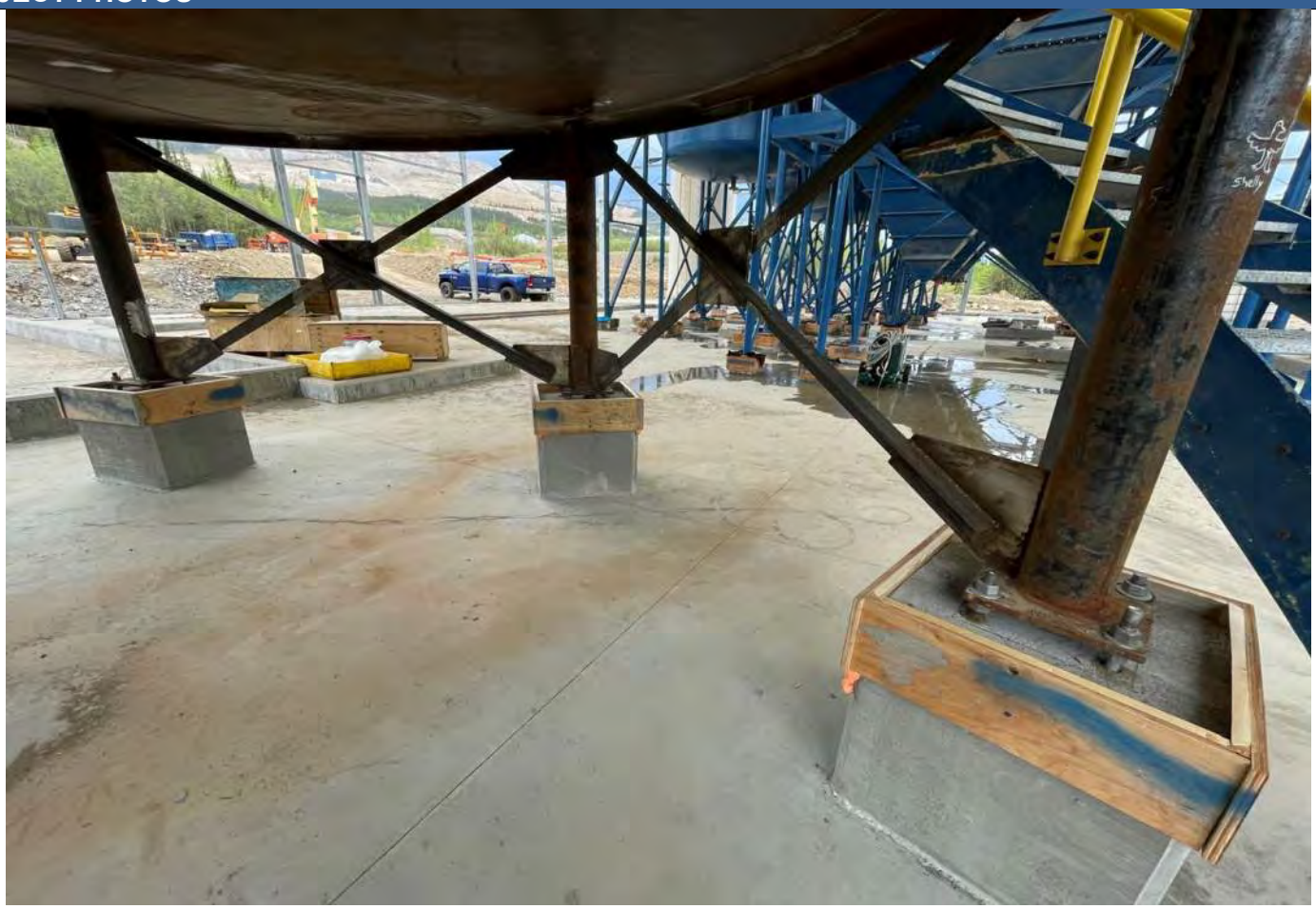
Continued shaping the Phase 2 East slope

Loading and hauling 38mm drain rock – ongoing

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	252	4,332
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	24	144
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	1	192	3,900
Norseman	Building erection	-	384	2,700
EWING	Earthworks	11	924	10,692
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**15**	**1,776**	**36,396**
Visitors		-	-	-
Total - Site		**15**	**1,776**	**36,396**

PROJECT PHOTOS



WTP – Grout Forms Completed for Thickener Tank

HLF – Electrofusion Sleeves Installed on Header Drain Connection

HLF – Installing Geotextile and Drainpipe on Lateral #1 East

HLF – Slope Shaping on Phase 2 East

JDS	Victoria Gold Daily Construction Report				June 6, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		12°C	23°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkaways and platforms	May 25, 2022	June 15, 2022	Delayed, waiting for final delivery from Mexico. Expected June 7. AUL to start working on column bracing before walkways to avoid getting in Norseman's way.
Layfield mobilizing to site	June 15, 2022	June 15, 2022	
Phase 2A East slope shaped and bedded with sand	June 16, 2022	June 16, 2022	General slope shaping 85%, continuing to haul sand

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity

Received first load of structural steel for WTP cable trays and pipe supports

WTP Phase 1 Mechanical – AUL Industrial

Started stripping grout forms off clarifier column bases

HLF Earthworks – Ewing

Continued backfilling over pipe in Lateral #1 East

Continued sloping and shaping the Phase 2 East slope

Started spreading sand on phase 2 East slope in preparation for liner install

Backfilled over header drain tie-in location

Loading and hauling sand

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	252	4,368
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	24	144
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	1	192	3,912
Norseman	Building erection	-	384	2,700
EWING	Earthworks	11	924	10,824
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**15**	**1,776**	**36,576**
Visitors		-	-	-
Total - Site		**15**	**1,776**	**36,576**

PROJECT PHOTOS

WTP – First Load of Cable Tray and Pipe Support Structural Steel

HLF – Continued Sloping and Shaping Phase 2 East

HLF – Started Spreading Sand on Phase 2 East Slope

HLF – Backfilling Over Header Drain

	Victoria Gold Daily Construction Report				June 7, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		11°C	20°C	Calm	Rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 15, 2022	Final delivery of steel arrived on site
Layfield mobilizing to site	June 15, 2022	June 15, 2022	
Phase 2A East slope shaped and bedded with sand	June 16, 2022	June 16, 2022	General slope shaping 87%, continuing to haul sand

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity
Received last load of clarifier platform steel
Met with Norseman to discuss cable tray support options with regard to fabric penetrations
WTP Phase 1 Mechanical – AUL Industrial
Removed all forms from cured grout
Awaiting grout shipment to complete the remainder of the pours
Iron worker arrived on site – to begin working on cable tray support installation
HLF Earthworks – Ewing
The morning was spent on standby due to heavy rain
Once material began to dry out, work continued on the following tasks
Continued backfilling over pipe in Lateral #1 East
Continued sloping and shaping the Phase 2 East slope
Continued spreading sand on phase 2 East slope in preparation for liner install
Backfilled over header drain tie-in location
Loading and hauling of sand

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	168	4,416
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	144
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	1	60	3,924
Norseman	Building erection	-	-	2,700
EWING	Earthworks	11	528	10,956
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**16**	**756**	**36,768**

PROJECT PHOTOS

WTP – Clarifier Column Bases Grouted In

	Victoria Gold Daily Construction Report				June 8, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		8°C	21°C	Calm	Sun & Cloud

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 15, 2022	Beginning to erect platform side bracing
Layfield mobilizing to site	June 15, 2022	June 15, 2022	
Phase 2A East slope shaped and bedded with sand	June 16, 2022	June 16, 2022	General slope shaping completed, continuing to haul and spread sand

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity
Site services hauled one truck load of HLF liner up to 1B
Met with VCGX E&I team to discuss cable tray locations for installation
Linkan to provide a detail drawing for moving the vertical cable trays from currently being inside the two pieces of wall fabric
WTP Phase 1 Mechanical – AUL Industrial
Laid out 80 holes to be drilled for cable tray supports
Drilling put on hold until cable tray location is confirmed for cable tray supports that have interfering fabric penetrations
Began erecting clarifier platform side bracing
HLF Earthworks – Ewing
Completed sloping and shaping the Phase 2 East slope
Continued spreading sand on phase 2 East slope in preparation for liner install
Loading and hauling of sand

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	216	4,464
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	144
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	2	84	3,948
Norseman	Building erection	-	-	2,700
EWING	Earthworks	11	660	11,088
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**17**	**960**	**36,972**

PROJECT PHOTOS

HLF – Transporting Liner Up to HLF from Lower Laydown

HLF – Spreading Sand on Phase 2 East Slope

WTP – Erection of Clarifier Platform Side Bracing

JDS	Victoria Gold Daily Construction Report				June 9, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		10°C	22°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 15, 2022	Continuing to erect platform steel bracing
Layfield mobilizing to site	June 15, 2022	June 15, 2022	
Phase 2A East slope shaped and bedded with sand	June 16, 2022	June 16, 2022	Continuing to haul and spread sand, removed soft material that was discovered while running the packer

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity

Site services brought one truckload and two loaders worth of HLF liner to 1B

WTP Phase 1 Mechanical – AUL Industrial

Moving forward on laying out and drilling confirmed locations for cable tray

Erected South end clarifier platform steel bracing

HLF Earthworks – Ewing

Continued spreading sand on Phase 2 East slope in preparation for liner install

Located four soft spots in the Phase 2 East slope while compacting sand

Removed soft material to be filled with rock from above Phase 2

Loading and hauling of sand

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	240	4,512
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	144
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	2	96	3,972
Norseman	Building erection	-	-	2,700
EWING	Earthworks	6	672	11,160
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**12**	**1,008**	**37,116**

PROJECT PHOTOS

HLF – Packing of ODF and Spreading of Sand. Note “Soft” Material Being Removed

WTP – Completed Erection of South End Clarifier Platform Steel Bracing

JDS	Victoria Gold Daily Construction Report				June 10, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		9°C	19°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 15, 2022	Continuing to erect platform steel bracing
Layfield mobilizing to site	June 15, 2022	June 15, 2022	
Phase 2A East slope shaped and bedded with sand	June 16, 2022	June 16, 2022	Continuing to haul and spread sand

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity

United Rentals technician on site to complete running repairs on our manlifts as some arrived to site with some pre-existing maintenance issues

Two Layfield Bobcat skid-steer loaders arrived onsite in preparation for crew mobilization June 15

WTP Phase 1 Mechanical – AUL Industrial

Drilled 90% of West end wall bolt holes for cable tray supports

HLF Earthworks – Ewing

Continued spreading sand on Phase 2 East slope in preparation for liner install

Filled soft spots with rock and compacted ODF prior to spreading sand

Continuing loading and hauling of sand

Using a D10 to open up material on the North slope of Phase 2 to begin drying material out for final shaping

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	264	4,536
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	144
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	1	120	3,984
Norseman	Building erection	-	-	2,700
EWING	Earthworks	6	744	11,232
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**9**	**1,128**	**37,224**

PROJECT PHOTOS

WTP – Drilling Columns for Cable Tray Supports on West End Wall

HLF – Two Bobcat Skid Steers Arrived Onsite for Layfield

HLF – Spreading of Sand on Phase 2 East Slope

JDS	Victoria Gold Daily Construction Report				June 11, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		8°C	20°C	Calm	*Sunny

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 15, 2022	Erecting platform supports between Clarifier #2&3
Layfield mobilizing to site	June 15, 2022	June 15, 2022	
Phase 2A East slope shaped and bedded with sand	June 16, 2022	June 16, 2022	Continuing to haul and spread sand – small delay with the rain that fell during the previous night

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

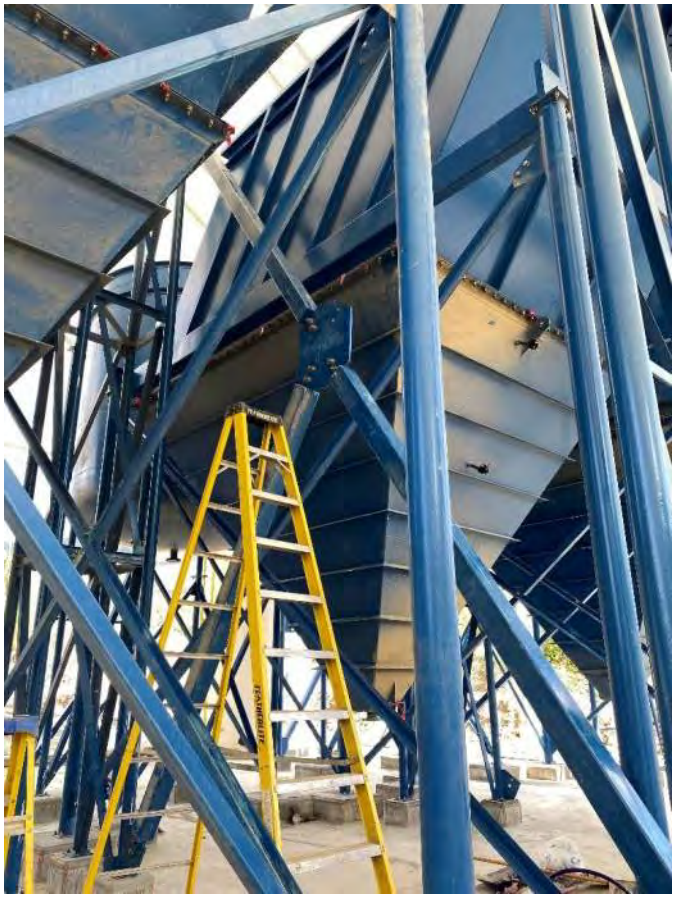
Activity
Site services continued to haul GCL and Liner up to the HLF
United Rentals technician completed site repairs and ordered replacement parts for one manlift
Received 2Mva Transformer
WTP Phase 1 Mechanical – AUL Industrial
Completed drilling of West end wall bolt holes for cable tray supports
Began to lay out holes to be drilled for South side wall cable tray supports
Erecting clarifier platform supports between clarifier #2&3
HLF Earthworks – Ewing
Morning was focussed on loading and hauling of sand while waiting for ground to dry out
Returned by mid morning to spreading sand on Phase 2 East slope in preparation for liner install
Packing slope to the North end of the Phase 2 East slope
D7 began shaping the North slope of Phase 2 where the D10 had previously spread material to dry it out

*Significant rain fell during the night causing for saturated ground at the HLF

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	264	4,560
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	144
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	2	120	4,008
Norseman	Building erection	-	-	2,700
EWING	Earthworks	6	744	11,304
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**10**	**1,128**	**37,344**

PROJECT PHOTOS



WTP – Erection of Clarifier Platform Support Between Clarifier #2&3

WTP – Offloading of 2Mva Transformer

HLF – Prepacking of Material and Spreading of Sand on Phase 2 East Slope

JDS	Victoria Gold Daily Construction Report				June 12, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		6°C	15°C	Calm	Overcast & Rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 15, 2022	Completed erection of platform support steel
Layfield mobilizing to site	June 15, 2022	June 15, 2022	
Phase 2A East slope shaped and bedded with sand	June 16, 2022	June 16, 2022	Continuing to pack shaped ground in preparation of laying ODF and sand

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity

Site services continued to haul GCL and Liner up to the HLF

Received 40' C Can for Layfield which was staged at upper 1B road to be moved to a permanent location at a later date

WTP Phase 1 Mechanical – AUL Industrial

Drilled 50% of North side wall columns for the cable tray support steel

Completed erection of clarifier platform supports – retorque of all bolts required

HLF Earthworks – Ewing

Packing slope to the North end of the Phase 2 East slope

D7 continuing shaping the North slope of Phase 2

Continuing to haul and spread sand

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	48	4,584
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	144
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	2	48	4,032
Norseman	Building erection	-	-	2,700
EWING	Earthworks	6	144	11,376
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**10**	**240**	**37,464**

PROJECT PHOTOS

WTP – Cutting Bench in for Feed and Return Lines

WTP – Clarifier Platform Supports Installed

HLF – Packing Both Sides of the Access Road in Preparation of Laying ODF and Sand

HLF – Delivery of Layfield's 40' C Can in Preparation of Site Mobilization

JDS	Victoria Gold Daily Construction Report				June 13, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		7°C	16°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 15, 2022	Handrail & platform steel erection to begin June 15 with crew change
Layfield mobilizing to site	June 15, 2022	June 15, 2022	Layfield held a premobilization job review for their crew at their home office
Phase 2A East slope shaped and bedded with sand	June 16, 2022	June 16, 2022	Continuing to pack shaped ground in preparation of laying ODF and sand

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity
Site services continued to haul GCL and Liner up to the HLF
Received NaOCl reagent tank (TK-902)
Ewing cutting in bench for WTP feed and return lines across the road from the South side wall
WTP Phase 1 Mechanical – AUL Industrial
Completed drilling of North & South side wall columns for the cable tray support steel
Crew change commencing with an additional four trades arriving tomorrow
HLF Earthworks – Ewing
Packing slope to the North end of the Phase 2 East slope
Continuing to haul and spread sand
Dug out old culvert on the North berm with Tetratech to witness backfill June 15th

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	72	4,608
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	144
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	2	60	4,056
Norseman	Building erection	-	-	2,700
EWING	Earthworks	6	216	11,448
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**10**	**348**	**37,584**

PROJECT PHOTOS

WTP – Cutting Bench in for Feed and Return Lines

WTP – Receipt of NaOCl Reagent Tank (TK-902)

HLF – Overall View of Progress in Packing and Spreading of Sand

JDS	Victoria Gold Daily Construction Report				June 14, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		5°C	19°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 25, 2022	Handrail & platform steel erection to begin June 15 with crew change
Layfield mobilizing to site	June 15, 2022	June 15, 2022	
Phase 2A East slope shaped and bedded with sand	June 16, 2022	June 16, 2022	Continuing to pack shaped ground in preparation of laying ODF and sand

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity

Received truck carrying 6"x4" HSS and end plates for cable tray support modifications

WTP Phase 1 Mechanical – AUL Industrial

Completed drilling of East end wall columns for cable tray support steel

Three additional Trades arrived to site to begin final push to project scope

HLF Earthworks – Ewing

Packing slope to the North end of the Phase 2 East slope

Continuing to spread sand

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	96	4,632
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	144
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	1	108	4,068
Norseman	Building erection	-	-	2,700
EWING	Earthworks	6	288	11,520
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**9**	**492**	**37,692**

PROJECT PHOTOS

WTP – Drilling Holes for Cable Tray Support Steel

WTP – Receipt End Plates for Cable Tray Steel Support Modifications

HLF – Ewing Crew Progressing Along Phase 2A East Slope with Packer

JDS	Victoria Gold Daily Construction Report				June 15, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		5°C	19°C	Calm	Sunny

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 25, 2022	Began erection of platforms or clarifiers and flocculation tanks
Layfield mobilizing to site	June 15, 2022	June 15, 2022	Layfield mobilized to site
Phase 2A East slope shaped and bedded with sand	June 16, 2022	June 16, 2022	Last loads of sand required to be spread

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity
Layfield crew arrived on site
Tetratech returned to site to support HLF liner installation
Site services continuing to haul truckloads of GCL and liner to the HLF Liner staging area
WTP Phase 1 Mechanical – AUL Industrial
Began erecting platforms above clarifiers and flocculation tanks
Began to cut and splice cable tray supports to allow for the first section to bolt between the columns and behind the first layer of fabric. The spliced section will "sandwich" the interior fabric with a bolted connection
HLF Earthworks – Ewing
Nearing completion – only several loads of sand left to spread on Phase 2A East slope
Continuing to haul sand and shape West slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	96	4,656
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	144
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	4	108	4,116
Norseman	Building erection	-	-	2,700
EWING	Earthworks	6	288	11,592
Layfield	Laying Liner	-	-	-
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**12**	**492**	**37,836**

PROJECT PHOTOS

WTP – Cable Tray Supports Being Cut and Spliced

WTP – Erection of Platforms Over Clarifier and Flocculation Tanks

	Victoria Gold Daily Construction Report				June 16, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		5°C	23°C	Calm	Sunny

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 25, 2022	Continuing erection of platforms for clarifiers and flocculation tanks
Phase 2A East slope shaped and bedded with sand	June 16, 2022	June 16, 2022	Completed
Winfield Mobilization to site	June 20, 2022	June 20, 2022	Mobilizing 8 trades to site and will spend 1 week tying up loose ends at the truck shop prior to the grand opening

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity

CE201 RFP bid submission closed on the 15th, beginning to review proposals

- Ryfan failed to submit RFP due to current project load, leaving Mueller as sole contractor to submit bid. Questions forthcoming for Mueller

WTP Phase 1 Mechanical – AUL Industrial

All base platform steel erected for clarifiers and flocculation tanks

Installed last section of stairs to clarifier access platform

Continuing to cut and splice cable tray support steel

HLF Earthworks – Ewing & Layfield

After completion of 2A East, discovered wet spot on the South end of the East slope – removed material and completing the final backfill

Continuing to haul sand and shape West slope

Completed filling of sandbags

Backfilling from the culvert that was removed from the berm above 1B road – Tetratech witnessing

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	120	4,680
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	12	156
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	4	156	4,164
Norseman	Building erection	-	-	2,700
EWING	Earthworks	16	480	11,784
Layfield	Laying Liner	13	156	156
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**36**	**924**	**38,268**

PROJECT PHOTOS

WTP – Erection of Final Stair Stringer for Clarifier Platform

HLF – Backfilling and Compacting Where the Culvert Was Removed

HLF – Layfield Filling Sandbags

HLF – Phase 2A East Slope

JDS	Victoria Gold Daily Construction Report				June 18, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		6°C	24°C	Moderate	Sunny

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 25, 2022	Began installing clarifier platform handrail
Winfield mobilization to site	June 20, 2022	June 20, 2022	Mobilizing 8 trades to site and will spend 1 week tying up loose ends at the truck shop prior to the grand opening. Several trades will begin on the WTP shaking out materials
Lining of Phase 2A East Slope	July 10, 2022	July 10, 2022	Pulled first sections of liner today – x6 sections of GCL, x3 sections of liner

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity

Ewing water truck continuing to water the roads to control the dust

WTP Phase 1 Mechanical – AUL Industrial

Began installing clarifier platform handrail

Continuing to cut and splice cable tray support steel with 9 sections completed today

HLF Earthworks – Ewing & Layfield

Persistent wind blowing throughout the day at 22km/hr and 25km/hr – 25km/hr is the maximum wind speed that Layfield will safely pull liner at

Pulled 6 sections of GCL and 3 sections of Liner

Pulling of liner was put on hold as winds began to surpass 25km/hr –pulled GCL instead as that can be done above 25km/hr winds and there was no rain in the overnight forecast

Continuing to haul sand and shape West slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	168	4,704
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	36	168
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	4	252	4,212
Norseman	Building erection	-	-	2,700
EWING	Earthworks	16	864	11,976
Layfield	Laying Liner	13	468	312
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**36**	**1,788**	**38,700**

PROJECT PHOTOS

WTP – Began Installing Walkway Platform Handrail

WTP – Modified Cable Tray Support Steel Ready to Hang

HLF – GCL Laid in Preparation of Liner Pull

HLF – Frist Pull of Liner on Phase 2A East Slope

HLF – Daily Liner Progress Photo

JDS	Victoria Gold Daily Construction Report				June 19, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		9°C	24°C	Moderate	Sunny

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 25, 2022	Completed installation of handrail
Winfield mobilization to site	June 20, 2022	June 20, 2022	Winfield's supervisor arrived on site in preparation of crew arriving the following day
Lining of Phase 2A East Slope	July 10, 2022	July 10, 2022	Installed 1274m^2 of GCL and 4576m^2 of Liner

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	2
Medical Aids	0	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	**0**	4

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity

Ewing water truck continuing to water the roads to control the dust

WTP Phase 1 Mechanical – AUL Industrial

Completed installation of clarifier platform handrail

Continuing to cut and splice cable tray support steel with 5 pieces remaining to modify

HLF Earthworks – Ewing & Layfield

Pulled liner in between periods of high wind

Installed 1274m^2 of GCL and 4576m^2 of Liner

Managed layout of GCL to ensure that by days end there were no GCL liners fully exposed due to thunderstorms forecasted for the evening

Continuing to haul sand and shape West slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	24	4,752
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	12	192
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	4	48	4,308
Norseman	Building erection	-	-	2,700
EWING	Earthworks	16	192	12,360
Layfield	Laying Liner	13	156	624
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**36**	**432**	**39,564**

PROJECT PHOTOS

WTP – Completed Installing Walkway Platform Handrail

HLF – End of Day Liner Progress

JDS	Victoria Gold Daily Construction Report				June 20, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		8°C	16°C	Moderate	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 25, 2022	Completed installation of handrail
Winfield	June 21, 2022	June 21, 2022	Crew will be arriving on site tomorrow
Lining of Phase 2A East Slope	July 10, 2022	July 10, 2022	Installed 2480m^2 of GCL and 3480m^2 of Liner

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	1	2
Medical Aids	1	1
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	2	4

Incidents:

- AUL worker injured upper body while working on WTP clarifier
- Layfield worker strained back while pulling the liner
- Both workers driven to Whitehorse for evaluation, incident reports to follow

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity
Ewing water truck continuing to water the roads to control the dust
WTP Phase 1 Mechanical – AUL Industrial
Completed cutting and splicing cable tray support steel
Continued mounting cable tray support steel to columns
HLF Earthworks – Ewing & Layfield
Installed 2480m^2 of GCL and 3480m^2 of Liner
Continuing to haul material and shape West perimeter berm
Continued packing northwest slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	60	4,788
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	24	204
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	-	1,944
AUL	Structural	4	96	4,356
Norseman	Building erection	-	-	2,700
EWING	Earthworks	16	384	12,552
Layfield	Laying Liner	13	312	780
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**37**	**876**	**40,008**
Visitors		-	-	-
Total - Site		**37**	**876**	**40,008**

PROJECT PHOTOS

HLF – Shaping West Perimeter Berm

HLF – Packing Northwest Slope

JDS	Victoria Gold Daily Construction Report				June 21, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		11°C	17°C	Moderate	On/off rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 25, 2022	Completed installation of handrail
Winfield	June 21, 2022	June 21, 2022	Crew arrived on site
Lining of Phase 2A East Slope	July 10, 2022	July 10, 2022	Installed 1220m^2 of GCL and 1220m^2 of Liner

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	3
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	6

Incidents:

- Nothing to Report

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity

Ewing water truck continuing to water the roads to control the dust

WTP Phase 1 Mechanical – AUL Industrial

Continued mounting cable tray support steel to columns

Continued welding mounting plates to cable tray support steel

HLF Earthworks – Ewing & Layfield

Managed to Install 1220m^2 of GCL and 1220m^2 of Liner in-between periods of rain and hail

Continuing to haul material and shape West perimeter berm

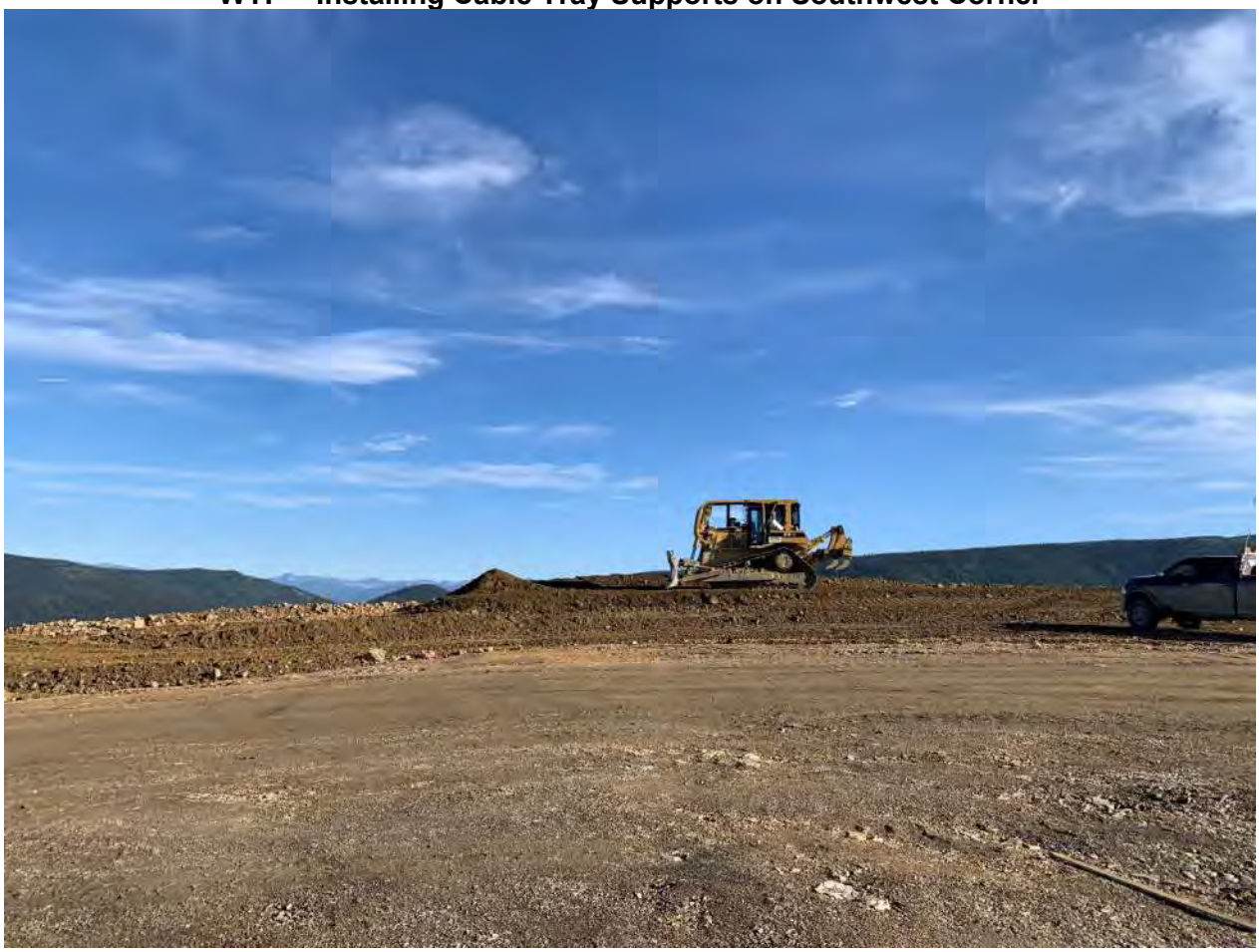
Continued packing northwest slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	96	4,824
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	36	216
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	1	24	1,968
AUL	Structural	4	144	4,404
Norseman	Building erection	-	-	2,700
EWING	Earthworks	16	576	12,744
Layfield	Laying Liner	13	468	936
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**38**	**1,344**	**40,476**
Visitors		-	-	-
Total - Site		**38**	**1,344**	**40,476**

PROJECT PHOTOS

WTP – Installing Cable Tray Supports on Southwest Corner



HLF – Shaping West Perimeter Berm

HLF – Phase 2 Liner Pull Progress

JDS	Victoria Gold Daily Construction Report				June 22, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		9°C	21°C	Slightly windy	Slightly cloudy

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 25, 2022	Completed installation of handrail
Winfield	June 21, 2022	June 21, 2022	Crew arrived on site
Lining of Phase 2A East Slope	July 10, 2022	July 10, 2022	Installed 5400m^2 of GCL and 4688m^2 of Liner

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	1	3
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	1	6

Incidents:

- A dust devil came through during a Layfield liner pull, lifting the liner and knocking over 2 workers. Injuries were not serious and both workers returned to work.

Other HSE Activities:

- Nothing to Report

TODAY'S ACTIVITIES

Activity

Ewing water truck continuing to water the roads to control the dust

WTP Phase 1 Mechanical – AUL Industrial

Completed mounting cable tray support steel to columns on the North, East and West walls.

Continued welding mounting plates to cable tray support steel

WTP Mechanical and Piping - Winfield

Winfield mobilized to site

Started setting up trailers shaking out materials

WTP Phase 1 mechanical – Norseman

Norseman arrived on site

Truck Shop mechanical and HVAC

Winfield and VETS mobilized to site in preparation for truck shop deficiency work

HLF Earthworks – Ewing & Layfield

Installed 5400m^2 of GCL and 4688m^2 of Liner

Ongoing liner testing and destructive sampling

Finished tying in perimeter berm

Started hauling riprap to phase 2 interceptor ditch

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	180	4,872
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	60	228
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	7	192	2,052
AUL	Structural	4	240	4,452
Norseman	Building erection	-	-	2,700
EWING	Earthworks	16	960	12,936
Layfield	Laying Liner	13	780	1,092
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**45**	**2,412**	**41,016**
Visitors		-	-	-
Total - Site		**45**	**2,412**	**41,016**

PROJECT PHOTOS

WTP – Cable Tray Supports Installed on Southeast Corner

HLF – Phase 2 Liner Pull Progress

JDS	Victoria Gold Daily Construction Report				June 23, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		9°C	21°C	Slightly windy	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 25, 2022	Continued torquing handrail bolts
Lining of Phase 2A East Slope	July 10, 2022	July 10, 2022	Installed 2376m^2 of GCL and 3142m^2 of Liner

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	1	4
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	1	7

Incidents:

- Winfield worker sustained a laceration to his right index finger from a sharp bur on a pipe. Worker went in for first aid and returned to work.

Other HSE Activities:

- WTP safety stand down, focus on mind on task, following safe work practices, risk mitigation and prevention.
- HLF phase 2 expansion safety stand down, focus on mind on task, following safe work practices, risk mitigation and prevention.

TODAY'S ACTIVITIES

Activity
Ewing water truck continuing to water the roads to control the dust
WTP Phase 1 Mechanical – AUL Industrial
Continued installing grating on clarifier walkways, and torquing handrail bolts
Continued modifying cable tray supports
WTP Mechanical and Piping - Winfield
Continued shaking out materials
WTP Phase 1 mechanical – Norseman
Started Pulling interior roof fabric, 5 of 14 panels completed
Truck Shop mechanical and HVAC
Started working on truck shop deficiency list
HLF Earthworks – Ewing & Layfield
Installed 2376m^2 of GCL and 3142m^2 of Liner
Crew did equipment maintenance after high winds began proceeding safety shutdown
Ongoing liner testing and destructive sampling
Finished hauling riprap to phase 2 interceptor ditch
Completed 1065 key in bench

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	180	4,908
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	60	240
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	7	192	2,136
AUL	Structural	3	204	4,464
Norseman	Building erection	-	-	2,700
EWING	Earthworks	15	948	13,116
Layfield	Laying Liner	13	756	1,224
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**42**	**2,340**	**41,472**
Visitors		-	-	-
Total - Site		**42**	**2,340**	**41,472**

PROJECT PHOTOS

WTP – Norseman Pulling Interior Roof Fabric

WTP – Grating Installed on Clarifier and Flocculant Tank Walkways

HLF – Packing 1065 Key in Bench

HLF – Liner Pull Progress

JDS	Victoria Gold Daily Construction Report				June 24, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		8°C	22°C	Calm	Slightly cloudy

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 25, 2022	Continued torquing handrail bolts
Lining of Phase 2A East Slope	July 10, 2022	July 10, 2022	225m Extrusion weld completed and tested

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	5
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	8

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Ewing water truck continuing to water the roads to control the dust

WTP Phase 1 Mechanical – AUL Industrial

Continued setting and tightening handrail splices, and torquing handrail bolts

Continued modifying cable tray supports

WTP Mechanical and Piping - Winfield

Started marking layouts for tank installs

WTP Phase 1 mechanical – Norseman

Continued pulling interior roof fabric, 13 of 14 panels completed

Truck Shop mechanical and HVAC

Continued working on truck shop deficiency list

HLF Earthworks – Ewing & Layfield

225m leister tac, grind and extrusion weld completed and tested

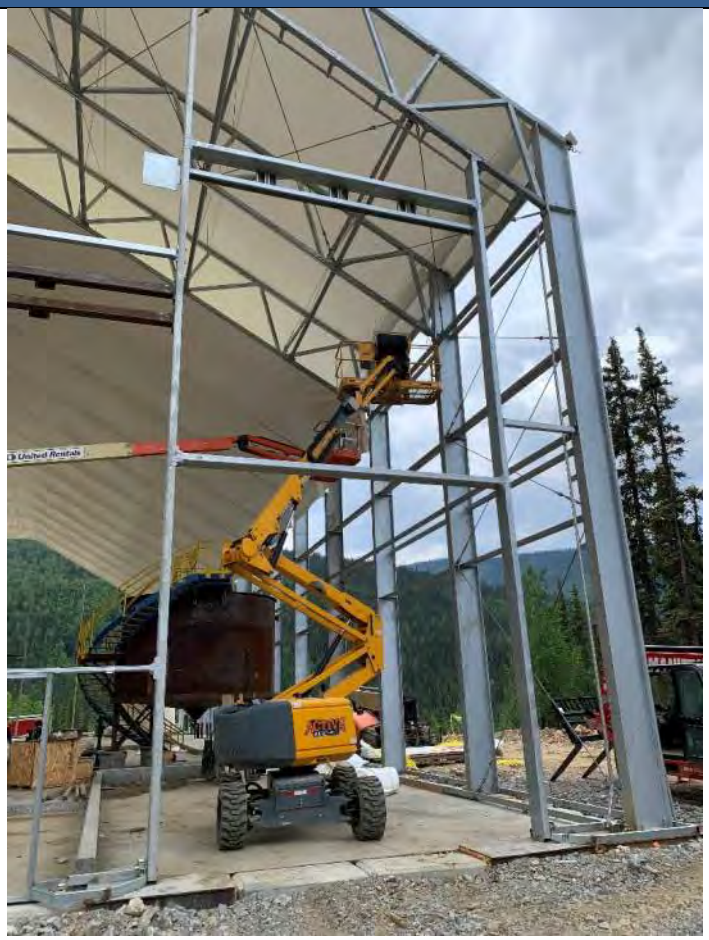
Continued digging anchor trench, South and East anchor trench backfilled

Hauling, spreading and packing sand on the West slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	216	4,944
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	72	252
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	10	312	2,256
AUL	Structural	3	240	4,500
Norseman	Building erection	-	-	2,700
EWING	Earthworks	15	1,320	13,296
Layfield	Laying Liner	13	912	1,380
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**45**	**3,072**	**42,012**
Visitors		-	-	-
Total - Site		**45**	**3,072**	**42,012**

PROJECT PHOTOS



WTP – Norseman Continuing to Pull Interior Roof Fabric

WTP – Completed Excavation of Feed and Return Line Bench

JDS	Victoria Gold Daily Construction Report				June 25, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		8°C	23°C	Calm	Slightly cloudy

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 25, 2022	Levelling stair treads and installing grating clips
Lining of Phase 2A East Slope	July 10, 2022	July 10, 2022	5832 m3 GCL and 5766 m3 Liner Installed

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	5
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	8

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Ewing water truck continuing to water the roads to control the dust

WTP Phase 1 Mechanical – AUL Industrial

Installed ladder gate

Levelled stair treads

WTP Mechanical and Piping - Winfield

Started rough setting tanks, 4 completed

Continued unloading components in lower laydown

WTP Earthworks - Ewing

Ewing continued excavating feed and return line bench with grade support from Underhill

WTP Phase 1 mechanical – Norseman

Completed pulling interior layer of fabric

Started trimming excess roof fabric

Truck Shop mechanical and HVAC

Continued patching on HVCA openings

Working on liner for wall penetrations

HLF Earthworks – Ewing & Layfield

5832 m3 GCL and 5766 m3 Liner Installed

Continued backfilling anchor trench

Continued hauling, spreading, and packing sand on the West slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	252	4,980
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	84	264
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	10	432	2,376
AUL	Structural	3	276	4,536
Norseman	Building erection	-	-	2,700
EWING	Earthworks	16	1,320	13,488
Layfield	Laying Liner	13	1,068	1,536
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**46**	**3,432**	**42,564**
Visitors		-	-	-
Total - Site		**46**	**3,432**	**42,564**

PROJECT PHOTOS

WTP – Norseman Trimming Excess Interior Fabric

HLF – Layfield Continuing to Pull GCL and Liner

HLF – Backfilling Anchor Trench

HLF – Ewing Spreading Sand Over West Slope

JDS	Victoria Gold Daily Construction Report				June 26, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		12°C	25°C	Slightly Windy	Slightly cloudy

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 28, 2022	Finished Stub Ends on Pipe Supports
Lining of Phase 2A East Slope	July 10, 2022	July 10, 2022	6264 m3 GCL and 6457 m3 Liner Installed

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	1	5
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	1	8

Incidents:

- Portion of Norseman worker's fingertip was taken off while pulling on fabric tensioner, the worker was taken to the medic and driven to Whitehorse where the wound was cauterized. Worker will be returning to work.

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Ewing water truck continuing to water the roads to control the dust
WTP Phase 1 Mechanical – AUL Industrial
Completed stub ends on pipe supports
WTP Mechanical and Piping - Winfield
Continued layout of equipment and tanks
Set tank 601 in final location
Staged TK-901, air compressor, MF feed pumps, and thickener feed pumps
WTP Earthworks - Ewing
Continued excavating feed and return line bench with grade support from Underhill
WTP Phase 1 mechanical – Norseman
Completed trimming excess roof fabric
Started hanging north wall exterior fabric
Truck Shop mechanical and HVAC
Boom arm on hold due to congestion during truck rebuild
Continued working on liner for wall penetrations
HLF Earthworks – Ewing & Layfield
6264 m3 GCL and 6457 m3 Liner Installed
Completed backfilling south side of anchor trench up to 1B, continued backfilling east side of anchor trench as liner gets pulled
Continued hauling, spreading, and packing sand on the West slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	252	5,016
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	84	276
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	10	432	2,496
AUL	Structural	3	276	4,572
Norseman	Building erection	-	-	2,700
EWING	Earthworks	16	1,320	13,680
Layfield	Laying Liner	13	1,068	1,692
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**46**	**3,432**	**43,116**
Visitors		-	-	-
Total - Site		**46**	**3,432**	**43,116**

PROJECT PHOTOS

WTP – Winfield Rough Setting Tanks

WTP – Completed Clarifier Walkways

WTP – Norseman starting to Pull North Wall Exterior Fabric

WTP - Continued Excavating Feed and Return Line Bench

HLF – Liner Pull Progress

JDS	Victoria Gold Daily Construction Report				June 27, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		11°C	28°C	Calm	Slightly cloudy

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Clarifier walkways and platforms	May 25, 2022	June 28, 2022	Completed
Lining of Phase 2A East Slope	July 10, 2022	July 10, 2022	6480 m3 GCL and 6440 m3 Liner Installed

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	6
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	9

Incidents:

- Nothing to report

Other HSE Activities:

- Completed safety walk-down at WTP with Darryl Finlay

TODAY'S ACTIVITIES

Activity
Ewing water truck continuing to water the roads to control the dust
WTP Phase 1 Mechanical – AUL Industrial
Started cleaning up work area in preparation for demobilization
WTP Mechanical and Piping - Winfield
Offloaded tank shipment, and continued unloaded equipment from crates in lower laydown
Continued staging pumps from lower laydown inside WTP building, and rough setting tanks
Started dressing tanks with loose components
WTP Earthworks - Ewing
Completed excavating feed and return line bench on east side of ADR road
WTP Phase 1 mechanical – Norseman
Continued hanging north wall exterior fabric
HLF Earthworks – Ewing & Layfield
6480 m3 GCL and 6440 m3 Liner Installed
Started moving liner to new laydown area
Continued excavating and backfilling anchor trench as liner gets pulled
Continued hauling, spreading, and packing sand on the West slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	252	5,052
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	84	288
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	7	432	2,580
AUL	Structural	3	276	4,608
Norseman	Building erection	-	-	2,700
EWING	Earthworks	16	1,320	13,872
Layfield	Laying Liner	13	1,068	1,848
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**43**	**3,432**	**43,632**
Visitors		-	-	-
Total - Site		**43**	**3,432**	**43,632**

PROJECT PHOTOS

WTP – Rough Setting Tanks Inside of Building

HLF – Liner Pull Progress

JDS	Victoria Gold Daily Construction Report				June 28, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		14°C	29°C	Calm	Slightly cloudy

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Electrical mobilization for grounding grid installation	July 5, 2022	July 5, 2022	Arriving July 5th
Lining of Phase 2A East Slope	July 10, 2022	July 10, 2022	Completed welding Phase 1B tie-in seam, and splice welds

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	6
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	9

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Ewing water truck continuing to water the roads to control the dust
WTP Mechanical and Piping - Winfield
Continued unloading equipment from crates in lower laydown
Continued staging pumps from lower laydown inside WTP building
Continued dressing tanks with loose components
WTP Earthworks - Ewing
Re-establishing gravity grade for inlet feed
WTP Phase 1 mechanical – Norseman
Completed hanging and tensioning North and South wall exterior fabric
HLF Earthworks – Ewing & Layfield
Completed welding Phase 1B tie-in seam, and splice welds
Completed moving liner to new laydown area
Continued backfilling anchor trench
Continued hauling, spreading, and packing sand on the West slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	108	5,088
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	36	300
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	7	288	2,664
AUL	Structural	-	72	4,608
Norseman	Building erection	-	-	2,700
EWING	Earthworks	16	576	14,064
Layfield	Laying Liner	13	468	2,004
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**40**	**1,548**	**44,112**
Visitors		-	-	-
Total - Site		**40**	**1,548**	**44,112**

PROJECT PHOTOS

WTP – North and South Wall Exterior Fabric Installed

WTP – Dressing Tanks With Loose Shipped Components

HLF – Anchor Trench Progress

JDS	Victoria Gold Daily Construction Report				June 29, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		12°C	26°C	Windy	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Electrical mobilization for grounding grid installation	July 5, 2022	July 5, 2022	Arriving July 5th
Lining of Phase 2A East Slope	July 10, 2022	July 10, 2022	4968m3 GCL and 4844m3 Liner Installed

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	6
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	9

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Ewing water truck continuing to water the roads to control the dust
WTP Mechanical and Piping - Winfield
Started the layout and installation of anchor bolts on air compressors, air receivers, and pumps
Continued dressing tanks with nozzles and external flanges
Staged tank ladders inside of the building
WTP Earthworks - Ewing
Completed re-establishing gravity grade for inlet feed
WTP Phase 1 mechanical – Norseman
Completed hanging and tensioning East wall fabric
HLF Earthworks – Ewing & Layfield
4968m3 GCL and 4844m3 Liner Installed
Progression halted a few times by rain/lightning, JDS made call to shut down as rainstorms were in the surrounding valleys
Continued backfilling anchor trench
Continued hauling, spreading, and packing sand on the West slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	144	5,124
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	48	312
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	7	372	2,748
AUL	Structural	-	72	4,608
Norseman	Building erection	-	-	2,700
EWING	Earthworks	16	768	14,256
Layfield	Laying Liner	13	624	2,160
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**40**	**2,028**	**44,592**
Visitors		-	-	-
Total - Site		**40**	**2,028**	**44,592**

PROJECT PHOTOS

WTP – East Wall Exterior Fabric

WTP – Staging Ladders Inside of Building

HLF – Liner Pull Progress

JDS	Victoria Gold Daily Construction Report				June 30, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		14°C	27°C	Slightly windy	Slightly cloudy

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Electrical mobilization for grounding grid installation	July 5, 2022	July 5, 2022	Arriving July 5th
Lining of Phase 2A East Slope	July 10, 2022	July 10, 2022	6264m2 GCL and 6274m2 Liner Installed

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	6
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	9

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Ewing water truck continuing to water the roads to control the dust
WTP Mechanical and Piping - Winfield
Continued the layout and installation of anchor bolts on air compressors, air receivers, and pumps
Continued dressing tanks with nozzles and external flanges
Relocated generator to make way for polymer makedown unit
Set and bolted down air receivers and air compressors
WTP Phase 1 mechanical – Norseman
Completed hanging and tensioning West wall exterior fabric
HLF Earthworks – Ewing & Layfield
6264m2 GCL and 6274m2 Liner Installed
JDS made call to shut down early considering the windy conditions
Continued backfilling anchor trench up to liner
Continued spreading and packing sand on the West slope
Started cutting Material out of HLF Slope for Phase 2B Perimeter Berm

MANPOWER ON SITE

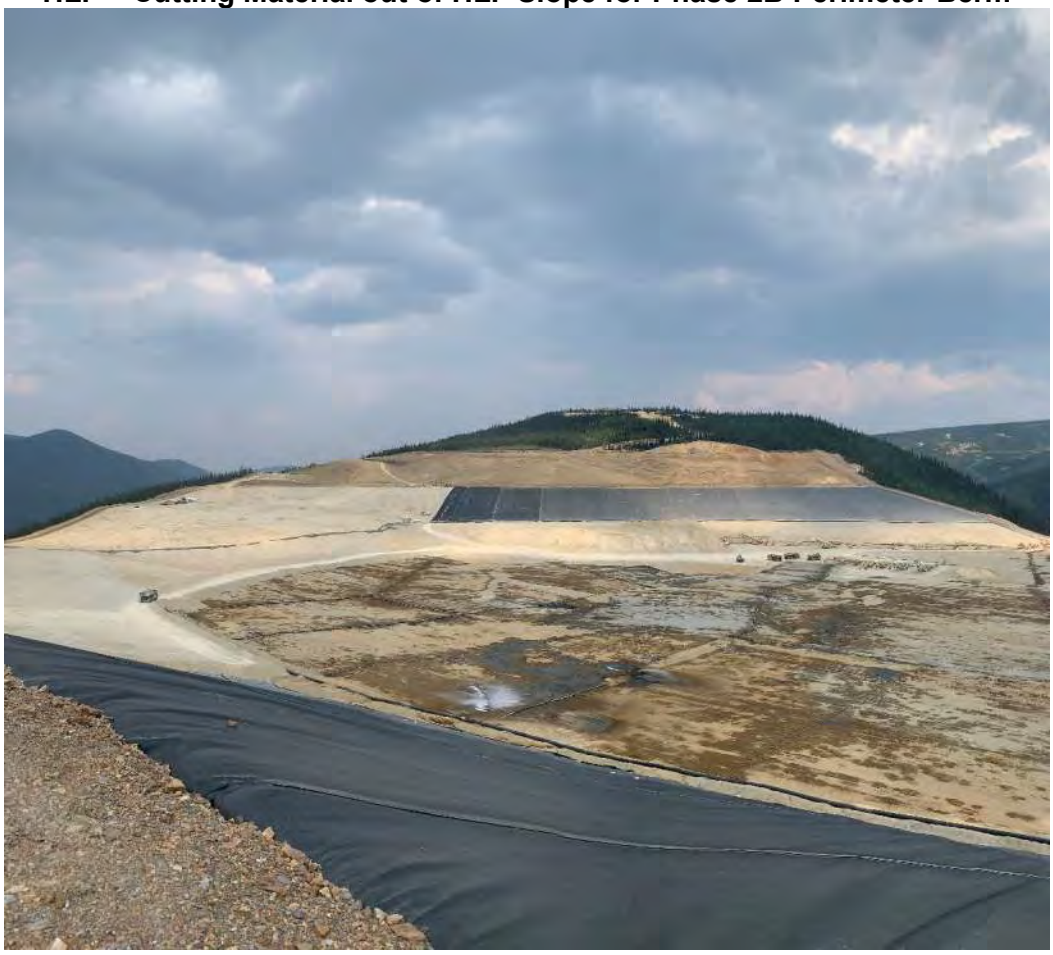
Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	180	5,160
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	60	324
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	7	456	2,832
AUL	Structural	-	72	4,608
Norseman	Building erection	-	-	2,700
EWING	Earthworks	16	960	14,448
Layfield	Laying Liner	13	780	2,316
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**40**	**2,508**	**45,072**
Visitors		-	-	-
Total - Site		**40**	**2,508**	**45,072**

PROJECT PHOTOS

WTP – West Wall Exterior Fabric

WTP – Gravity Grade Feed Line Bench

HLF – Cutting Material out of HLF Slope for Phase 2B Perimeter Berm



HLF – Liner Pull Progress

JDS	Victoria Gold Daily Construction Report				July 1, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		11°C	24°C	Slightly windy	Slightly cloudy

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Electrical mobilization for grounding grid installation	July 5, 2022	July 5, 2022	Arriving July 5th
Lining of Phase 2A East Slope	July 10, 2022	July 10, 2022	4350m2 GCL and 4350m2 Liner Installed

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	6
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	9

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Ewing water truck continuing to water the roads to control the dust
WTP Mechanical and Piping - Winfield
Drilled and installed anchors for MF feed pumps
Removed suction nozzle spools from bottom of MF feed tanks to grind out holes
Completed layout of Citric and Polymer makedown units
WTP Phase 1 mechanical – Norseman
Completed cutting openings for both East and West overhead doors
HLF Earthworks – Ewing & Layfield
4350m2 GCL and 4350m2 Liner Installed
Continued welding liner seams
Continued excavating anchor trench on west slope and backfilling up to liner
Continued cutting material out of HLF Slope for Phase 2B Perimeter Berm

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	216	5,196
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	72	336
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	7	540	2,916
AUL	Structural	-	72	4,608
Norseman	Building erection	-	-	2,700
EWING	Earthworks	16	1,152	14,640
Layfield	Laying Liner	13	936	2,472
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**40**	**2,988**	**45,552**
Visitors		-	-	-
Total - Site		**40**	**2,988**	**45,552**

PROJECT PHOTOS

WTP – Norseman Cutting Opening on West Wall for Overhead Door

HLF – Excavating Anchor Trench on West Slope

HLF – Liner Pull Progress

JDS	Victoria Gold Daily Construction Report				July 2, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		10°C	28°C	Slightly windy	clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Electrical mobilization for grounding grid installation	July 5, 2022	July 6, 2022	Arriving July 6th
Lining of Phase 2A	July 20, 2022	July 20, 2022	6511 m2 GCL and 5472 m2 Liner Installed 57.7% complete entire project
Norseman building – Interior Liner Completion	July 17, 2022	July 17, 2022	Received penetration steel today

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	6
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	9

Incidents:

- Nothing to report

Other HSE Activities:

- Safety focus - Hot outside; Keep hydrated take micro brakes to cool down

TODAY'S ACTIVITIES

Activity
Received Norseman penetration block out steel
WTP Mechanical and Piping - Winfield
Installed P-501, P-502 and P-503
Drilled anchor bolts and installed MD-1001 and MD-1101
Laid out, drilled and installed perimeter Tank Restraints on TK-202 and laid out Tk-201 Restraints and drilled 1/3 of holes
Started moving MF-201, MF-202, MF-203 material and equipment from lower laydown up to WTP laydown
Die grinded out Tank Bolt hole to allow for proper alignment to 12" flange on both TK-201 and TK-202; Installed spools once completed
WTP Phase 1 mechanical – Norseman
Continued trimming and detailing man door & overhead door cut outs
Continued sealing the exterior panel junctions
HLF Earthworks – Ewing & Layfield
6511 m2 GCL and 5472 m2 Liner Installed
Continued cutting material out of HLF Slope for Phase 2B Perimeter Berm
Loading, hauling, placing, and compacting site grading fill for the Phase 2B Perimeter Berm
Tetra Tech on site for Liner QA / QC, as well as providing compaction testing at the Phase 2B Perimeter Berm

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	264	5,244
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	84	348
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	8	636	3,012
AUL	Structural	-	72	4,608
Norseman	Building erection	-	-	2,700
EWING	Earthworks	16	1,344	14,832
Layfield	Laying Liner	13	1,092	2,628
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**42**	**3,492**	**46,056**

PROJECT PHOTOS

WTP – Norseman detailing opening on West wall for overhead door

HLF – Phase 2B west perimeter berm

HLF – Liner Installation Progress

JDS	Victoria Gold Daily Construction Report				July 3, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		10°C	30°C	Slightly windy	Smoky

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Electrical mobilization for grounding grid installation	July 5, 2022	July 6, 2022	Arriving July 6th
Lining of Phase 2A	July 20, 2022	July 20, 2022	5520 m2 GCL and 5420 m2 Liner Installed 63% complete entire project
Norseman building – Interior Liner Completion	July 17, 2022	July 17, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	6
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	9

Incidents:

- Nothing to report

Other HSE Activities:

- Safety focus – pre operation inspections

TODAY'S ACTIVITIES

Activity
Received Norseman penetration block out steel
WTP Mechanical and Piping - Winfield
Drilled Anchor Bolts and installed Restraints on TK-201
Drilled Anchor Bolts and installed Piping Module for MF-203 and MF-202
Finished bolting remainder of accessible Tank Nozzles TK-501 and TK-203 Dome
Hauled up filter racking and staged beside MF skids
Continued uncrated material and received to packing slips
WTP Phase 1 mechanical – Norseman
Continued trimming and detailing man door & overhead door cut outs
Continued sealing the exterior panel junctions
Ewing excavated a 2ft perimeter trench so Norseman can tension the lower portion of the exterior fabric
Shaking out penetration block out steel
HLF Earthworks – Ewing & Layfield
5520 m2 GCL and 5420 m2 Liner Installed
Continued cutting material out of HLF Slope for Phase 2B Perimeter Berm
Loading out and hauling out waste material for the next length of the Phase 2B Perimeter Berm
Tetra Tech on site for Liner QA / QC as well as providing compaction testing at the Phase 2B Perimeter Berm

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	36	5,280
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	12	360
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	8	96	3,108
AUL	Structural	-	-	4,608
Norseman	Building erection	7	84	3,792
EWING	Earthworks	16	192	15,024
Layfield	Laying Liner	13	156	2,784
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**48**	**576**	**47,640**

PROJECT PHOTOS

WTP – Fusing 12-inch HDPE for the LDSP return line

HLF – Stockpiling site grading fill for use in the phase 2B perimeter berm

HLF – Liner Installation Progress

WTP – Moving PAL filter skids onto there pads

	Victoria Gold Daily Construction Report				July 4, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		12°C	30°C	calm	Smoky

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Electrical mobilization for grounding grid installation	July 5, 2022	July 6, 2022	Arriving July 6th
Lining of Phase 2A	July 20, 2022	July 20, 2022	4820 m2 GCL and 4690 m2 Liner Installed 65% complete entire project
Norseman building – Interior Liner Completion	July 17, 2022	July 17, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	6
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	9

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

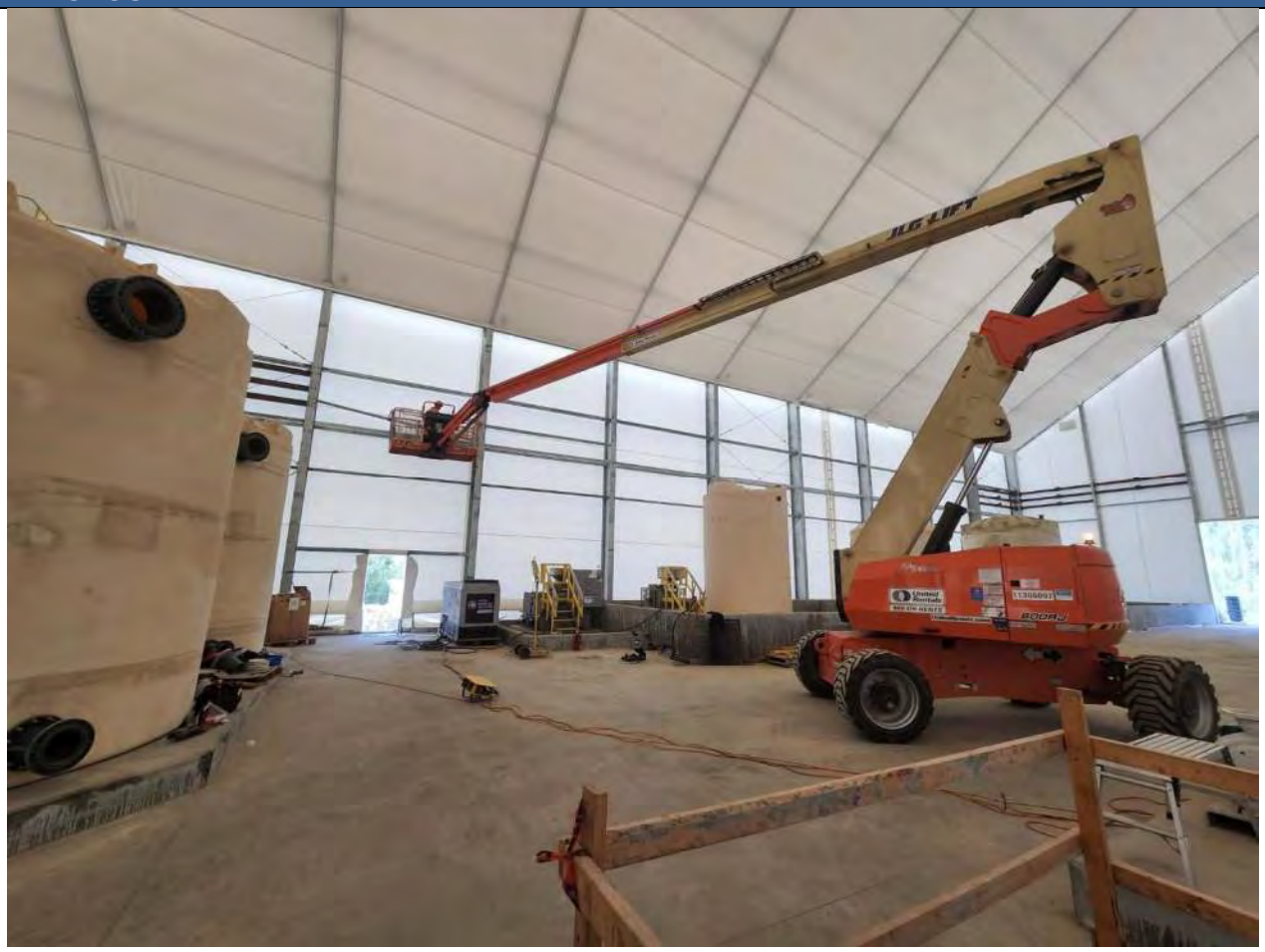
TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Drilled Anchor Bolts and installed Restraints on TK-201
Drilled Anchor Bolts and installed Piping Module for MF-203 and MF-202
Finished bolting remainder of accessible Tank Nozzles TK-501 and TK-203 Dome
Hauled up filter racking and staged beside MF skids
Continued uncrated material and received to packing slips
WTP Phase 1 mechanical – Norseman
Installing block out steel for the fabric penetrations
HLF Earthworks – Ewing & Layfield
Layfield - 4820 m2 GCL and 4690 m2 Liner Installed
Continued cutting material out of HLF Slope for Phase 2B Perimeter Berm
Loading out and hauling out waste material for the next length of the Phase 2B Perimeter Berm
Extended lateral #2 west approximately 60m
Tetra Tech on site for Liner QA / QC as well as providing compaction testing at the Phase 2B Perimeter Berm

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	72	5,316
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	24	372
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	8	192	3,204
AUL	Structural	-	-	4,608
Norseman	Building erection	7	168	3,876
EWING	Earthworks	16	384	15,216
Layfield	Laying Liner	13	312	2,940
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**48**	**1,152**	**48,216**

PROJECT PHOTOS



WTP – Installing the fabric penetration block for the cable tray

HLF – Loading out saturated & frozen material from Phase 2B perimeter berm subgrade

WTP – Rough setting the PAL filtration skids

HLF – extension of the lateral #2W

JDS	Victoria Gold Daily Construction Report				July 5, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		12°C	28°C	calm	Smoky

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Electrical mobilization for grounding grid installation	July 5, 2022	July 6, 2022	Arriving July 6th
Lining of Phase 2A	July 20, 2022	July 20, 2022	Reset day off 65% complete entire project
Norseman building – Interior Liner Completion	July 17, 2022	July 17, 2022	Completed the installation of penetration block out steel

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	6
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	9

Incidents:

- Nothing to report

Other HSE Activities:

- Evacuation procedure & readiness review

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Start Laying out Pipe Supports Around TK-500
Laid out TK-501 and identified Required Notching in Cement.
Leveled MF-203 and leveled out MF Filter Racking to Common Baseline of Skid
Set P-201, P-202 and P-203 Pumps on their Anchor Bolts.
Brought the Majority of Material up from lower Laydown up to WTP Laydown
WTP Phase 1 mechanical – Norseman
Completed Installing block out steel for the fabric penetrations
HLF Earthworks – Ewing & Layfield
Layfield – Day off in camp to rest up and re-focus
Ripping frozen material from the perimeter berm subgrade
Loading out and hauling out waste material for the next length of the Phase 2B Perimeter Berm

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	96	5,340
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	36	384
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	8	288	3,300
AUL	Structural	-	-	4,608
Norseman	Building erection	7	252	3,960
EWING	Earthworks	16	576	15,408
Layfield	Laying Liner	-	312	2,940
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**34**	**1,560**	**48,624**

PROJECT PHOTOS

HLF – Continued loading out organics and unsuitable material from Perimeter berm

HLF – Ripping frozen material from the Phase 2B perimeter berm subgrade

JDS	Victoria Gold Daily Construction Report				July 6, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		12°C	32°C	Light	Very Smoky

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Electrical mobilization for grounding grid installation	July 5, 2022	July 8, 2022	Delayed due to flight cancellation and freight – arriving July 8th
Lining of Phase 2A	July 20, 2022	July 20, 2022	Back in the field after reset
Norseman building – Interior Liner Completion	July 17, 2022	July 17, 2022	Continuing outer lower termination strip

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	6
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	9

Incidents:

- Nothing to report

Other HSE Activities:

- Evacuation procedure & readiness review
- Shut down Layfield at 1pm due to heavy smoke and crew side effects

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Start Laying out Pipe Supports Around TK-500
Laid out TK-501 and identified Required Notching in Cement.
Leveled MF-203 and leveled out MF Filter Racking to Common Baseline of Skid
Set P-201, P-202 and P-203 Pumps on their Anchor Bolts.
Brought the Majority of Material up from lower Laydown up to WTP Laydown
WTP Phase 1 mechanical – Norseman
Cutting puck board for building penetrations
Continuing outer lower termination strip
HLF Earthworks – Ewing & Layfield
Layfield – Working on southwest slope
Ripping frozen material from the perimeter berm subgrade
Loading out and hauling out waste material for the next length of the Phase 2B Perimeter Berm

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	-	96	5,340
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	48	396
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	8	384	3,396
AUL	Structural	-	-	4,608
Norseman	Building erection	7	336	4,044
EWING	Earthworks	16	768	15,600
Layfield	Laying Liner	13	468	3,096
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**45**	**2,100**	**49,164**

PROJECT PHOTOS

HLF – Layfield starting Southwest bowl section of liner

JDS	Victoria Gold Daily Construction Report				July 7, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		13°C	27°C	Light	Very Smoky

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Electrical mobilization for grounding grid installation	July 5, 2022	July 8, 2022	Delayed due to flight cancellation and freight – arriving July 8th
Lining of Phase 2A	July 20, 2022	July 20, 2022	6264m2 of GCL and 6100m2 of Liner laid 74% complete
Norseman building – Interior Liner Completion	July 17, 2022	July 17, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	6
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	9

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Laid out Pipe Supports under C-103, C-102, C-101 and behind TK-201 and TK-202
Laid out and set Tank Restraints on TK- 1201, TK-801 and TK-701
Prepped weld area, installed Angle Guides and hoisted the Filter Manifold and Frame into place with Bessy Clamps and Vise Grips
Hoisted MF-201 and MF-202's Filter Manifolds Vertical Support Columns on to Pallet in prep for shipping
Tightened down TK-201 Anchor bolts
WTP Phase 1 mechanical – Norseman
Cutting puck board for building penetrations
Continuing outer lower termination strip
HLF Earthworks – Ewing & Layfield
Layfield – 6264m2 of GCL and 6100m2 of Liner laid
Continued ripping and stockpiling frozen material from the Phase 2B Perimeter Berm subgrade
Continued loading out and hauling out waste material for the next length of the Phase 2B Perimeter Berm

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	-	96	5,340
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	48	396
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	8	384	3,396
AUL	Structural	-	-	4,608
Norseman	Building erection	7	336	4,044
EWING	Earthworks	16	768	15,600
Layfield	Laying Liner	13	468	3,096
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**45**	**2,100**	**49,164**

PROJECT PHOTOS

WTP – Norseman installing the interior lining

WTP – Rough set MF feed pumps

HLF – Layfield Liner Installation

WTP – Norseman installing the interior lining

JDS	Victoria Gold Daily Construction Report				July 8, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		12°C	23°C	Light	Smoky

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Electrical mobilization for grounding grid installation	July 5, 2022	July 8, 2022	Delayed due to flight cancellation and freight – arriving July 8th
Lining of Phase 2A	July 20, 2022	July 20, 2022	5230 m^2 of GCL and 4770 m^2 of Liner laid 79% complete
Norseman building – Interior Liner Completion	July 17, 2022	July 17, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	6
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	9

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Hoisted and moved TK-101, TK-102 and TK-103 into building through the access provided by Norseman
Laid out pipe supports behind TK-201 and TK-202
Started dressing TK-101, TK-102 and TK-103
Set MF-203 Filter Racks in place and welded the frames to the columns. Installed and tightened bolts on end plates and where two racks converge
WTP Phase 1 mechanical – Norseman
Continued framing of interior penetrations
Installing interior lining of East End Wall
HLF Earthworks – Ewing & Layfield
Layfield – 5230 m^2 of GCL and 4770 m^2 of Liner laid
Covered GCL with liner in preparation for forecasted rain showers the following day
Continued ripping and stockpiling site grading material for use in the Phase 2B West Perimeter Berm
Continued loading out and hauling out waste material and backfilling and packing site grading for the next length of the Phase 2B Perimeter Berm
Tetratech completed subgrade testing of Phase 2B Perimeter Berm

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	168	5,412
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	72	420
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	8	576	3,588
AUL	Structural	-	-	4,608
Norseman	Building erection	7	504	4,212
EWING	Earthworks	16	1,152	15,984
Layfield	Laying Liner	13	684	3,312
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**47**	**3,156**	**50,220**

PROJECT PHOTOS

WTP – Setting MF-203 Filter Rack in Place

WTP – Norseman Installing Interior Lining of East End Wall

WTP – Framing Interior Cable Tray Penetration

HLF – Excavation of Phase 2B West Perimeter Berm

HLF – Liner Laid Fully Covering GCL, Preparing to Fuse in Preparation of Forecasted Rain

JDS	Victoria Gold Daily Construction Report				July 9, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		13°C	19°C	Light	Smoke & Rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Electrical mobilization for grounding grid installation	July 5, 2022	July 9, 2022	Delayed due to flight cancellation and freight – arriving July 9th
Lining of Phase 2A	July 20, 2022	July 20, 2022	Down day due to rain – no progress 79% complete
Norseman building – Interior Liner Completion	July 17, 2022	July 17, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	6
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	9

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Finished welding the underside of the top manifold racks
Installed mod bracing between racking modules both North/South and ½ of the East/West bracing.
Installed feed manifold to manifold racks
Installed oxygen injection tubes into bottom rack manifolds.
Installed tank nozzles on TK-103, TK-102, and TK-101
Layout of pipe supports behind TK-201 and TK-202
WTP Phase 1 mechanical – Norseman
Continued framing of interior penetrations
Installing interior lining of East and South wall
HLF Earthworks – Ewing & Layfield
Layfield – No progress due to rain delay
Continued ripping and stockpiling site grading material for use in the Phase 2B West Perimeter Berm
Continued loading out and hauling out waste material and backfilling and packing site grading for the next length of the Phase 2B Perimeter Berm
Discovered permafrost further up the West Perimeter Berm – test pits to follow
Tetratech completed subgrade testing of Phase 2B Perimeter Berm

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	216	5,460
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	84	432
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	8	672	3,684
AUL	Structural	-	-	4,608
Norseman	Building erection	7	588	4,296
EWING	Earthworks	16	1,344	16,176
Layfield	Laying Liner	11	792	3,420
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**47**	**3,696**	**50,760**

PROJECT PHOTOS

WTP – Installing Feed Manifold to Manifold Racks

WTP – Installing Interior Lining on South Wall

HLF – Backfill and Compaction of Phase 2B West Perimeter Berm

HLF – Liner Progress Prior to Rain Delay

JDS	Victoria Gold Daily Construction Report				July 10, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		13°C	19°C	Light	Light Haze

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Electrical mobilization for grounding grid installation	July 5, 2022	July 9, 2022	On site and beginning layout of grounding grid
Lining of Phase 2A	July 20, 2022	July 20, 2022	8640 m^2 of GCL and 7884 m^2 of Liner laid 86% complete
Norseman building – Interior Liner Completion	July 17, 2022	July 17, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	6
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	9

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
ERT team on site at WTP to complete training and become familiarized with the layout of the building / equipment
WTP Mechanical and Piping - Winfield
MF 203 – Installed flush connections, return header on primary and secondary discharge of top rack manifolds
MF 203 – Installed slip stream connections
Laid out pipe supports to the West of the MF filter skids
Night capped open nozzles on tanks and put any loose material in the laydown for each tank
Welded down West wall tubing for Norseman
Began general clean up of site in preparation of travelling offsite the following day
WTP Phase 1 mechanical – Norseman
Continued interior lining of East and West end walls
HLF Earthworks – Ewing & Layfield
Layfield – 8640 m^2 of GCL and 7884 m^2 of Liner laid (record day to date)
Dug test pits along the Phase 2B West Perimeter Berm with Tetratech to confirm the presence of frozen ground
- Meetings to be held with Tetratech and Forte Engineering to discuss findings and path forward
Loaded and hauled site grade fill for the WTP road expansion and transformer / E – house pad

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	216	5,460
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	84	432
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	8	672	3,684
AUL	Structural	-	-	4,608
Norseman	Building erection	7	588	4,296
EWING	Earthworks	16	1,344	16,176
Layfield	Laying Liner	11	792	3,420
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**47**	**3,696**	**50,760**

PROJECT PHOTOS

WTP – Installing Air Scrub HDPE Manifold

WTP – ERT Practicing Rescue Scenarios Above the Flocculation Tanks

WTP – Mueller Beginning Grounding Grid Installation

HLF – Liner Deployment on Phase 2A North Slope

JDS	Victoria Gold Daily Construction Report				July 11, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		9°C	16°C	Light	Clear/Rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Lining of Phase 2A	July 20, 2022	July 20, 2022	6480 m^2 of GCL and 6423 m^2 of Liner laid 92% complete
Norseman building – Interior Liner Completion	July 17, 2022	July 17, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	6
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	9

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Ewing shaping and building the E-House and transformer pad for the WTP

WTP Mechanical and Piping - Winfield

Conducted site clean up in the morning and consolidated any hardware that may have been spread out so that it does not go missing in the interim

Traveled off site and returning July 19th

WTP Phase 1 mechanical – Norseman

Beginning to secure tensioned lower sections of exterior fabric with termination strips

Cleaning up fabric seams around South man door

HLF Earthworks – Ewing & Layfield

Layfield – 6480 m2 of GCL and 6423 m2 of Liner laid. Heavy rain and lightening in the afternoon interrupted liner placement

Established solution with Forte for frozen materials encountered on the Phase 2B West Perimeter Berm

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	96	5,556
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	24	456
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	4	144	3,828
AUL	Structural	-	-	4,608
Norseman	Building erection	7	168	4,464
EWING	Earthworks	13	348	16,524
Layfield	Laying Liner	13	288	3,708
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**42**	**1,068**	**51,828**

PROJECT PHOTOS

WTP – Securing South of Exterior Fabric with Termination Strips

WTP – Shaping E-House and Transformer Pad

HLF –Liner Deployment on Phase 2A North Slope

JDS	Victoria Gold Daily Construction Report				July 12, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		10°C	18°C	Light	Sun & Cloud

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Lining of Phase 2A	July 20, 2022	July 20, 2022	5616 m^2 of GCL and 6090 m^2 of Liner laid 96% complete
Norseman building – Interior Liner Completion	July 17, 2022	July 17, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	6
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	9

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Received Finished Water Tank (TK-401)
Received skidded wash car for contractor's use
WTP Mechanical and Piping - Winfield
Off site – returning July 19th
WTP Phase 1 Mechanical – Norseman
Continuing to tension lower sections of exterior fabric with termination strips
Trimming fabric along West bay door
WTP Electrical – Mueller
Continuing to lay grounding grid around the building
Shaking out their office trailer along with materials they mobilized with
HLF Earthworks – Ewing & Layfield
Layfield – 5616 m^2 of GCL and 6090 m^2 of Liner laid
Continued backfilling and compacting the Phase 2B West Perimeter Berm
Dug two test pits at the end of the day along the Phase 2B West Perimeter Berm to verify whether there was frozen ground present

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	144	5,604
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	36	468
Mueller	Electrical	-	-	3,384
Winfield/VETS	Mech/Pipe	-	144	3,828
AUL	Structural	-	-	4,608
Norseman	Building erection	7	252	4,548
EWING	Earthworks	13	504	16,680
Layfield	Laying Liner	13	444	3,864
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**38**	**1,524**	**52,284**

PROJECT PHOTOS

WTP – Received Finished Water Tank (TK-401)

WTP – Securing South of Exterior Fabric with Termination Strips

WTP – Received Skidded Wash Car

WTP – Lynx Spotted Outside the JDS Trailer

HLF – Phase 2A Liner Deployment Before Weather Moves In

HLF – Phase 2B West Perimeter Berm Compaction Testing

JDS	Victoria Gold Daily Construction Report				July 13, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		10°C	19°C	Light	Sun & Cloud

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Lining of Phase 2A	July 20, 2022	July 20, 2022	7128 m^2 of GCL and 6551 m^2 of Liner laid 98% complete
Norseman building – Interior Liner Completion	July 17, 2022	July 14, 2022	Norseman completing final touches on fabric installation

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	6
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	9

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Placed wash car – to be connected by VGCX E&I Team
WTP Mechanical and Piping - Winfield
Off site – returning July 19th
WTP Phase 1 Mechanical – Norseman
Completing site clean up
West Bay Door Termination Stripped and Trimmed
Installing last of the termination strips along the bottom of the South wall
WTP Electrical – Mueller
Completed installation of grounding grid
Setting up the trailered office and tool crib
HLF Earthworks – Ewing & Layfield
Layfield – 7128 m^2 of GCL and 6551 m^2 of Liner laid
Continued backfilling and compacting the Phase 2B Perimeter Berm
Excavated saturated material from above Phase 2B Perimeter Berm

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	192	5,652
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	48	480
Mueller	Electrical	2	96	3,480
Winfield/VETS	Mech/Pipe	-	144	3,828
AUL	Structural	-	-	4,608
Norseman	Building erection	7	336	4,632
EWING	Earthworks	13	660	16,836
Layfield	Laying Liner	13	600	4,020
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**40**	**2,076**	**52,836**

PROJECT PHOTOS

HLF – Laying of GCL on the Phase 2A North Slope

HLF – Excavation of Saturated Material Along the Phase 2B Perimeter Berm

WTP – Placed Skidded Wash Car

WTP – West Bay Door Termination Stripped and Trimmed

JDS	Victoria Gold Daily Construction Report				July 14, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		8°C	18°C	Light	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Lining of Phase 2A	July 20, 2022	July 20, 2022	5972 m^2 of GCL and 6516 m^2 of Liner laid 99% complete
Norseman building – Interior Liner Completion	July 17, 2022	July 14, 2022	Completed

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	6
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	9

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Received truckload of epoxy coated piping

WTP Mechanical and Piping - Winfield

Off site – returning July 19th

WTP Phase 1 Mechanical – Norseman

Norseman completed walkdown with JDS and Substantial Completion document was signed for Norseman

Completed remainder of site clean up before travelling off site

WTP Electrical – Mueller

Travelled off site, returning July 26th

HLF Earthworks – Ewing & Layfield

Layfield – 7128 m^2 of GCL and 6551 m^2 of Liner laid

- GCL and Liner placement complete, 500m of welding remains (approximately 2 days)

Continued backfilling and compacting the Phase 2B Perimeter Berm

Discovered a source of water flowing through Phase 2B, further efforts to follow up the source tomorrow

MANPOWER ON SITE

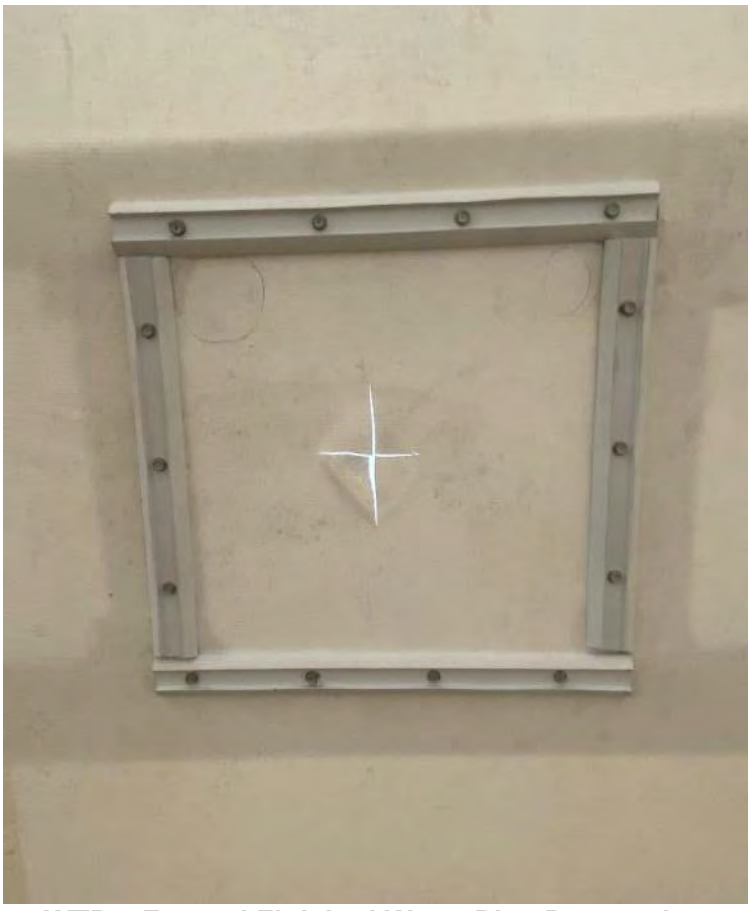
Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	228	5,688
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	60	492
Mueller	Electrical	-	96	3,480
Winfield/VETS	Mech/Pipe	-	144	3,828
AUL	Structural	-	-	4,608
Norseman	Building erection	-	336	4,632
EWING	Earthworks	13	816	16,992
Layfield	Laying Liner	13	756	4,176
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**30**	**2,436**	**53,196**

PROJECT PHOTOS

HLF – Compaction Testing Along the Phase 2B Perimeter Berm

HLF – Excavation in Phase 2B to Discover the Source of Water

WTP – Completed Termination Strips Along the Southern Exterior Wall



WTP – Framed Finished Water Pipe Penetration

WTP – Receipt of Epoxy Coated Steel Piping

JDS	Victoria Gold Daily Construction Report				July 15, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		10°C	19°C	Light	Sun & Cloud

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Lining of Phase 2A	July 20, 2022	July 18, 2022	Line laid, 50 m of welding along with QA/QC remains 99% complete
Excavation of Road Between Camp and ADR Road	July 17, 2022	July 17, 2022	Received fusing jaws from Smalls in the afternoon

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	1	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Ewing labourer hyperextended their left thumb while pulling on liner at Phase 2A

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Received truckload of 24" cable tray
Received truckload of pipe supports
Received HDPE fusing jaws to be used for fusing HDPE being buried under the road between the camp and ADR road.
WTP Mechanical and Piping - Winfield
Off site – returning July 19th
WTP Electrical – Mueller
Off site – returning July 24th
HLF Earthworks – Ewing & Layfield
Layfield – Liner deployment complete, 500/550 m of remaining seam welding completed
Layfield – Liner deployment team began to clean the work site
Continued backfilling and compacting the Phase 2B Perimeter Berm
Excavated trenches to determine the source of the water flow through the cracked shale layer buried in the ground in Phase 2B beside the Perimeter Berm
Excavation discovered a layer of seasonal ice buried within the cracked shale layer
Seasonal ice was removed, while the saturated slope was left to dry out any remaining ground water

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	264	5,724
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	72	504
Mueller	Electrical	-	96	3,480
Winfield/VETS	Mech/Pipe	-	144	3,828
AUL	Structural	-	-	4,608
Norseman	Building erection	-	336	4,632
EWING	Earthworks	13	972	17,148
Layfield	Laying Liner	12	900	4,320
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**29**	**2,784**	**53,544**

PROJECT PHOTOS

HLF – Completed Liner Deployment of Phase 2A

HLF – Multiple Trenches Dug to Locate the Source of Water

HLF – Seasonally Frozen Material Located and Excavated

WTP – Receipt of Bulk Cable Tray

WTP – Receipt of First Pipe Support Shipment

JDS	Victoria Gold Daily Construction Report				July 16, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		9°C	16°C	Light	Rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Lining of Phase 2A	July 20, 2022	July 18, 2022	12 m of seam welding remains, weather delayed the crew from completing their welds 99% complete
Excavation of Road Between Camp and ADR Road	July 17, 2022	July 17, 2022	Fused pipe sections to burry under excavated road

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Received second truckload carrying remainder of pipe supports and filter press platform steel
Fused 300' of the 16" HDPE feed line
Fused 300' of 12" HDPE return line with flanges on both ends
VGCX E&I team began to wire in the skidded wash car at the WTP
WTP Mechanical and Piping - Winfield
Off site – returning July 19th
WTP Electrical – Mueller
Off site – returning July 24th
HLF Earthworks – Ewing & Layfield
Layfield – Continuing welding of tie in to 1B with 12 m remaining to complete, weather windows were short limiting the opportunity to weld during the day
Layfield – Continuing to complete site clean up and begin packing tools into their c-can
Excavator supported JDS during fusing of 12" & 16" HDPE pipe sections
Crew was on standby for earthworks due to heavy rain at Phase 2B

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	300	5,760
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	84	516
Mueller	Electrical	-	96	3,480
Winfield/VETS	Mech/Pipe	-	144	3,828
AUL	Structural	-	-	4,608
Norseman	Building erection	-	336	4,632
EWING	Earthworks	13	1,128	17,304
Layfield	Laying Liner	12	1,044	4,464
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**29**	**3,132**	**53,892**

PROJECT PHOTOS

WTP – Dragging 12” Insulated HDPE to Fuse a Flange on the End of the Section

WTP – Fusing a Flange on the 12” Insulated HDPE LDSP Return Line

WTP – VGCX E&I Beginning Hook Up of Wash Car

WTP – Receipt of Second Pipe Support Shipment with Filter Press Platform Steel

JDS	Victoria Gold Daily Construction Report				July 17, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		9°C	18°C	Light	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Lining of Phase 2A	July 20, 2022	July 18, 2022	Complete – Remainder of site clean up carried out and staging demobilized equipment outside of the security gate
Excavation of Road Between Camp and ADR Road	July 18, 2022	July 18, 2022	Excavated road and placed WTP feed and return lines with backfill ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Ewing excavated the road between camp and the ADR access road to place the feed and return lines for the WTP
Began backfilling the road at the end of the day
WTP Mechanical and Piping - Winfield
Off site – returning July 19th
WTP Electrical – Mueller
Off site – returning July 26th
HLF Earthworks – Ewing & Layfield
Layfield – Completed tie in weld to 1B, sign off and inspection
Layfield – Site cleaned up for demobilization
Crew continued to complete lifts on the Phase 2B Perimeter Berm with Tetra Tech witnessing and completing compaction tests
Layfield, Ewing and JDS reviewed the current slope of Phase 2B to discuss sloping requirements for when Layfield returns the following year

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	36	5,796
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	12	528
Mueller	Electrical	-	-	3,480
Winfield/VETS	Mech/Pipe	-	-	3,828
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	10	120	17,424
Layfield	Laying Liner	12	144	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**26**	**312**	**54,204**

PROJECT PHOTOS

HLF – Backfilling in Lifts on the Phase 2B Perimeter Berm

WTP – Surveying Target Grade During Excavation of the Road Between Camp and the ADR Access Road

WTP – Feed and Return Line Placed in Trench to be Backfilled

JDS	Victoria Gold Daily Construction Report				July 18, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		8°C	14°C	Light	Rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Lining of Phase 2A	July 20, 2022	July 18, 2022	Complete – Crew left site
Excavation of Road Between Camp and ADR Road	July 18, 2022	July 19, 2022	Heavy rainfall resulted in a standby day with no work completed on the backfill

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Heavy rainfall resulted in the crew backfilling the road between camp and the ADR access road to be on standby all day with no breaks in the weather

WTP Mechanical and Piping - Winfield

Off site – returning July 19th

WTP Electrical – Mueller

Off site – returning July 26th

HLF Earthworks – Ewing & Layfield

Layfield – Scope of work completed and crew left site

Ewing shaping Phase 2B – working to flatten out two knolls and reduce the depth of the valley between them

Ewing cut in small diversion berm in high flow runoff areas to reduce the amount of water and material flowing onto the Phase 2A liner

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	60	5,820
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	24	540
Mueller	Electrical	-	-	3,480
Winfield/VETS	Mech/Pipe	-	-	3,828
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	11	252	17,556
Layfield	Laying Liner	-	144	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**14**	**480**	**54,372**

PROJECT PHOTOS

HLF – Earthworks Shaping in Phase 2B

HLF – Small Diversion Culvert Cut to Reduce Erosion into Phase 2A

WTP – Weather Conditions Postponed Backfill of Road

JDS	Victoria Gold Daily Construction Report				July 119, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		4°C	17°C	Light	Sun & Cloud

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Excavation of Road Between Camp and ADR Road	July 18, 2022	July 20, 2022	Continued backfill and packing material in lifts once saturated material dried out

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Ewing continuing to backfill and compact material in lifts for the road between camp and the ADR access road

Backfill 85% with road scheduled to be reopened before lunch the following day

WTP Mechanical and Piping - Winfield

Crew of 6 travelled into site today to begin on the WTP work front tomorrow

WTP Electrical – Mueller

Off site – returning July 26th

HLF Earthworks – Ewing

Ewing shaping Phase 2B – Stripping overburden from the slope and loading by excavator onto wiggles to haul out of the HLF

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	84	5,844
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	36	552
Mueller	Electrical	-	-	3,480
Winfield/VETS	Mech/Pipe	-	-	3,828
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	11	384	17,688
Layfield	Laying Liner	-	144	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**14**	**648**	**54,540**

PROJECT PHOTOS

HLF – Stripping and Hauling of Overburden from Phase 2B

WTP – Backfilling Over the Feed and Return Line of the WTP

JDS	Victoria Gold Daily Construction Report				July 20, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		8°C	15°C	Light	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Excavation of Road Between Camp and ADR Road	July 18, 2022	July 20, 2022	Completed backfill and reopened the road
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	Material is on site
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	Currently 19% of mechanical equipment is rough set
Completion of Electrical Distribution	Aug 16, 2022	Aug 16, 2022	Anticipated site delivery – July 31st
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Material is on site

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Ewing completed backfill and reopened the road between camp and the ADR access road
WTP Mechanical and Piping - Winfield
Crew began to sort through material that had been delivered while off site – pipe supports, and epoxy coated steel piping
Reorganized laydown for ease of access and hoisting steel
Drilled anchor bolts for Pipe Supports (PS) – PS-32, PS-33
Completed modification to PS 32,33 due to interference between interior building fabric
Reviewed cable tray supports with Mueller ahead of site arrival date
WTP Electrical – Mueller
Off site – returning July 26th
HLF Earthworks – Ewing
Ewing continuing to shape Phase 2B slope with their D10
Returned to backfilling and compacting Phase 2B Perimeter Berm after completion of road rebuild, Tetra Tech on site to witness compaction tests

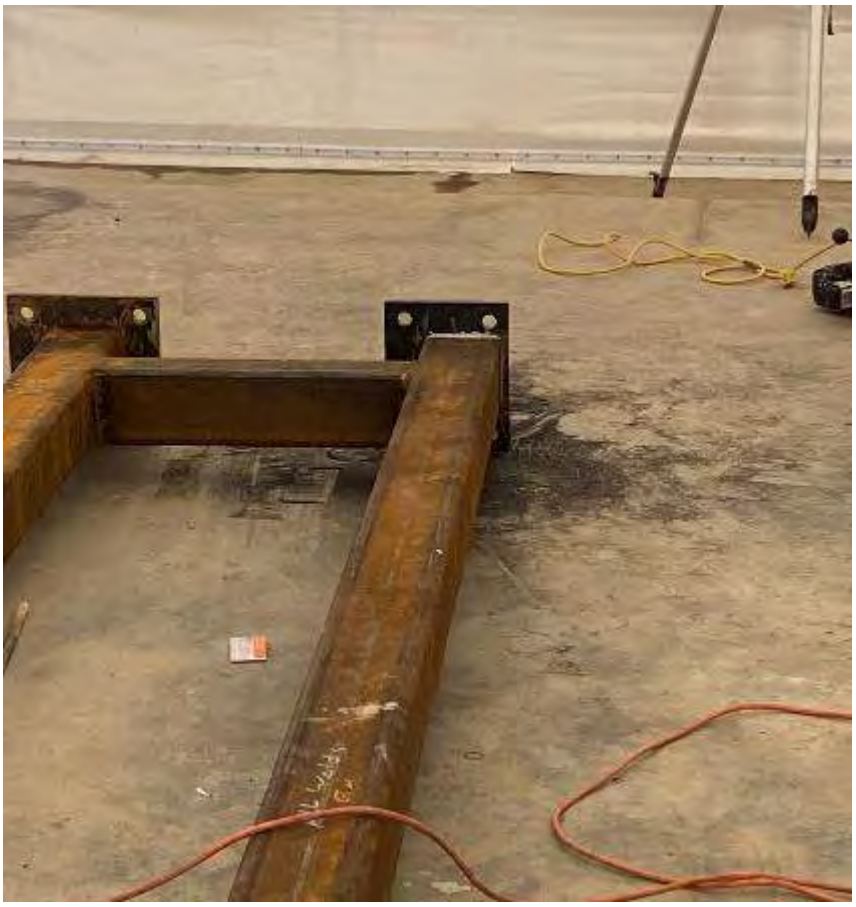
MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	108	5,868
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	48	564
Mueller	Electrical	-	-	3,480
Winfield/VETS	Mech/Pipe	7	84	3,912
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	11	516	17,820
Layfield	Laying Liner	-	144	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**21**	**900**	**54,792**

PROJECT PHOTOS

HLF – D10 Shaping Phase 2B Northern Slope

WTP – Completed Rebuild of Road Between Camp and ADR Access Road



WTP – Modified PS-33 Baseplate to Clear Interior Building Fabric

WTP – Installation of PS-33

JDS	Victoria Gold Daily Construction Report				July 21, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		6°C	18°C	Light	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	Started staging and installing pipe spools
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	Currently, 19% of mechanical equipment is rough set
Completion of Electrical Distribution	Aug 16, 2022	Aug 16, 2022	Anticipated site delivery – July 31st
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Continuing to cut and weld Unistrut to cable tray supports

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

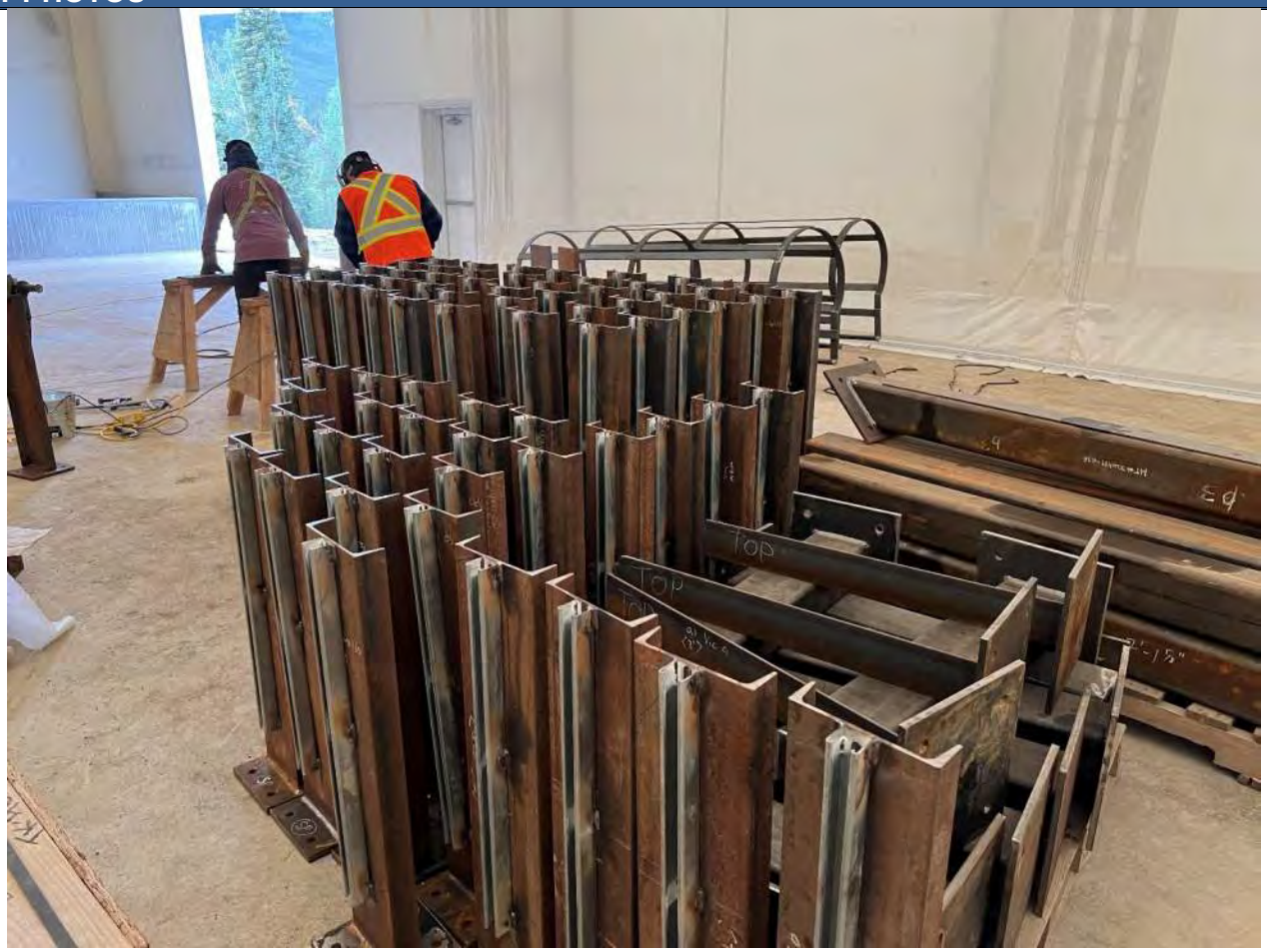
TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Continued pre-cutting and welding Unistrut to CTS
Installed pipe support anchors and installed PS-32
Started staging and Installing ECS pipe spools
WTP Electrical – Mueller
Off-site – returning July 26th
HLF Earthworks – Ewing
Continued shaping Phase 2B slope
Continued backfilling and compacting Phase 2B Perimeter Berm

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	144	5,904
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	60	576
Mueller	Electrical	-	-	3,480
Winfield/VETS	Mech/Pipe	7	168	3,996
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	11	648	17,952
Layfield	Laying Liner	-	144	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**22**	**1,164**	**55,056**
Visitors		-	-	-
Total - Site		**22**	**1,164**	**55,056**

PROJECT PHOTOS



WTP – Welding Unistrut to CST

WTP – Installing Epoxy Coated Pipe in Southeast corner

JDS	Victoria Gold Daily Construction Report				July 22, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		13°C	17°C	Light	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	Continuing to stage and install pipe spools
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	Currently, 25% of mechanical equipment is rough set
Completion of Electrical Distribution	Aug 16, 2022	Aug 16, 2022	Anticipated site delivery – July 31st
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Continuing to cut and weld Unistrut to cable tray supports

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

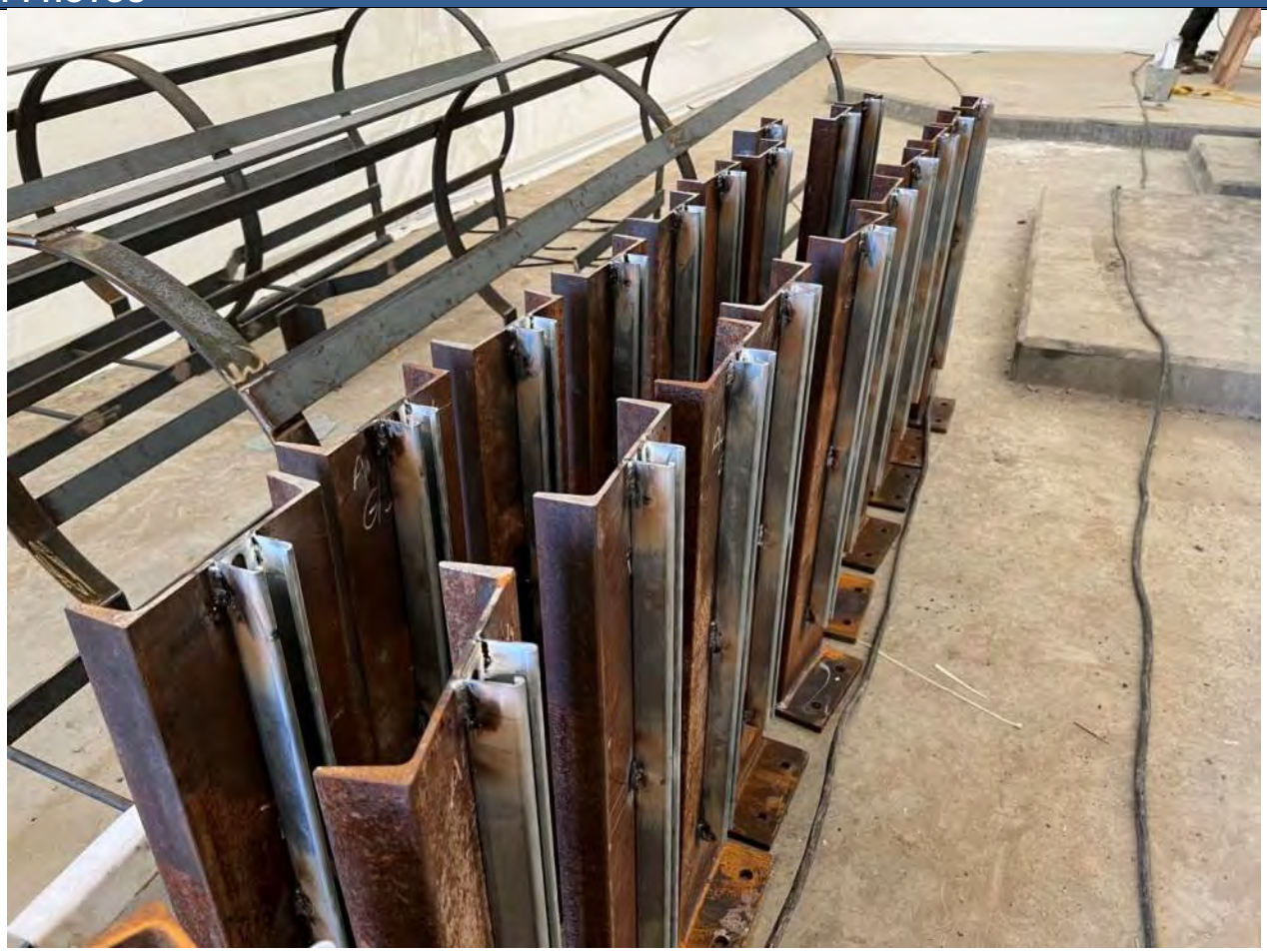
TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Completed welding Unistrut to CTS channel supports and started welding Unistrut to CTS HSS supports
Continued staging and installing ECS pipe spools in Southeast corner
Laid out TK-101, Tk-102, TK-103
WTP Electrical – Mueller
Off-site – returning July 26th
HLF Earthworks – Ewing
Continued shaping Phase 2B slope
Continued backfilling and compacting Phase 2B Perimeter Berm

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	168	5,928
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	72	588
Mueller	Electrical	-	-	3,480
Winfield/VETS	Mech/Pipe	7	252	4,080
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	11	780	18,084
Layfield	Laying Liner	-	144	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**21**	**1,416**	**55,308**
Visitors		-	-	-
Total - Site		**21**	**1,416**	**55,308**

PROJECT PHOTOS



WTP – Continuing to Weld Unistrut to CTS

WTP – Continuing to Install Epoxy Coated Pipe in Southeast corner

JDS	Victoria Gold Daily Construction Report				July 23, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		8°C	19°C	Light	Slightly Cloudy

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	Continuing to stage and install pipe spools
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	Currently, 25% of mechanical equipment is rough set
Completion of Electrical Distribution	Aug 16, 2022	Aug 16, 2022	Anticipated site delivery – July 31st
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Completed cutting and welding Unistrut to cable tray supports

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

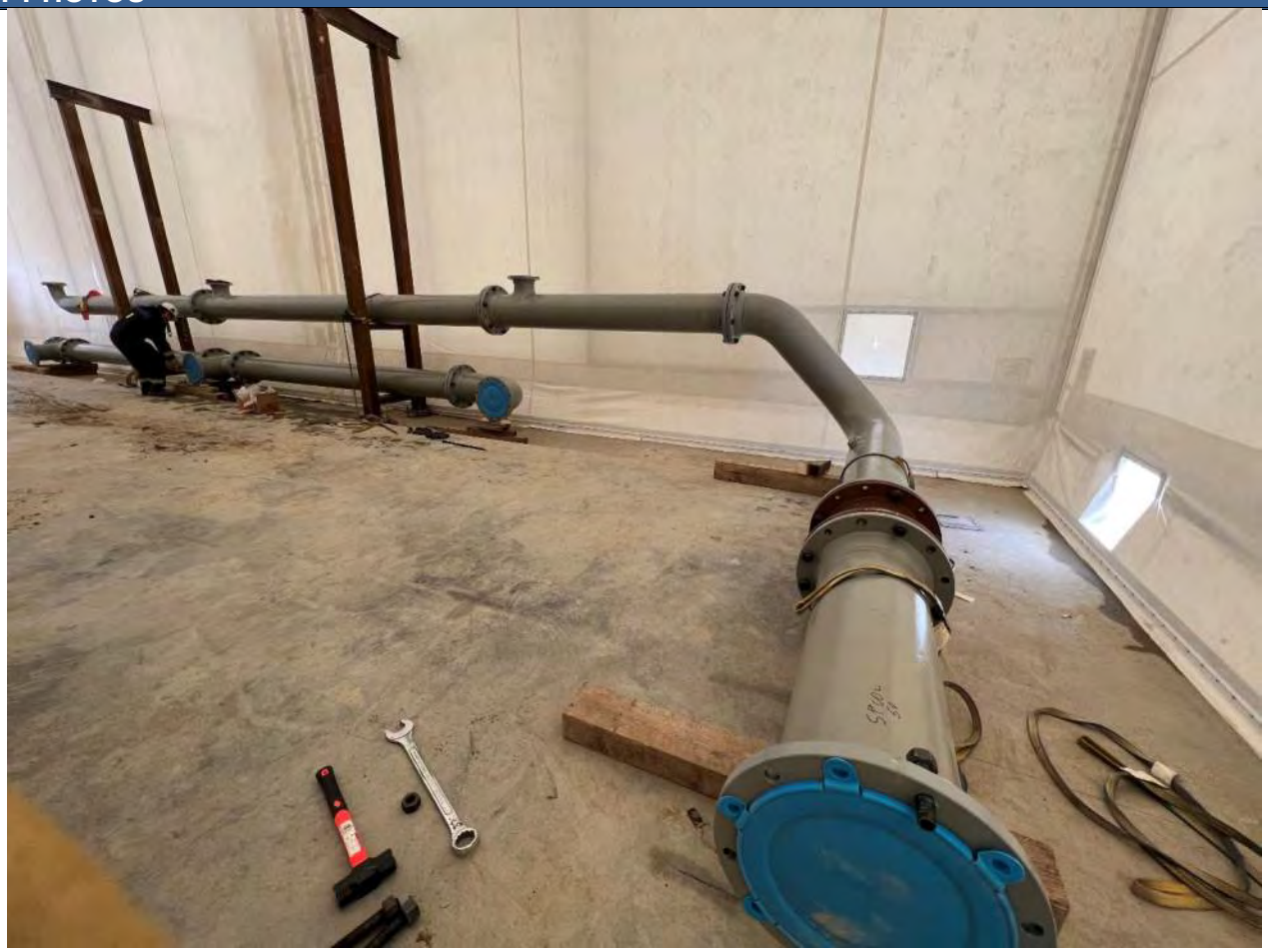
TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Completed welding Unistrut to CTS supports
Installed gaskets on epoxy coated pipe spools
Continued staging and installing ECS pipe spools in Southeast corner
Installed PVC connector spools from manifold bank to main skid on MF-203
WTP Electrical – Mueller
Off-site – returning July 26th
HLF Earthworks – Ewing
Continued shaping Phase 2B slope
Continued backfilling and compacting Phase 2B Perimeter Berm

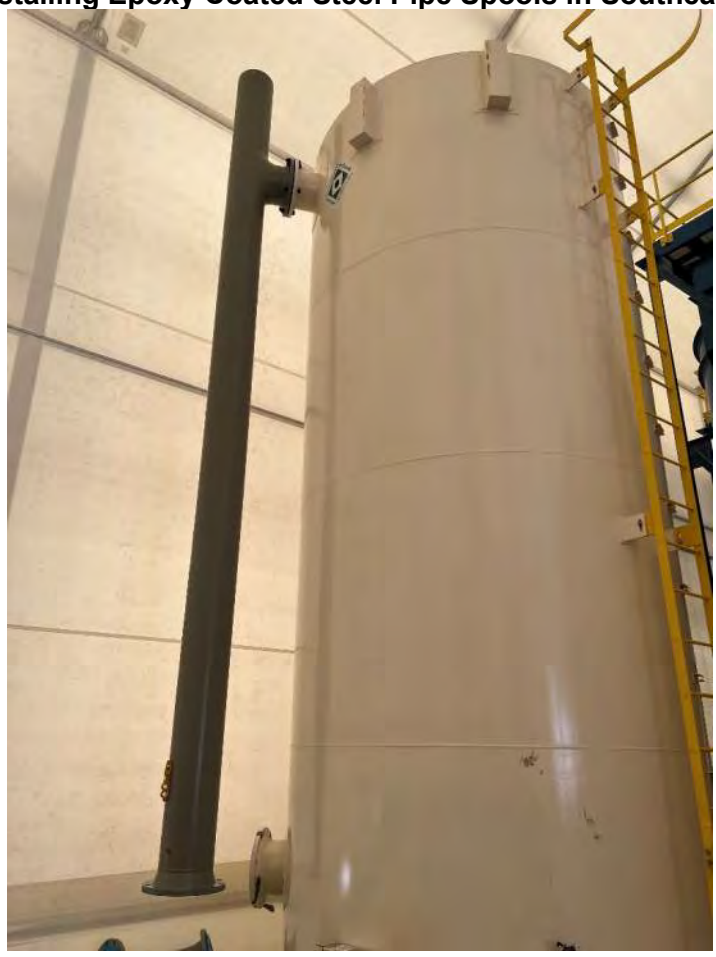
MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	192	5,952
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	84	600
Mueller	Electrical	-	-	3,480
Winfield/VETS	Mech/Pipe	11	384	4,212
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	11	912	18,216
Layfield	Laying Liner	-	144	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**25**	**1,716**	**55,608**
Visitors		-	-	-
Total - Site		**25**	**1,716**	**55,608**

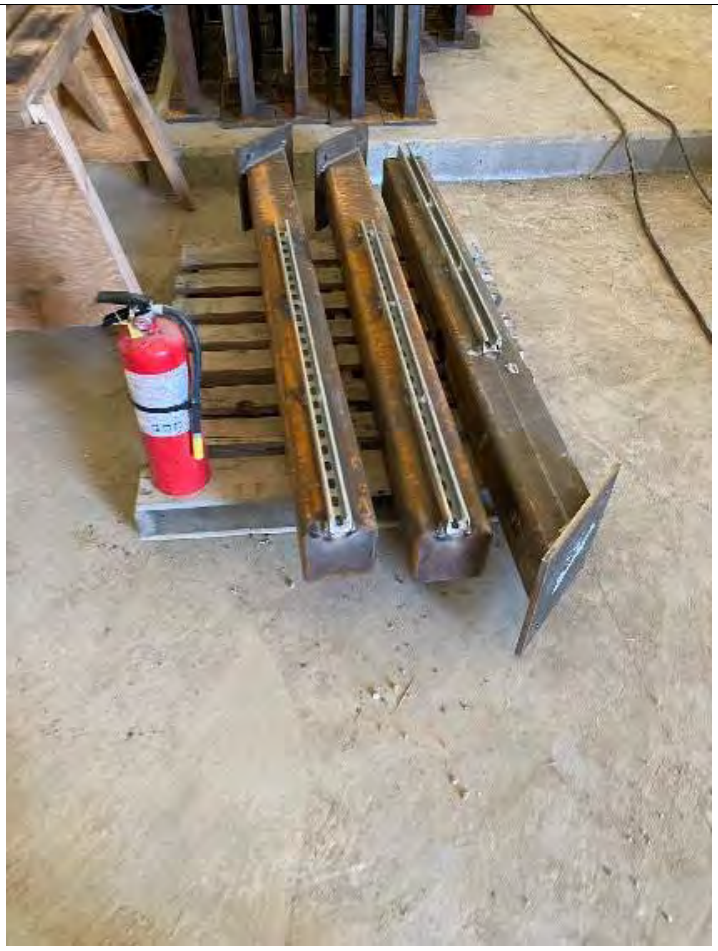
PROJECT PHOTOS



WTP – Installing Epoxy Coated Steel Pipe Spools in Southeast Corner



WTP – Epoxy Coated Pipe connection to Oxidation tank



Welding Unistrut to Corner Cable Tray Supports

	Victoria Gold Daily Construction Report				July 24, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		6°C	22°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	Starting to install gaskets and bolt up flanges
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	Currently, 25% of mechanical equipment is rough set
Completion of Electrical Distribution	Aug 16, 2022	Aug 16, 2022	Anticipated site delivery – July 31st
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Completed cutting and welding Unistrut to cable tray supports

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Layfield's 2 Bobcats loaded up, ready to be shipped out
WTP Mechanical and Piping - Winfield
Installed connector piping on MF-203
Cut down anchor bolts to allow for collar and rod extension and started bush hammering pump bases
Started core drilling pipe supports and epoxying anchors between MF feed tanks and the clarifiers
Moved pumps off MF-201 skid base to allow for installation of anchor bolts
WTP Electrical – Mueller
Off-site – returning July 26th
HLF Earthworks – Ewing
Continued shaping Phase 2B slope
Completed backfilling and compacting Phase 2B Perimeter Berm

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	192	5,976
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	84	600
Mueller	Electrical	-	-	3,480
Winfield/VETS	Mech/Pipe	11	384	4,344
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	11	912	18,348
Layfield	Laying Liner	-	144	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**1,716**	**55,896**
Visitors		-	-	-
Total - Site		**24**	**1,716**	**55,896**

PROJECT PHOTOS

WTP – Installed Connector Piping on MF-203 skid

WTP – Gaskets Installed and Flanges Bolted up on Epoxy Coated Pipe

JDS	Victoria Gold Daily Construction Report				July 25, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		7°C	24°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	Continuing to install gaskets and bolt up flanges
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	Currently, 25% of mechanical equipment is rough set
Completion of Electrical Distribution	Aug 16, 2022	Aug 16, 2022	Anticipated site delivery – July 31st
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Waiting for reamers to prepare mounting holes for Hollo-Bolts

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Received E-house 1

WTP Mechanical and Piping - Winfield

Installed MF-201 skid along with levelling out base supports and epoxying anchors

Received air compressor CA-501, and staged near installation location

Completed core drilling pipe supports and epoxying anchors between MF feed tanks and the clarifiers

Reinstalled MF-Feed pump P-202

WTP Electrical – Mueller

Off-site – returning July 26th

HLF Earthworks – Ewing

Continued shaping Phase 2B slope

Started hauling and installing Riprap in interceptor ditch

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	48	6,000
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	-	-	3,480
Winfield/VETS	Mech/Pipe	11	264	4,476
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	11	264	18,480
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**576**	**56,184**
Visitors		-	-	-
Total - Site		**24**	**576**	**56,184**

PROJECT PHOTOS

WTP – Received E-house 1

WTP – Reinstalled MF-Feed Pump P-202

JDS	Victoria Gold Daily Construction Report				July 26, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		14°C	20°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	Currently setting reaction tanks
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	Currently, 25% of mechanical equipment is rough set
Completion of Electrical Distribution	Aug 16, 2022	Aug 16, 2022	Anticipated site delivery – July 31st
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Started installing cable tray supports

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Assisted environment with river flume construction
WTP Mechanical and Piping - Winfield
Installed ladder brackets and ladders on TK-701, TK-1201, TK-202
Bush hammered underneath MF-Feed pumps and Installed P-201, P-202, and P-203
Painted mating side of cable tray supports and started to install on North wall
WTP Electrical – Mueller
Arrived on site
HLF Earthworks – Ewing
Continued shaping Phase 2B slope
Continued hauling and installing Riprap in interceptor ditch

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	72	6,024
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	2	24	3,504
Winfield/VETS	Mech/Pipe	11	396	4,608
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	11	396	18,612
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**26**	**888**	**56,496**
Visitors		-	-	-
Total - Site		**26**	**888**	**56,496**

PROJECT PHOTOS

WTP – Installed MF Feed Pumps

WTP – Started Installing Cable Tray Supports on Northwest Wall

River Flume Installed

JDS	Victoria Gold Daily Construction Report				July 27, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		3°C	10°C	Slightly windy	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	Continuing to install pipe supports
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	Currently, 25% of mechanical equipment is rough set
Completion of Electrical Distribution	Aug 16, 2022	Aug 16, 2022	Anticipated site delivery – July 31st
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Continuing to install cable tray supports

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Installed ladder brackets and ladders on TK-801
Installed anchor bolts for PS-63, PS-61, and installed PS-65 and PS-66
Cleaned up and moved equipment on North wall to allow Genie lift access to install cable tray supports
Continued to install cable tray supports on North wall
WTP Electrical – Mueller
Started shaking out materials
HLF Earthworks – Ewing
Continued shaping Phase 2B slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	96	6,048
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	6	96	3,576
Winfield/VETS	Mech/Pipe	11	528	4,740
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	11	528	18,744
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**30**	**1,248**	**56,856**
Visitors		-	-	-
Total - Site		**30**	**1,248**	**56,856**

PROJECT PHOTOS

WTP – Continued to Install Cable Tray Supports

WTP – Installed Ladder on TK-801

JDS	Victoria Gold Daily Construction Report				July 28, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		1°C	19°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	Continuing to install pipe supports
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	Currently, 25% of mechanical equipment is rough set
Completion of Electrical Distribution	Aug 16, 2022	Aug 16, 2022	Anticipated site delivery – July 31st
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Started installing cable tray on North wall

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Truck shop robotic vent arm mechanically complete July 27th and electrically complete July 28th

WTP Mechanical and Piping - Winfield

Installed MF-202's Trees and entire lower manifold rack

Started installing MF-202's lower manifold feed pipe

Installed pipe supports PS-61 and PS-63

Continued to install cable tray supports on North, East and South walls

WTP Electrical – Mueller

Started installing cable tray on the North wall

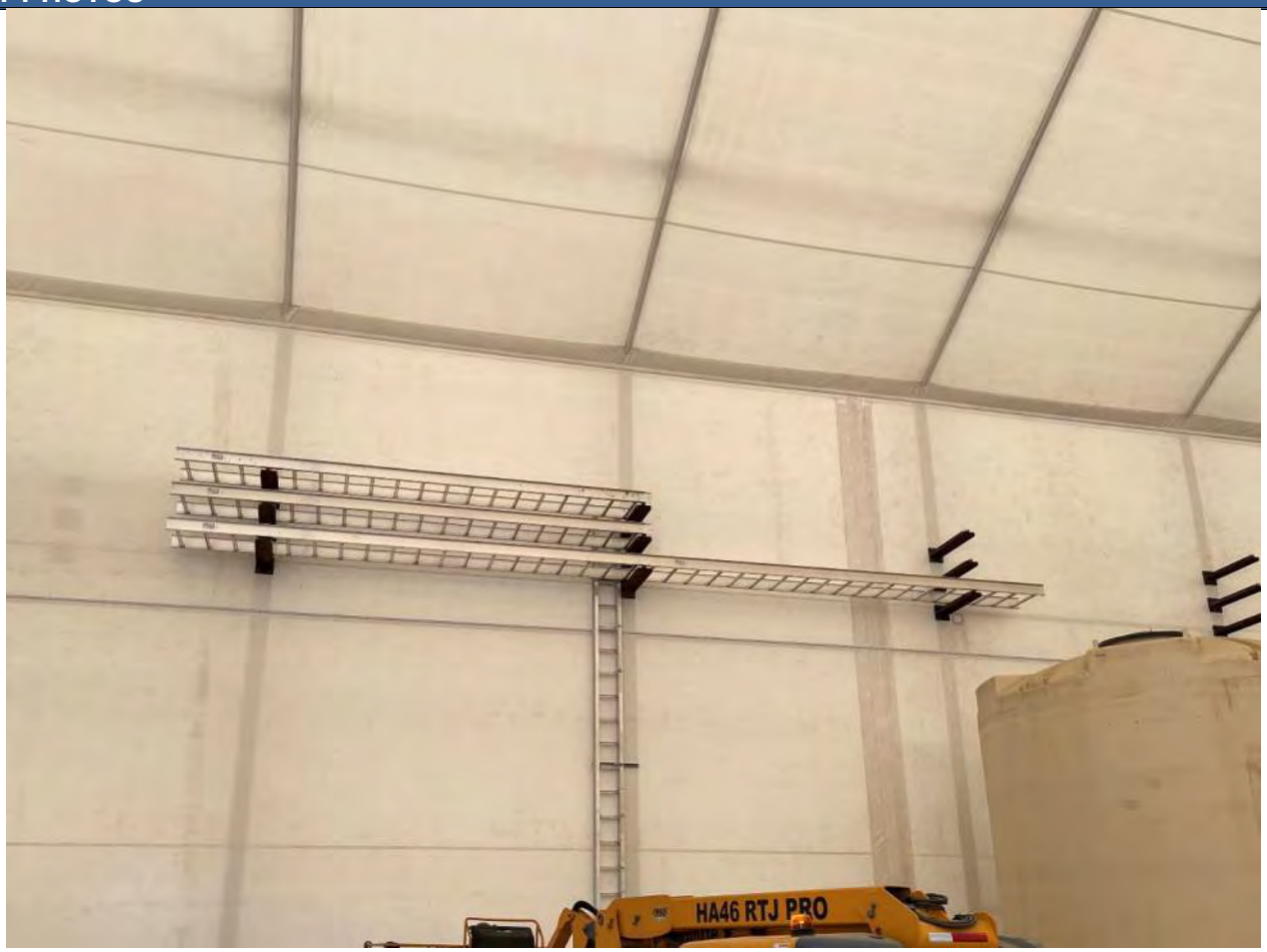
HLF Earthworks – Ewing s

Continued shaping Phase 2B slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	120	6,072
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	6	168	3,648
Winfield/VETS	Mech/Pipe	11	660	4,872
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	11	660	18,876
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**30**	**1,608**	**57,216**
Visitors		-	-	-
Total - Site		**30**	**1,608**	**57,216**

PROJECT PHOTOS



WTP – Started Installing Cable Tray on North Wall

WTP – Installed PS-61 and PS-63

JDS	Victoria Gold Daily Construction Report				July 29, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		5°C	22°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	Continuing to install pipe supports
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	Currently, 25% of mechanical equipment is rough set
Completion of Electrical Distribution	Aug 16, 2022	Aug 16, 2022	Anticipated site delivery – July 31st
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Continued installing cable tray on North wall

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Received and offloaded the 800btu heaters

WTP Mechanical and Piping - Winfield

Installed upper Manifold Racks on MF-202

Installed gasket on top of TK-001 for the 14" overflow piping

Prepped electrical waterfall mating plates, started fabricating waterfall supports

Installed cable tray supports in Southeast corner

WTP Electrical – Mueller

Continued installing cable tray on the North wall

Started working on cable tray grounding

HLF Earthworks – Ewing s

Continued shaping Phase 2B slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	156	6,108
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	6	240	3,720
Winfield/VETS	Mech/Pipe	11	792	5,004
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	11	792	19,008
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**31**	**1,980**	**57,588**
Visitors		-	-	-
Total - Site		**31**	**1,980**	**57,588**

PROJECT PHOTOS

WTP – Continued Installing Cable Tray on North Wall

WTP – Installed Upper Manifold Racks on MF-202

JDS	Victoria Gold Daily Construction Report				July 30, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		1°C	25°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	Continuing to install pipe supports
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	Currently, 25% of mechanical equipment is rough set
Completion of Electrical Distribution	Aug 16, 2022	Aug 16, 2022	Anticipated site delivery – July 31st
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Continued installing cable tray on North and South walls

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Received and offloaded piping and valves shipment from Wolseley
Received and offloaded load of cable tray
WTP Mechanical and Piping - Winfield
Continued installing upper Manifold Racks on MF-202
Continued installing ECS pipe supports along East wall
Installed waterfall drop supports on North wall
WTP Electrical – Mueller
Started installing cable tray on South wall
Continued installing 12" drops on the North wall
Continued installing lighting transformers and outside JBs on the e-houses
HLF Earthworks – Ewing
Continued shaping Phase 2B slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	192	6,144
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	6	312	3,792
Winfield/VETS	Mech/Pipe	11	924	5,136
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	2	708	18,924
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**22**	**2,136**	**57,744**
Visitors		-	-	-
Total - Site		**22**	**2,136**	**57,744**

PROJECT PHOTOS

WTP – Installing Upper Manifold Racks on MF-202

WTP – Installed 12” drops on the North Wall

JDS	Victoria Gold Daily Construction Report				July 31, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		6°C	13°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	Currently installing valves and mixers
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	Currently, 25% of mechanical equipment is rough set
Complete HV testing	Aug 26, 2022	Aug 26, 2022	Planned to start on August 24th
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Continued installing cable tray on North and South walls

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Continued installing upper Manifold Racks on MF-202
Continued Installing valves and mixers on epoxy coated pipe
WTP Electrical – Mueller
Continued installing cable tray in Southeast corner
Continued installing 12" vertical trays
Continued installing grounding on the Southeast corner for all vertical drops
HLF Earthworks – Ewing
Continued shaping Phase 2B slope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	36	6,180
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	6	72	3,864
Winfield/VETS	Mech/Pipe	10	120	5,256
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	2	24	18,948
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**21**	**252**	**57,996**
Visitors		-	-	-
Total - Site		**21**	**252**	**57,996**

PROJECT PHOTOS

WTP – Mounted HV-007 to Oxidation Tank

WTP – Installing Manifold Racks and Headers for MF-203

JDS	Victoria Gold Daily Construction Report				August 1, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		8°C	18°C	Calm	Partly Cloudy

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	Currently installing valves and mixers
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	Currently, 30% of mechanical equipment is rough set
Complete HV testing	Aug 26, 2022	Aug 26, 2022	Planned to start on August 24th
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Continued installing cable tray on North and South walls

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Continued installing upper Manifold Racks on MF-202
Continued installing valves and mixers on epoxy coated pipe
Started assembly of pipe rack for MF Units
WTP Electrical – Mueller
Continued installing tray drops to clarifier motors
Continued installing tray tees on North wall
Assisted VGCX with ADR shutdown to install 15kV load break
HLF Earthworks – Ewing
Excavated WTP Transformer Pad
Assisted Cody with HDPE Pipe fusing

MANPOWER ON SITE

PBS	Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
	EPCM Construction Contractors				
	JDS	EPCM	2	60	6,204
CB001	Nahanni	Concrete	-	-	8,784
CA201	Western Canadian Steel	Pre-Eng	-	-	-
0	Tetratech Eba	Geotech	-	-	600
CE001	Mueller	Electrical	6	144	3,936
0	Winfield/VETS	Mech/Pipe	7	204	5,340
	AUL	Structural	-	-	4,608
	Norseman	Building erection	-	-	4,632
0	EWING	Earthworks	3	60	18,984
	Layfield	Laying Liner	-	-	4,608
0	Clear Stream	Demolition	-	-	96
0	JDS McCaw	Drilling	-	-	288
0	RC	Crane	-	-	132
0	Hatch	Engineering	-	-	-
	Subtotal - EPCM Construction Contractors		**18**	**468**	**58,212**
	Visitors		-	-	-
	Total - Site		**18**	**468**	**58,212**

PROJECT PHOTOS

WTP – Pipe Fusing Ongoing

WTP – Epoxy Coated Pipe Progress

JDS	Victoria Gold Daily Construction Report				August 2, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		11°C	20°C	Calm	Partly Cloudy

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	Currently installing valves and mixers
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	Currently, 30% of mechanical equipment is rough set
Complete HV testing	Aug 26, 2022	Aug 26, 2022	Planned to start on August 24th
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Continued installing cable tray on North and South walls

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

WTP Mechanical and Piping - Winfield

Installed rectangular cable tray supports on South wall

Completed modifications to PS-74, checked measurements and drilled/epoxied anchor bolts

Installed remainder of trees on MF-201 along with the upper and lower manifold racking

- Started to install bracing and remove vics to allow for flush tube installation on MF-201

Installed remainder of bolts on the RW inlet piping

WTP Electrical – Mueller

Completed installing tray tees on North wall

Began installing tray trees on the South wall and building trees that go out to the MCC then installed the tees

Began shaking out MF instrumentation and planning installation procedure

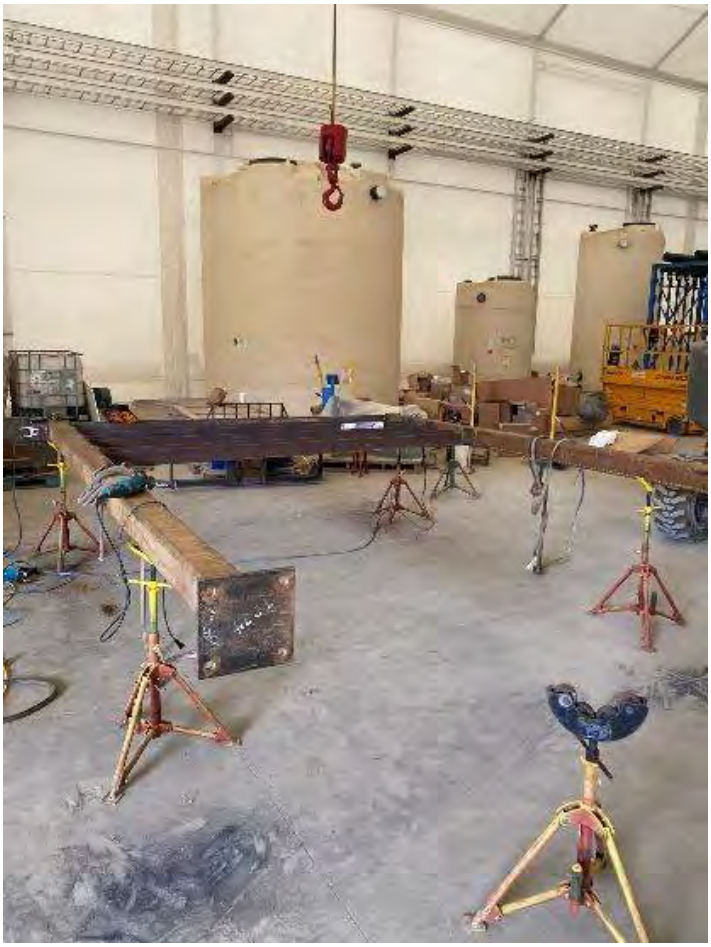
HLF Earthworks – Ewing

Assisted Cody with HDPE pipe fusing

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	84	6,228
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	6	216	4,008
Winfield/VETS	Mech/Pipe	9	312	5,448
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	2	84	19,008
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**19**	**696**	**58,440**

PROJECT PHOTOS



WTP – Fabrication and Modification of PS-74

WTP – Fusing of HDPE Pipe

WTP – Installation of MF-201 Upper and Lower Manifolds

WTP – Formwork for the Transformer Pad

JDS	Victoria Gold Daily Construction Report				August 3, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		12°C	19°C	Calm	Partly Cloudy

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	Currently installing valves and mixers
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	Currently, 30% of mechanical equipment is rough set
Complete HV testing	Aug 26, 2022	Aug 26, 2022	Planned to start on August 24th
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Continued installing cable tray on North and South walls

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Finished installing PS-74, laid out and drilled and installed anchor bolts for PS-73
Continued to install flush fittings and manifold feed piping on the discharge
Removed previously placed air compressors and repositioned them based on newly provided recommendation from Linkan
Installed CA-60A/B and CA-501
Installed grounding rings on FIT-001
WTP Electrical – Mueller
Worked on tees exiting the building towards the MCC, before returning to the South wall tray behind the clarifiers
Installed the West tees and supports followed by building cable tray under the clarifiers
Received cable shipment
Generated list of questions that have surfaced to be answered by Linkan
HLF Earthworks – Ewing
Assisting JDS with HDPE Pipe fusing and continuing to shape Phase 2B

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	108	6,252
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	7	300	4,092
Winfield/VETS	Mech/Pipe	9	420	5,556
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	2	108	19,032
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**20**	**936**	**58,680**

PROJECT PHOTOS

WTP – Poured the Transformer Pad Along South Wall of Building

WTP – Installation of PS-74 and PS-73 Anchor Bolts

JDS	Victoria Gold Daily Construction Report				August 4, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		11°C	21°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	Currently installing valves and mixers
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	Currently, 30% of mechanical equipment is rough set
Complete HV testing	Aug 26, 2022	Aug 26, 2022	Planned to start on August 24th
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Continued installing cable tray on North and South walls

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
MF-201 – Finished installing flush tubes, bracing, and coupling together inlet / discharge feed pipe to the manifold rack
Drilled and installed anchor bolts for PS-72, PS-71, PS-46, PS-45, PS-35
Installed three brass valves onto the fire water spool
Moved to work front and fabricated PS-73, PS-72, PS-71
Installed a HDPE "hubbed" flange and a HDPE vic clamp onto RW (Return Water) inlet piping
WTP Electrical – Mueller
Worked on the high line down to the tray that runs between the clarifiers, currently waiting for the completion of the mechanical piping
Mounted the emergency lights and fabricated the cable tray and mounts to go between the clarifiers and out to the small agitator motors
Welded cable tray stands and pipe stands for Winfield
Met with DC engineers to discuss questions that have arisen over the last several days
HLF Earthworks – Ewing
Assisting JDS with HDPE Pipe fusing and continuing to shape Phase 2B

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	132	6,276
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	6	360	4,152
Winfield/VETS	Mech/Pipe	8	516	5,652
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	2	132	19,056
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**18**	**1,140**	**58,884**

PROJECT PHOTOS

WTP – Installed Hubbed Flange and Vic Clamp on RW Inlet

WTP – Installation of PS-73 and PS-72

JDS	Victoria Gold Daily Construction Report				August 5, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		10°C	21°C	Calm	Clear w/ showers

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	~40% of mechanical equipment is rough set
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Continued installing cable tray on North and South walls

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

WTP Mechanical and Piping - Winfield

Cut and glued the last remaining connector piping from MF skid to MF manifold rack on MF-201, MF-202 and MF-203

Received a Super B trailer of PVC pipe

Installed all the Northwest corner's cable tray supports and started on the Southwest corner

Continued layout of structural supports – leveled PS-66 to suit

Drilled and epoxied anchor bolts followed by installing PS-70 and securing down

WTP Electrical – Mueller

Installed temporary lights inside the building

Worked on the cable tray under the clarifier catwalk

Welded cable tray stands and pipe stands for Mueller

Generated lists for material still needing to be located and ordered

WTP Earthworks – Ewing

Started backfilling the perimeter grounding grid

Completed the site services road crossing backfill

HLF Earthworks – Ewing

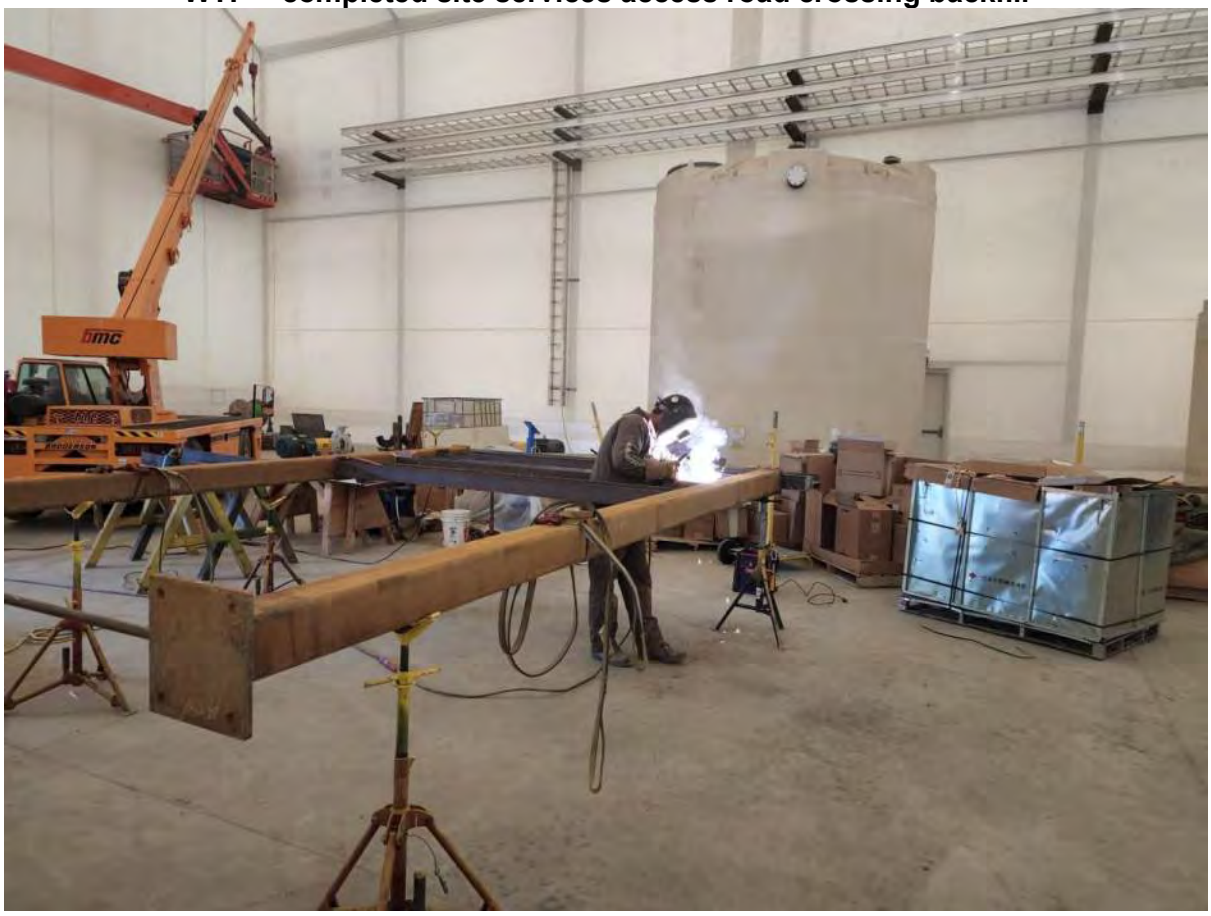
Continued Phase 2B slope shaping

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	156	6,300
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	6	432	4,224
Winfield/VETS	Mech/Pipe	8	612	5,748
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	8	228	19,152
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**1,428**	**59,172**

PROJECT PHOTOS

WTP – completed site services access road crossing backfill



WTP – Pipe support modifications ongoing

JDS	Victoria Gold Daily Construction Report				August 6, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		9°C	19°C	Calm	Overcast w/ showers

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	~40% of mechanical equipment is rough set
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Continued installing cable tray underneath the clarifier catwalks

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Installed all of the Southwest corner cable tray supports
Completed all deficiencies on MF-201, 202, 203
Hoisted TK-101, 102, 103 onto tank base
Installed tank restraints on TK-902
Continued to lay out pipe supports – Installed PS-44, PS-43, PS-42 and saw cut cement and re-laid out PS-62, PS-64
WTP Electrical – Mueller
Worked on installation of cable tray below the clarifier catwalk
Reviewed vendor supplied documents to understand the requirements when it comes to install
WTP Earthworks – Ewing
Completed backfilling the perimeter grounding grid
HLF Earthworks – Ewing
Southeast slope had become too steep of a grade, so Ewing hauled material from the Northwest of Phase 2B to Southeast to even out the slope grade

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	1	168	6,312
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	3	468	4,260
Winfield/VETS	Mech/Pipe	8	708	5,844
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	8	324	19,248
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**20**	**1,668**	**59,412**

PROJECT PHOTOS

WTP – Completion of Grounding Grid Backfill

WTP – Cutting Out Concrete for PS-62

JDS	Victoria Gold Daily Construction Report				August 7, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		5°C	13°C	Calm	Rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 10, 2022	Assembled vertical drops from Clarifier C-101 and C-102
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	~45% of mechanical equipment is rough set
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Readjusted cable tray by the clarifiers

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

WTP Mechanical and Piping - Winfield

Laid out, drilled and installed anchor bolts for PS-120 and PS-121

Laid out and installed tank restraints on TK-801, TK-701 and TK-1201

Bolted up vertical drops from Clarifier C-101, C-102

Began general site clean up in preparation of site departure tomorrow

WTP Electrical – Mueller

Worked on straightening supports in the Southwest corner of the building and moving the tray by the clarifiers

Generated additional questions for Linkan and DC Engineering to be submitted as RFIs

Began planning future tray runs and mapping out crates that contained instrumentation yet to be moved to the work front

WTP Earthworks – Ewing

Began to excavate a trench for the placement of weeping tile along the exterior South wall

HLF Earthworks – Ewing

Ewing continued to haul material from the Northwest of Phase 2B to Southeast to even out the slope grade

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	24	6,336
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	3	36	4,296
Winfield/VETS	Mech/Pipe	8	96	5,940
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	8	96	19,344
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**21**	**252**	**59,664**

PROJECT PHOTOS

WTP – Preassembled Vertical Drops for Clarifier C-101, C-102

WTP – Excavating Weeping Tile Trench and Surveying to Achieve 1% Grade

JDS	Victoria Gold Daily Construction Report				August 8, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		3°C	16°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 25, 2022	
Rough Setting Major Mechanical Equipment	Aug 10, 2022	Aug 10, 2022	~47% of mechanical equipment is rough set
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
Completion of Cable Tray Installation	Aug 16, 2022	Aug 16, 2022	Readjusted cable tray by the clarifiers

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

WTP Mechanical and Piping - Winfield

Finished cleaning worksite prior to leaving for Whitehorse in the morning

WTP Electrical – Mueller

Ordered material for the Fibre, EJBs and additional material top ups

Mounted exterior lights above the Western man door and bay door and Southern man door

Installed the grounding grid surrounding the E House and transformer pad

WTP Earthworks – Ewing

Completed excavation and backfill of the weeping tile trench along with the grounding grid along the Southern wall

Graded and compacted 38mm material behind the E House

HLF Earthworks – Ewing

Ewing continued shaping of Phase 2B

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	60	6,372
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	5	96	4,356
Winfield/VETS	Mech/Pipe	-	96	5,940
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	8	192	19,440
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**16**	**444**	**59,856**

PROJECT PHOTOS

WTP – Installation of Exterior Lights on the Eastern End Wall

WTP – Backfilling Weeping Tile Trench

WTP – Final Grading of 38mm Minus Over the Weeping Tile

JDS	Victoria Gold Daily Construction Report				August 9, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		4°C	16°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 25, 2022	~45% of epoxy coated piping is installed
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
CV – 28 Cable Trenching	Aug 14, 2022	Aug 21, 2022	
Completion of Cable Tray Installation	Aug 16, 2022	Aug 24, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Winfield off site, returning August 17
WTP Electrical – Mueller
Placed the main transformer with the assistance of site services and the 90 T crane
Ran the cabling for the interior overhead lights and started on mounting the boxes
Continued with material purchasing
Placed concrete lock block to support cable tray waterfall exiting the building to the E Houses
HLF Earthworks – Ewing
Ewing hauled material from the Northwest of Phase 2B to Southeast to even out the slope grade and continued shaping

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	96	6,408
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	5	156	4,416
Winfield/VETS	Mech/Pipe	-	96	5,940
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	264	19,512
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**14**	**612**	**60,024**

PROJECT PHOTOS

WTP – Placement of Main Transformer

WTP – Main Transformer Placed on Pad

WTP – Running Cable for Overhead Lights

JDS	Victoria Gold Daily Construction Report				August 10, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		4°C	16°C	Calm	Sunny

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 25, 2022	~45% of epoxy coated piping is installed
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
CV – 28 Cable Trenching	Aug 14, 2022	Aug 21, 2022	
Completion of Cable Tray Installation	Aug 16, 2022	Aug 31, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Winfield off site, returning August 17
WTP Electrical – Mueller
Worked on the cabling from the main transformer to each fused junction box
Prepared Unistrut for the welder to build junction box stands with
Completed running the cabling for the overhead lights and began hanging and wiring up the lights
Planned out the fibre runs for the plant
WTP Earthworks – Ewing
Chipped out concrete blocks in the West bay door in order to build forms for a bay door sill
Relocated epoxy coated steel staged to the East of the building in preparation of earthworks commencing the following day
HLF Earthworks – Ewing
Ewing hauled material from the Northwest of Phase 2B to Southeast to even out the slope grade and continued shaping

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	132	6,444
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	5	216	4,476
Winfield/VETS	Mech/Pipe	-	96	5,940
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	336	19,584
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**14**	**780**	**60,192**

PROJECT PHOTOS

WTP – Chipped Concrete Blocks to Install Forms to Grout Bay Door Sill

WTP – Hanging and Wiring Overhead Lights

JDS	Victoria Gold Daily Construction Report				August 11, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-1°C	20°C	Calm	Sunny

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 25, 2022	~45% of epoxy coated piping is installed
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
CV – 28 Cable Trenching	Aug 14, 2022	Aug 21, 2022	JDS, Mueller and Ewing walked down the slope to determine the best plan for trenching the cable
Completion of Cable Tray Installation	Aug 16, 2022	Aug 31, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Winfield off site, returning August 17
WTP Electrical – Mueller
Secured the main transformer to the pad and began mounting junction boxes
Continued to wire and run cabling for the overhead lights
Welded angle iron in on the West bay door sill and began building the stands for the transformer junction boxes
Continued planning cable tray runs
WTP Earthworks – Ewing
Chipped out concrete blocks in the East bay door in preparation for forms and grouting
Excavated the East side of the building down to grade and ensured that sloping promoted waterflow away from the building
Hauled excavated material to the West side of the building to push the road out to improve access for future trucks offloading in the delivery driveway
HLF Earthworks – Ewing
All manpower was dedicated to the WTP today

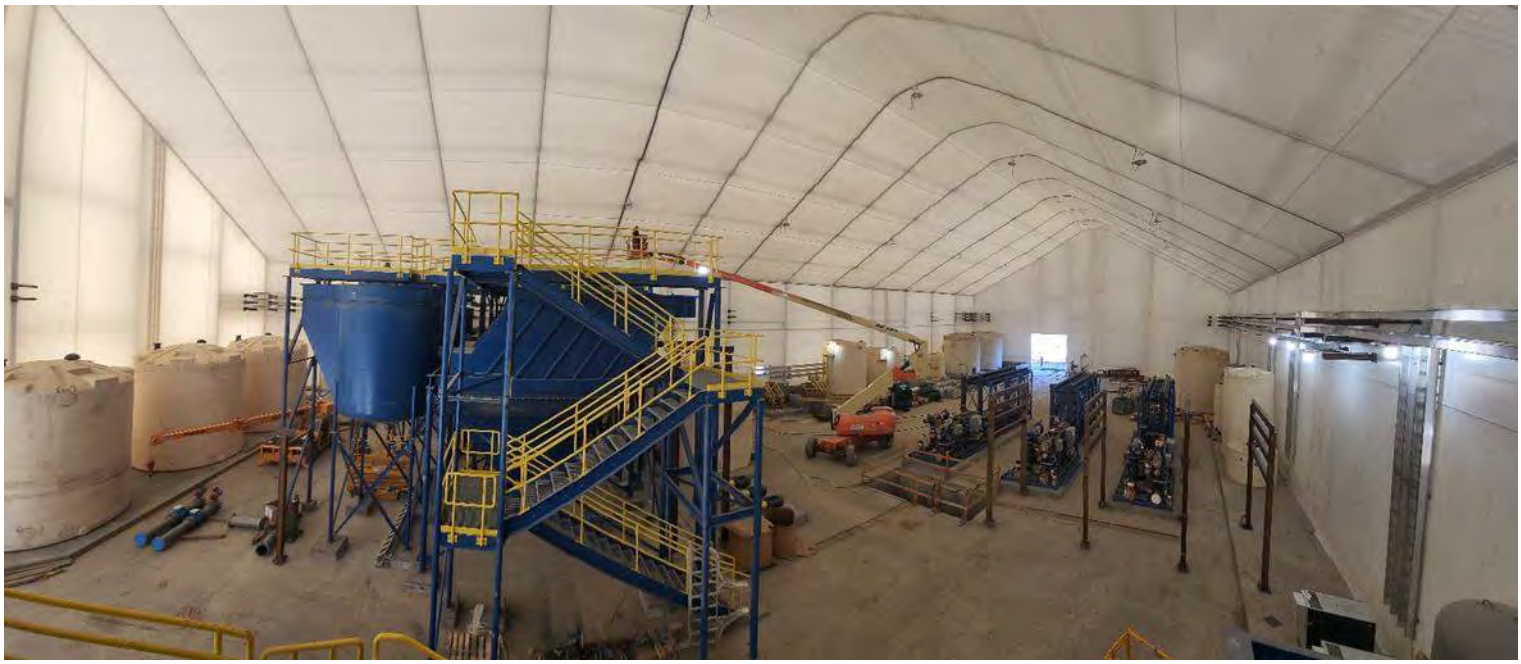
MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	180	6,492
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	6	288	4,548
Winfield/VETS	Mech/Pipe	-	96	5,940
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	7	420	19,668
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**17**	**984**	**60,396**

PROJECT PHOTOS

WTP – Removing Material from the East Side of the Building to be Hauled to the West Side

WTP – D7 Pushing Out the Road to the West of the WTP



WTP – Hanging and Wiring Overhead Lights

JDS	Victoria Gold Daily Construction Report				August 12, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		4°C	23°C	Calm	Sunny

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 25, 2022	~45% of epoxy coated piping is installed
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
CV – 28 Cable Trenching	Aug 14, 2022	Aug 21, 2022	
Completion of Cable Tray Installation	Aug 16, 2022	Aug 31, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Winfield off site, returning August 17
WTP Electrical – Mueller
Began shift supervisor crossover
Continued to wire and run cabling for the overhead lights
Continued mounting the junction boxes to the main transformer
Built support stands for the junction boxes
WTP Earthworks – Ewing
Compacted material once shaping completed outside the West end of the WTP building
Finished compaction and berm shaping on the East end of the WTP building
Supported Cody fusing HDPE pipe
HLF Earthworks – Ewing
All manpower was dedicated to the WTP today

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	228	6,540
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	7	372	4,632
Winfield/VETS	Mech/Pipe	-	96	5,940
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	7	504	19,752
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**18**	**1,200**	**60,612**

PROJECT PHOTOS

WTP – Final Slope Shaping to the East Side of the Building

WTP – Final Grading to the West of the Building

WTP – Beginning to Mount the Transformer Junction Boxes

WTP – Poured Grout for West Bay Door Sill

JDS	Victoria Gold Daily Construction Report				August 13, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		9°C	25°C	Calm	Sunny

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 25, 2022	~45% of epoxy coated piping is installed
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
CV – 28 Cable Trenching	Aug 14, 2022	Aug 21, 2022	Began pulling cable slack cable in preparation for earthworks
Completion of Cable Tray Installation	Aug 16, 2022	Aug 31, 2022	Continued with installation

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Fused 265' of 12" HDPE pipe and installed 400-001-HDPE-RW (feed elbow into the plant)
Poured grout for East bay door sill
WTP Mechanical and Piping - Winfield
Winfield off site, returning August 17
WTP Electrical – Mueller
Installed run of cable tray coming from the top of the clarifier to the floor
Continued to wire and run cabling for the overhead lights
Pulled secondaries into the transformer and progressed with the wiring of the junction box
Supported Ewing with pulling the cables out of the way for the CV-28 trenching
WTP Earthworks – Ewing
Continued supporting Cody with the fusing of HDPE pipe
CV-28 Cable Trenching - Ewing
Started on cable trenching excavation
HLF Earthworks – Ewing
Non active work front today

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	276	6,588
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	7	456	4,716
Winfield/VETS	Mech/Pipe	-	96	5,940
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	576	19,824
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**17**	**1,404**	**60,816**

PROJECT PHOTOS

WTP – Fusing 12” HDPE Feed Line

WTP – Power to Two Thirds of the Overhead Lights

WTP – Connecting the Transformer Junction Boxes

WTP – Poured Grout for East Bay Door Sill

JDS	Victoria Gold Daily Construction Report				August 14, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		7°C	23°C	Calm	Sunny

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 25, 2022	~45% of epoxy coated piping is installed
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
CV – 28 Cable Trenching	Aug 14, 2022	Aug 21, 2022	Began to cut in bench adjacent to the perimeter berm of CV – 28
Completion of Cable Tray Installation	Aug 16, 2022	Aug 31, 2022	Continued with installation

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Tied in 265' of 12" HDPE return line
Stripped grout forms from the bay door sills
Offloaded truckload of carbon steel piping
WTP Mechanical and Piping - Winfield
Winfield off site, returning August 17
WTP Electrical – Mueller
Fabricated cable tray running along the clarifier
Completed the secondaries for the main transformer
WTP Earthworks – Ewing
Excavated road to bury feed and return lines to the WTP
Hauled crush to the WTP to finish the perimeter of the Western exterior wall
CV-28 Cable Trenching - Ewing
Began cutting a bench in adjacent to the CV-28
HLF Earthworks – Ewing
Placing rip rap in the Phase 2B interceptor ditch

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	48	6,636
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre- Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	6	72	4,788
Winfield/VETS	Mech/Pipe	-	-	5,940
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	72	19,896
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**16**	**192**	**61,008**

PROJECT PHOTOS

WTP – Placement of Return Line (left) and Feed Line (right) Prior to Burying

WTP – Offloading Truckload of Carbon Steel Piping

WTP – Completion of Secondaries in the 2MVA Transformer

WTP – Installation of Clarifier Cable Tray Vertical Run

JDS	Victoria Gold Daily Construction Report				August 15, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		6°C	20°C	Calm	Sun & Cloud

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 25, 2022	~45% of epoxy coated piping is installed
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
CV – 28 Cable Trenching	Aug 14, 2022	Aug 21, 2022	Continued to cut in bench adjacent to the perimeter berm of CV – 28
Completion of Cable Tray Installation	Aug 16, 2022	Aug 31, 2022	Continued with installation

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Tied in remaining 16" HDPE feed line to the plant

WTP Mechanical and Piping - Winfield

Winfield off site, returning August 17

WTP Electrical – Mueller

Continued fabricating and installing cable tray running around the clarifiers

Welded a flat bar to the interior angle iron of the sills of both the East and West bay doors to provide a ramp to ease a 2" rise

Load break switch set into position with support from JDS

Installed clarifier control panel

WTP Earthworks – Ewing

Backfilling the road over the feed and return lines from the WTP and beginning compaction

CV-28 Cable Trenching - Ewing

Continued cutting a bench in adjacent to the CV-28 in preparation of pulling cable

HLF Earthworks – Ewing

Placing geotextile and rip rap in the Phase 2B interceptor ditch

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	96	6,684
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	6	144	4,860
Winfield/VETS	Mech/Pipe	-	-	5,940
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	144	19,968
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**16**	**384**	**61,200**

PROJECT PHOTOS

WTP – Backfilling Road Over Feed and Return Lines

WTP – Placing Load Break Switch onto Pad

WTP – Mounting of Clarifier Control Panel

WTP – Installation of Cable Tray Running Around the Flocculation Tank of C-103

JDS	Victoria Gold Daily Construction Report				August 16, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		10°C	20°C	Calm	Sun & Cloud

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 25, 2022	~45% of epoxy coated piping is installed
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
CV – 28 Cable Trenching	Aug 14, 2022	Aug 21, 2022	Continued to cut in bench adjacent to the perimeter berm of CV – 28
Completion of Cable Tray Installation	Aug 16, 2022	Aug 31, 2022	Continued with installation

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Continued Overland HDPE Installation

WTP Mechanical and Piping - Winfield

Winfield off site, returning August 17

WTP Electrical – Mueller

Continued fabricating and installing cable tray running around the clarifiers

Load break switch set into position with support from JDS

Installing Cable Tray on Outside of E-Houses

Completed Grounding Grid around E-Houses

Preparing for MWTP Main 13.8kV Feed

WTP Earthworks – Ewing

Backfilling the road over the feed and return lines from the WTP and beginning compaction

Excavating For Final E-House Grounding Grid & Main MWTP 13.8kV Feed Line

CV-28 Cable Trenching – Ewing

Continued cutting a bench in adjacent to the CV-28 in preparation of burying CV-027 Cables

HLF Earthworks – Ewing

Placing geotextile and rip rap in the Phase 2B interceptor ditch

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	120	6,708
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	6	216	4,932
Winfield/VETS	Mech/Pipe	-	-	5,940
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	216	20,040
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**14**	**552**	**61,368**

PROJECT PHOTOS

WTP – Backfilling Road Over Feed Pipes and Grounding

WTP – E-House Grounding

WTP – E-House Cable Tray Supports

JDS	Victoria Gold Daily Construction Report				August 17, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		14°C	21°C	Calm	Sun & Cloud

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 25, 2022	~45% of epoxy-coated piping is installed
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
CV – 28 Cable Trenching	Aug 14, 2022	Aug 21, 2022	Continued to cut in bench adjacent to the perimeter berm of CV – 28
Completion of Cable Tray Installation	Aug 16, 2022	Aug 31, 2022	Continued with installation

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

WTP Mechanical and Piping - Winfield

Winfield arrived on site

WTP Electrical – Mueller

Continued installing cable tray on outside of E-Houses

Pulled main 13.8kV feed from the load break to the main XMFR

Pulled fiber cables from the deep well shack to MCC sea-can 1

Ty-wrapped fiber cables to the 13.8kV line

WTP Earthworks – Ewing

Completed backfilling and compacting the road over the feed and return lines from the WTP

CV-28 Cable Trenching – Ewing

Continued cutting a bench adjacent to CV-28 in preparation for burying CV-027 Cables

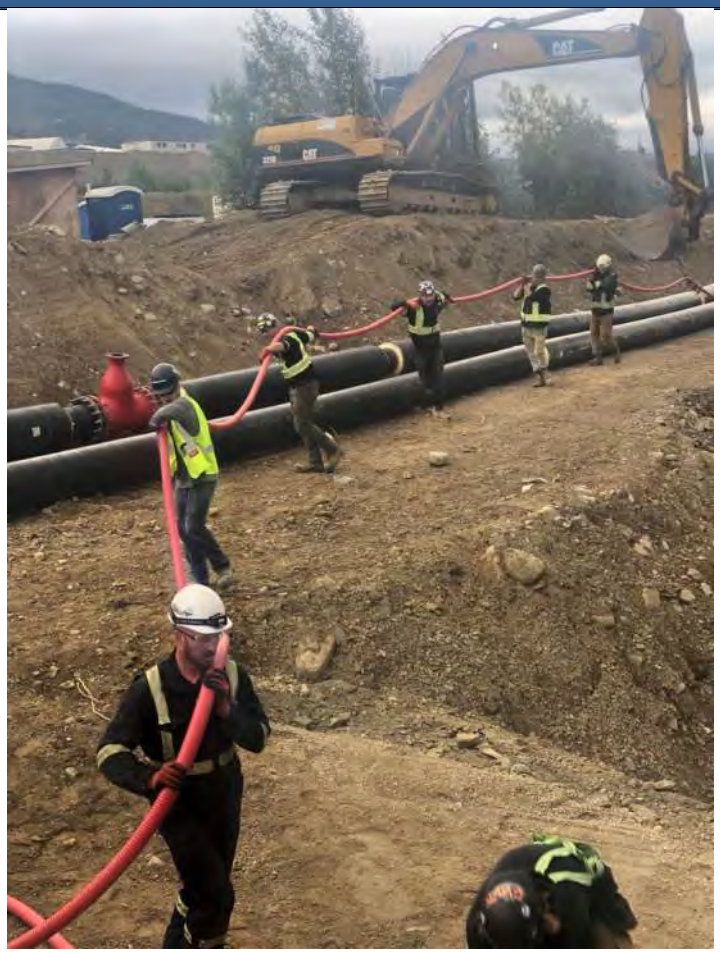
HLF Earthworks – Ewing

Completed placing geotextile and rip rap in the Phase 2B interceptor ditch

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	144	6,732
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	6	288	5,004
Winfield/VETS	Mech/Pipe	-	-	5,940
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	288	20,112
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**14**	**720**	**61,536**
Visitors		-	-	-
Total - Site		**14**	**720**	**61,536**

PROJECT PHOTOS



WTP – Pulling main 13.8kV feed from load break to main XMFR

WTP – 13.8kV feed pulled through conduit in preparation for backfilling

WTP – E-House Cable Tray Supports

JDS	Victoria Gold Daily Construction Report				August 18, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		5°C	20°C	Calm	Sun & Cloud

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 25, 2022	~45% of epoxy-coated piping is installed
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
CV – 28 Cable Trenching	Aug 14, 2022	Aug 21, 2022	Completed cutting in bench adjacent to the perimeter berm of CV – 28
Completion of Cable Tray Installation	Aug 16, 2022	Aug 31, 2022	Continued with installation

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Set reaction tanks to final location
Installed butterfly valves and expansion joints on reaction tanks
Staged ECS piping for install
Bolted spools to pumps for install
WTP Electrical – Mueller
Continued installing cable tray on outside of E-Houses
CV-28 Cable Trenching – Ewing
Completed cutting in bench adjacent to CV-28 in preparation for burying CV-027 Cables
HLF Earthworks – Ewing
Started cutting in 2A diversion ditch

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	180	6,768
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	6	360	5,076
Winfield/VETS	Mech/Pipe	8	96	6,036
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	360	20,184
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**996**	**61,812**
Visitors		-	-	-
Total - Site		**23**	**996**	**61,812**

PROJECT PHOTOS

WTP – Expansion Joint Installed on Reaction Tank TK-101

WTP – E-House Cable Tray Supports

JDS	Victoria Gold Daily Construction Report				August 19, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		9°C	18°C	Calm	Intermittent rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 25, 2022	~45% of epoxy-coated piping is installed
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
CV – 28 Cable Trenching	Aug 14, 2022	Aug 21, 2022	Started placing CV-027 cables on bench
Completion of Cable Tray Installation	Aug 16, 2022	Aug 31, 2022	Continued with installation

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

WTP Mechanical and Piping - Winfield

Rough set clarifier feed pumps

Bolted up spools from main line to pumps, and from outlet of pumps

Installed clarifier spool

WTP Electrical – Mueller

Continued installing cable tray on outside of E-Houses

CV-28 Cable Trenching – Ewing

Started placing and organizing CV-027 cables in preparation for burying

HLF Earthworks – Ewing

Continued cutting in 2A diversion ditch

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	216	6,804
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	7	444	5,160
Winfield/VETS	Mech/Pipe	8	192	6,132
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	432	20,256
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**1,284**	**62,100**
Visitors		-	-	-
Total - Site		**24**	**1,284**	**62,100**

PROJECT PHOTOS

WTP – CV-027 Cables placed on Bench to Create Room for CV-028

WTP – Spools Bolted up to Clarifier Feed Pumps

WTP – Spool Installed on Clarifier C-101

JDS	Victoria Gold Daily Construction Report				August 20, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		1°C	15°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 25, 2022	~45% of epoxy-coated piping is installed
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
CV – 28 Cable Trenching	Aug 14, 2022	Aug 21, 2022	Continued placing CV-027 cables on bench
Completion of Cable Tray Installation	Aug 16, 2022	Aug 31, 2022	Continued with installation

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Completed pouring pad for WTP process water pump house

WTP Mechanical and Piping - Winfield

Installed last riser on clarifiers

Installed main pipe run between risers on clarifiers

Rough fit risers on reaction tanks

WTP Electrical – Mueller

Continued installing cable tray on south wall

CV-28 Cable Trenching – Ewing

Continued placing and organizing CV-027 cables on the bench next to CV-028

HLF Earthworks – Ewing

Continued cutting in 2A diversion ditch

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	-	6,840
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	7	-	5,244
Winfield/VETS	Mech/Pipe	8	-	6,228
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	5	-	20,316
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**-**	**62,376**
Visitors		-	-	-
Total - Site		**23**	**-**	**62,376**

PROJECT PHOTOS

WTP – Forms and Rebar Built for Process Water Pump House

WTP – Concrete Poured for Process Water Pump House

WTP – Main Pipe Run Between Risers on Clarifiers

JDS	Victoria Gold Daily Construction Report				August 21, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		10°C	21°C	Calm	Sun and cloud

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 25, 2022	~45% of epoxy-coated piping is installed
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
CV – 28 Cable Trenching	Aug 14, 2022	Aug 21, 2022	Completed placing and backfilling CV-027 cables
Completion of Cable Tray Installation	Aug 16, 2022	Aug 31, 2022	Continued with installation

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Completed standing walls for WTP process water pump house
WTP Mechanical and Piping - Winfield
Started installing PVC piping under clarifier
Fixed support length for ECS piping run from clarifier to pumps
Sorted and staged supports for under clarifier
Installed pipe supports PS040 – PS041
WTP Electrical – Mueller
Continued installing cable tray off south wall
CV-28 Cable Trenching – Ewing
Completed placing and backfilling CV-027 cables
HLF Earthworks – Ewing
Continued shaping East Slope
Started extending header drain trench

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	36	6,876
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	7	84	5,328
Winfield/VETS	Mech/Pipe	8	96	6,324
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	5	60	20,376
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**276**	**62,652**
Visitors		-	-	-
Total - Site		**23**	**276**	**62,652**

PROJECT PHOTOS

WTP – Installing Cable Tray off South Wall

WTP – Process Water Pump House Walls Erected

WTP – Started Installing PVC Piping Under Clarifier

HLF – Extending Header Drain Trench

JDS	Victoria Gold Daily Construction Report				August 22, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		14°C	24°C	Calm	Sun and cloud

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 25, 2022	~45% of epoxy-coated piping is installed
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
Completion of Cable Tray Installation	Aug 16, 2022	Aug 31, 2022	Continued with installation

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Installed PVC under clarifier to drain trench
Installed cable tray supports on West wall
Installed final ECS spools
Planned new routing of cable tray for West wall
WTP Electrical – Mueller
Continued installing cable tray off South wall
Pulled 13.8kV cable from the load break to the deep well XFMR
Continued welding cable tray supports
HLF Earthworks – Ewing
Completed extending header drain trench, waiting for approval from TetraTech

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	60	6,900
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	7	168	5,412
Winfield/VETS	Mech/Pipe	9	216	6,444
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	5	120	20,436
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**564**	**62,940**
Visitors		-	-	-
Total - Site		**23**	**564**	**62,940**

PROJECT PHOTOS

WTP – Continuing to Install PVC Underneath Clarifiers

WTP – Cable Tray on South Wall

WTP – ECS Spools Bolted to Clarifiers

JDS	Victoria Gold Daily Construction Report				August 23, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		9°C	24°C	Calm	Sun and cloud

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Piping	Aug 10, 2022	Aug 25, 2022	~45% of epoxy-coated piping is installed
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Planned to start on August 25th
Completion of Cable Tray Installation	Aug 16, 2022	Aug 31, 2022	Continued with installation

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Installed house water skid, neutralization pump skid, and CIP skid
Staged water softener tanks and hot water tanks
Installed tank 401
Installed pumps 401 and 402
Completed cable tray supports on East wall
WTP Electrical – Mueller
Continued installing cable tray outside of E-houses
HLF Earthworks – Ewing
Completed extending header drain trench, waiting for approval from TetraTech

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	84	6,924
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	7	252	5,496
Winfield/VETS	Mech/Pipe	9	324	6,552
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	5	180	20,496
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**840**	**63,216**
Visitors		-	-	-
Total - Site		**23**	**840**	**63,216**

PROJECT PHOTOS

WTP – Continued Installing Cable Tray Outside of E-houses

WTP – Placed Finish Water Pumps and House Water Skid

WTP – Placed CIP Pump Skid

JDS	Victoria Gold Daily Construction Report				August 24, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		12°C	22°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Completion of Epoxy Coated Pipe Rough Fitment	Aug 10, 2022	Aug 25, 2022	Completed
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Disconnected power lines in preparation for HV testing
Completion of Cable Tray Installation	Aug 16, 2022	Aug 31, 2022	Continued with installation

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Installed tank heater in TK-203
Set TK-203, TK-204, and TK-205 in their final location
Cut corner and drain nozzle pocket out of tank pad 501
Stood water softener, safety shower and hot water tanks
Continued to install 2" PVC pump discharge lines underneath clarifiers
Installed chemical pump skids inside of containments
WTP Electrical – Mueller
Continued installing cable tray above West overhead door
HLF Earthworks – Ewing
Completed extending header drain trench, TetraTech arrived on site

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	108	6,948
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	600
Mueller	Electrical	7	336	5,580
Winfield/VETS	Mech/Pipe	9	432	6,660
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	5	240	20,556
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**1,116**	**63,492**
Visitors		-	-	-
Total - Site		**23**	**1,116**	**63,492**

PROJECT PHOTOS

WTP – Cutting Corner off Tank Pad 501

WTP – Placed Hot Water Tanks

WTP – 2” PVC Piping Underneath Clarifiers

JDS	Victoria Gold Daily Construction Report				August 25, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		11°C	19°C	Calm	Sun and cloud

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Substantial Mechanical Completion	September 15, 2022	September 15, 2022	Approximately 48% complete
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Began HV testing
Energize Transformer Using Permanent Power	Aug 29, 2022	Aug 29, 2022	Waiting on HV testing to be complete
Substantial Completion of Cable Tray Installation	Aug 16, 2022	Aug 31, 2022	Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

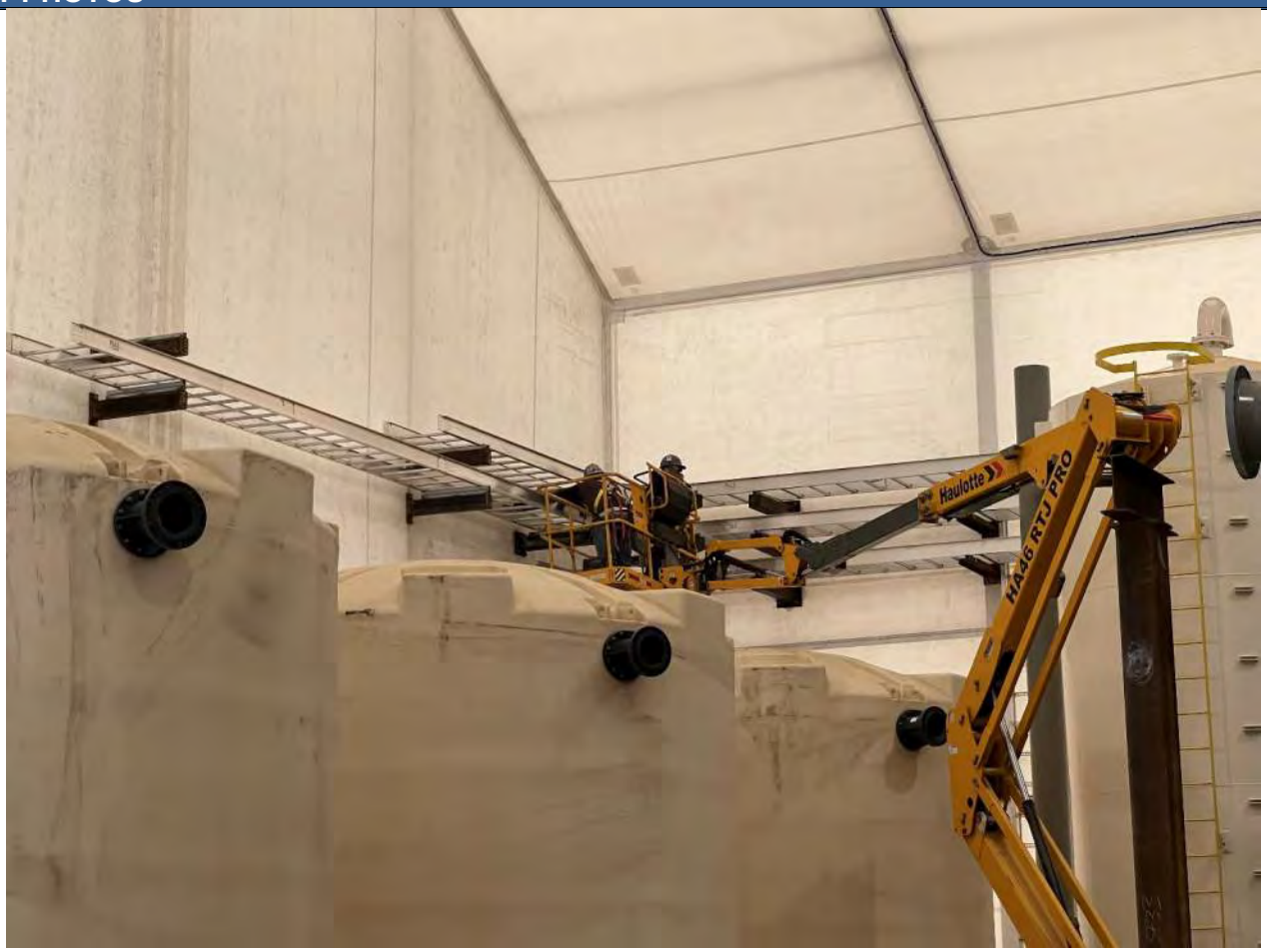
TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Installed expansion joints on TK-201, 202 and 401
Installed ladder on TK-202
Continued to install 2" PVC lines in clarifier area
WTP Electrical – Mueller
Continued installing cable tray above West overhead door and Southeast corner
Working on bonding the 600V secondary JB's off the main XFMR
HLF Earthworks – Ewing
Completed header drain trench
Continued working on lateral drain trenching

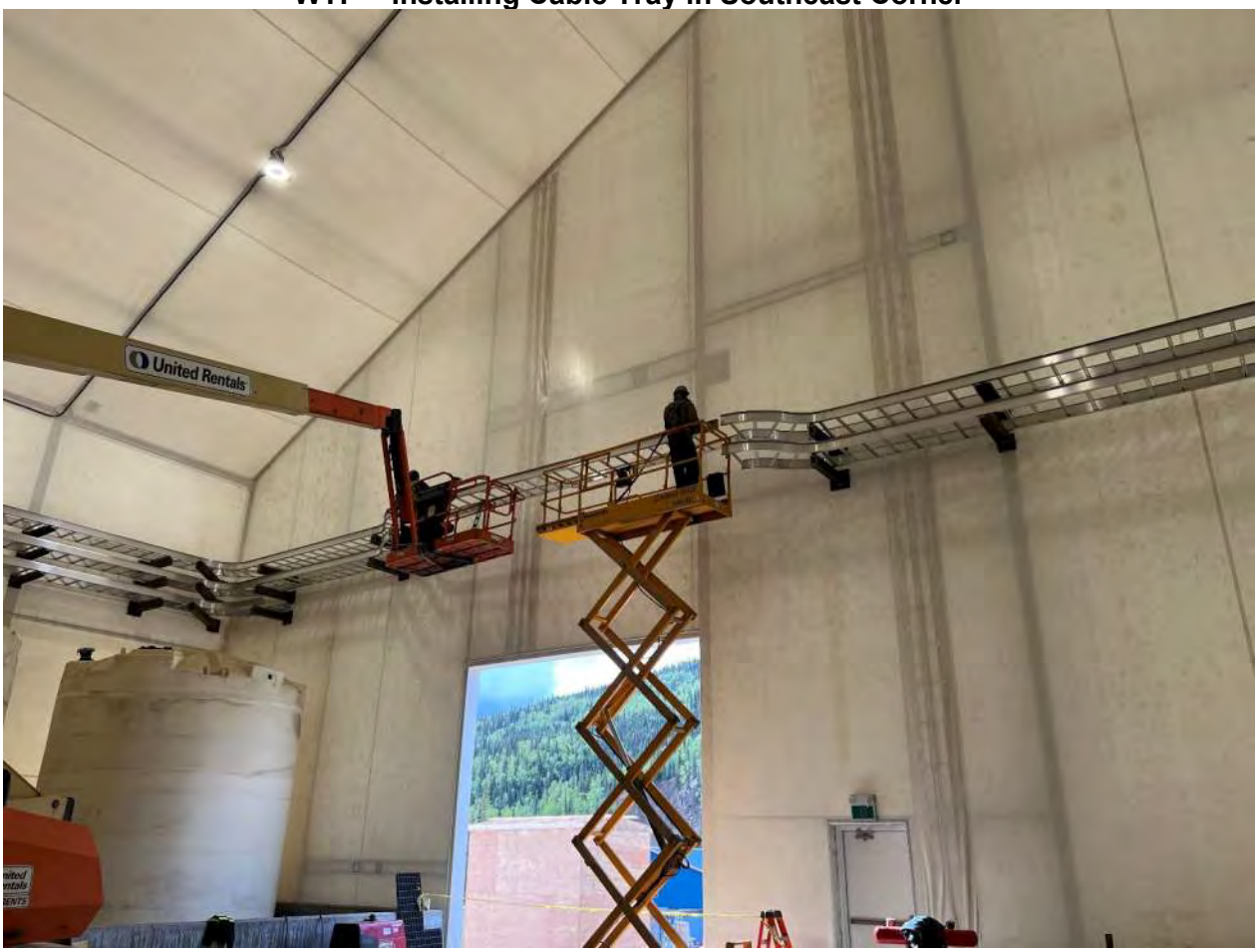
MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	144	6,984
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	1	12	612
Mueller	Electrical	7	420	5,664
Winfield/VETS	Mech/Pipe	11	564	6,792
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	5	300	20,616
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**27**	**1,440**	**63,816**
Visitors		-	-	-
Total - Site		**27**	**1,440**	**63,816**

PROJECT PHOTOS



WTP – Installing Cable Tray in Southeast Corner



WTP – Installing Cable Tray Over West Overhead Door

WTP – Expansion Joints installed on TK-401

JDS	Victoria Gold Daily Construction Report				August 26, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		2°C	14°C	Calm	Intermittent rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Substantial Mechanical Completion	September 15, 2022	September 15, 2022	Approximately 48% complete
Complete HV testing	Aug 27, 2022	Aug 27, 2022	HV testing underway
Energize Transformer Using Permanent Power	Aug 29, 2022	Aug 29, 2022	Waiting on HV testing to be complete
Substantial Completion of Cable Tray Installation	Aug 16, 2022	Aug 31, 2022	Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Adjusted TK-205, TK-204, and TK-203 to make room for piping on North wall
Installed ladder clips on TK-201, TK-202 and TK-901
Started fitting PVC piping on CIP skid
Tightened flanges on TK-103, TK-102, and TK-601
Anchored neutralization skid P-70
WTP Electrical – Mueller
Continued installing cable tray on East wall
Continued fabricating additional supports
HLF Earthworks – Ewing
Fusing 6" for header drain
Continued working on lateral #2 and #3 East trenching

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	192	7,032
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	12	612
Mueller	Electrical	7	504	5,748
Winfield/VETS	Mech/Pipe	11	696	6,924
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	5	360	20,676
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**27**	**1,764**	**64,140**
Visitors		-	-	-
Total - Site		**27**	**1,764**	**64,140**

PROJECT PHOTOS

WTP – PVC Piping Underneath Clarifiers

WTP – Installing Cable Tray on East Wall

HLF – Continued Lateral Drain Trenching

JDS	Victoria Gold Daily Construction Report				August 28, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		3°C	16°C	Calm	Sun and cloud

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Substantial Mechanical Completion	September 15, 2022	September 15, 2022	Approximately 48% complete
Complete HV testing	Aug 27, 2022	Aug 27, 2022	Completed
Energize Transformer Using Permanent Power	Aug 29, 2022	Aug 29, 2022	Completed
Substantial Completion of Cable Tray Installation	Aug 16, 2022	Sep 15, 2022	Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Continued fusing WTP feed line

WTP Mechanical and Piping - Winfield

Cut all anchor bolts for TK-401, TK-205, TK-203, and TK-901's restraints

Set pumps 401 and 402 to TK-401

Tightened all remaining flanges on TK-101, TK-102, and TK-103

Finished prepping PS-043, PS-044, and modifying PS-094

Pulled 2 ECS spools needing revision, prepped for B-Pressure welder

WTP Electrical – Mueller

Continued bonding ring tray

HLF Earthworks – Ewing

Fusing 6" header drain on hold

Continued installing drain rock and drainpipe on lateral #3 West

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	36	7,116
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	7	84	5,916
Winfield/VETS	Mech/Pipe	13	156	7,200
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	5	60	20,796
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**28**	**336**	**64,788**
Visitors		-	-	-
Total - Site		**28**	**336**	**64,788**

PROJECT PHOTOS

WTP – Transformer Energized Using Full-Time Power

WTP – Continued Working on Bonding Ring Tray

HLF – Laying Pipe for Lateral #3 West

JDS	Victoria Gold Daily Construction Report				August 29, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		5°C	16°C	Calm	Intermittent rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Substantial Mechanical Completion	September 15, 2022	September 15, 2022	Approximately 48% complete
Substantial Completion of Cable Tray Installation	Aug 16, 2022	Sep 15, 2022	Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

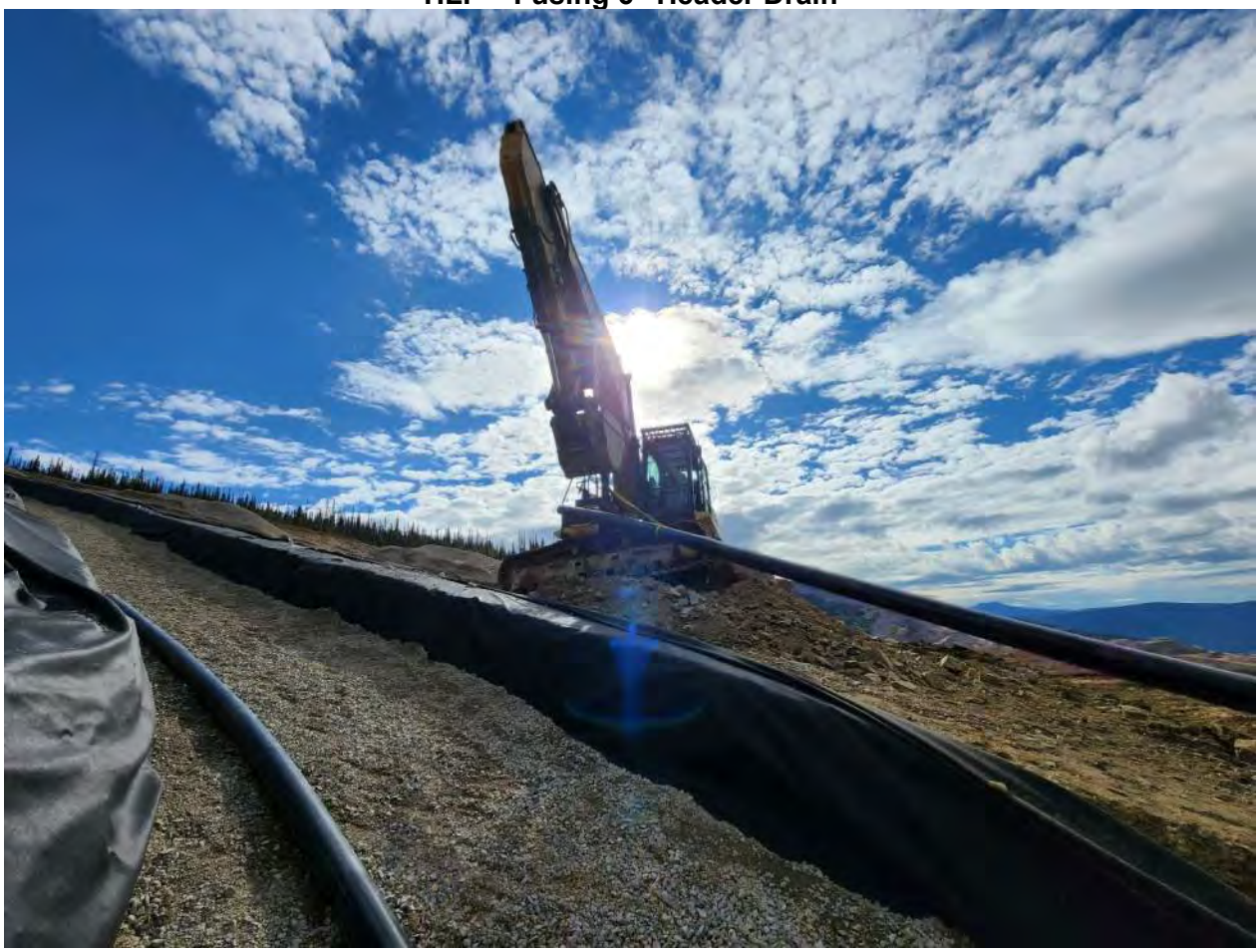
Activity
Continued fusing HLF header drain
WTP Mechanical and Piping - Winfield
Prepped TK-401, TK-601, TK-901, TK-902 for ladder installation
Epoxied TK-203, 205, and secured TK-401, TK-901
Anchored RF pump skid
Completed welding and setting modified pipe supports
WTP Electrical – Mueller
Fabricated new feet for the DIO cabinets
Continued bonding ring tray
HLF Earthworks – Ewing
Completed fusing 750' of 6" header drain
Completed lateral #3 West burrito wrap

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	72	7,152
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	9	192	6,024
Winfield/VETS	Mech/Pipe	13	312	7,356
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	5	120	20,856
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**30**	**696**	**65,148**
Visitors		-	-	-
Total - Site		**30**	**696**	**65,148**

PROJECT PHOTOS

HLF – Fusing 6” Header Drain



HLF – Installing Header Drain Pipe

WTP – Continuing Bonding Ring Tray

WTP – Tanks Prepped for Ladders

JDS	Victoria Gold Daily Construction Report				August 31, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		7°C	17°C	Calm	Sun and cloud

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Substantial Mechanical Completion	September 15, 2022	September 15, 2022	Approximately 51% complete
Substantial Completion of Cable Tray Installation	August 16, 2022	September 15, 2022	Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Drilled and installed pipe supports on South Wall
Reclaimed spools 200-004-ECS-PW, 200-005-ECS-PW, and 200-006-ECS-PW for revisions
Started installing 8" PVC pipe at MF skids to pipe rack
Completed welding on PS-062
WTP Electrical – Mueller
Continued working on temporary power
Continued installing and bonding cable tray
HLF Earthworks – Ewing
Completed electro fusing on header drain
Started backfilling header drain
Completed butt fusing 6" header drain

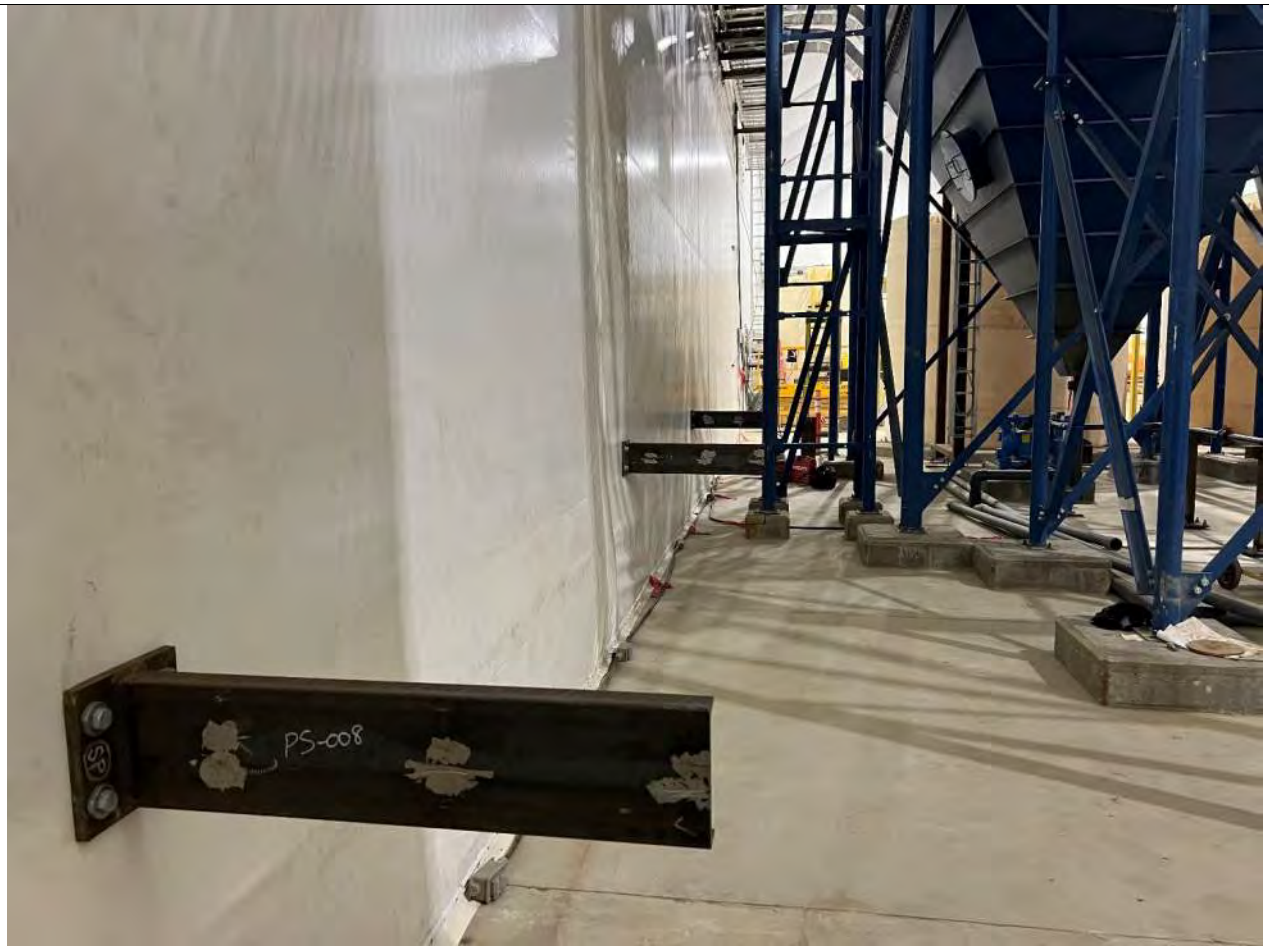
MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	144	7,224
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	312	6,144
Winfield/VETS	Mech/Pipe	13	624	7,668
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	7	288	21,024
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**29**	**1,368**	**65,820**
Visitors		-	-	-
Total - Site		**29**	**1,368**	**65,820**

PROJECT PHOTOS

HLF – Header Drain Pipe Progress

HLF – PVC Piping Installed on CIP Pump Skid



WTP – Pipe Supports Installed on South Wall

JDS	Victoria Gold Daily Construction Report				September 1, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		7°C	17°C	Calm	Sun and cloud

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Substantial Mechanical Completion	September 15, 2022	September 15, 2022	Approximately 51% complete
Substantial Completion of Cable Tray Installation	August 16, 2022	September 15, 2022	Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

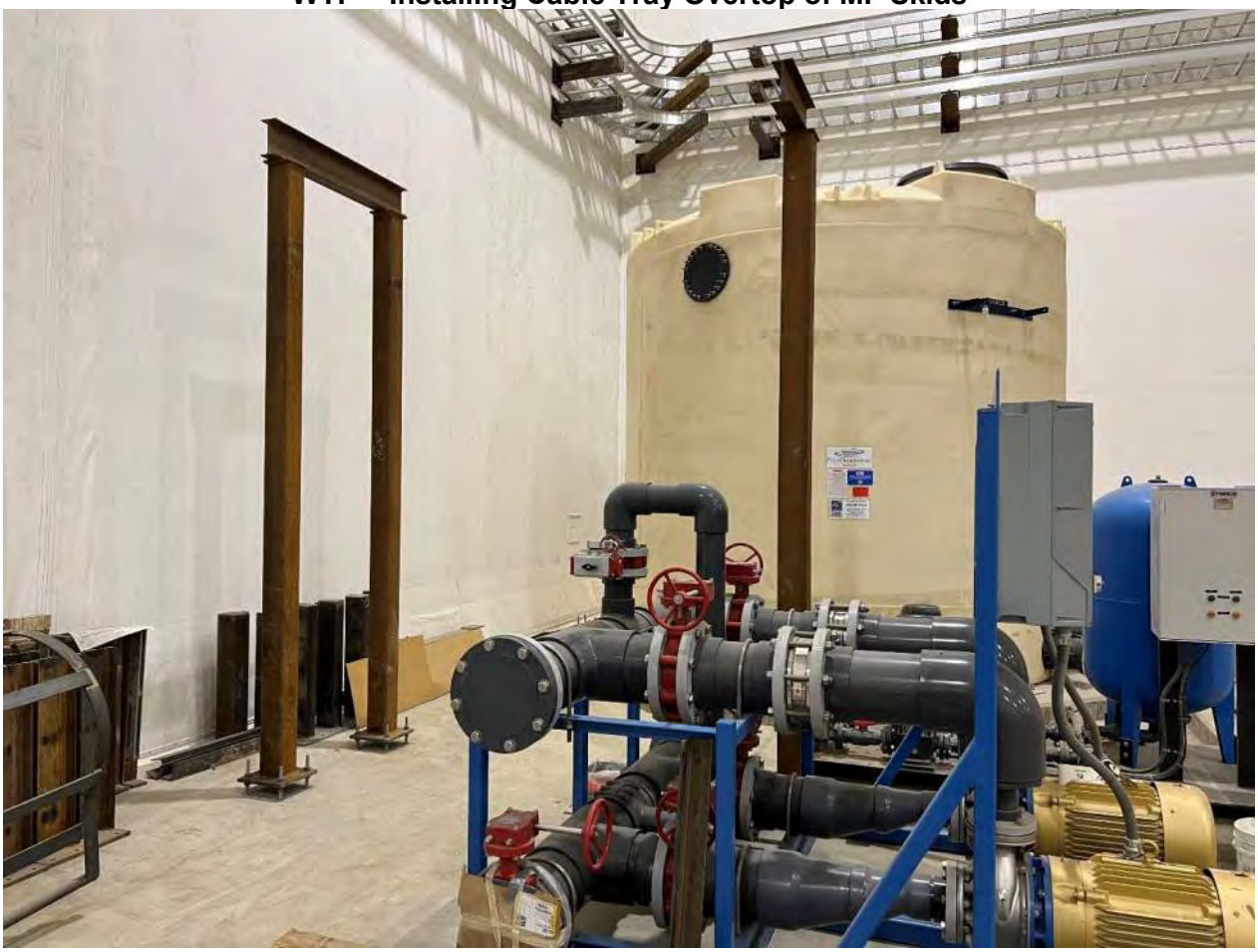
Activity
WTP Mechanical and Piping - Winfield
Continued welding and installing pipe supports
Layed out holes for mixers in tanks TK-101, TK-102, TK-103
Tacked reclaimed ECS spools, and rough installed for final dimension check and welding
Continued working on connections to MF skids and installing expansion joints
Continued working on PVC from MF skids to pipe rack
WTP Electrical – Mueller
Continued working on temporary power
Continued installing and bonding cable tray
HLF Earthworks – Ewing
Padding in roads to Phase 3 test pits
Lateral #4 West subgrade inspection
Completed backfilling header drain

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	180	7,260
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	384	6,216
Winfield/VETS	Mech/Pipe	13	780	7,824
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	7	372	21,108
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**29**	**1,716**	**66,168**
Visitors		-	-	-
Total - Site		**29**	**1,716**	**66,168**

PROJECT PHOTOS

WTP – Installing Cable Tray Overtop of MF Skids



WTP – Continuing to Install Pipe Supports

HLF – Backfilling Header Drain

JDS	Victoria Gold Daily Construction Report				September 2, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		6°C	12°C	Calm	Rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Substantial Mechanical Completion	September 15, 2022	September 15, 2022	Approximately 51% complete
Substantial Completion of Cable Tray Installation	August 16, 2022	September 15, 2022	Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

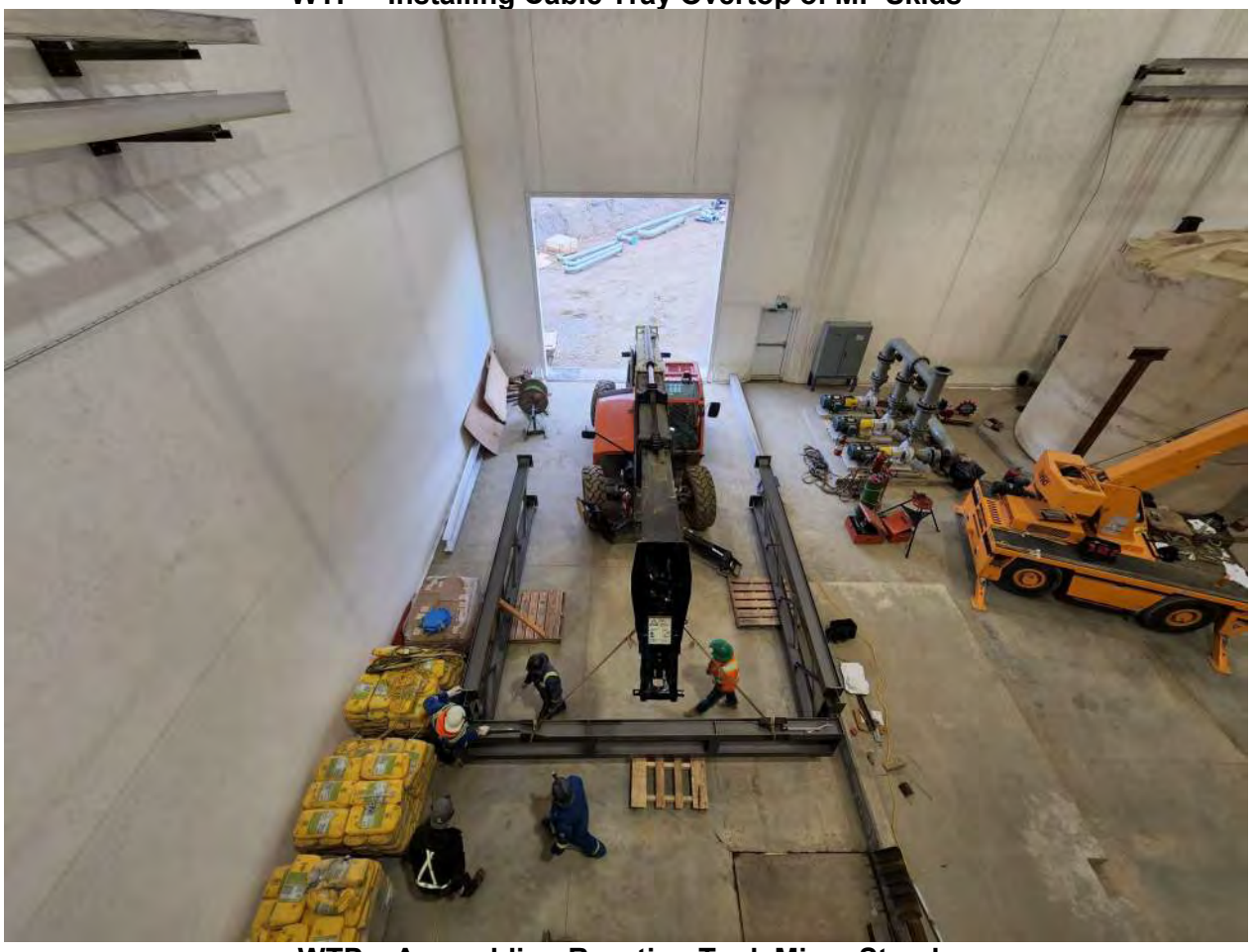
Activity
WTP Mechanical and Piping - Winfield
Assembled and installed mixer stands over reaction tanks
Drilled hole for TK-103's mixer
Bolted drive to mixer shaft in preparation for install
Continued welding pipe supports
Continued working on PVC from MF skids to pipe rack
WTP Electrical – Mueller
Continued installing cable tray supports on South Wall
Continued installing cable tray
HLF Earthworks – Ewing
Completed padding in roads to Phase 3 test pits
Working on Lateral #4 West
Completed backfilling header drain

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	216	7,296
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	456	6,288
Winfield/VETS	Mech/Pipe	13	936	7,980
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	444	21,180
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**28**	**2,052**	**66,504**
Visitors		-	-	-
Total - Site		**28**	**2,052**	**66,504**

PROJECT PHOTOS

WTP – Installing Cable Tray Overtop of MF Skids



WTP – Assembling Reaction Tank Mixer Stands

WTP – Installing Reaction Tank Mixer Stands

JDS	Victoria Gold Daily Construction Report				September 3, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		11°C	20°C	Slightly Windy	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Substantial Mechanical Completion	September 15, 2022	September 15, 2022	Approximately 51% complete
Substantial Completion of Cable Tray Installation	August 16, 2022	September 15, 2022	Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Ewing started clearing, grubbing, and hauling out waste for WTP propane tank pad
WTP Mechanical and Piping - Winfield
Leveled and anchored mixer stands
Set 12" steel pipe on supports in Southeast corner
Installed 8" PVC header into rack and connected to MF-202
Installed 4" PVC header into rack
WTP Electrical – Mueller
Continued installing cable tray supports on North and South walls
Continued tying in temp power skid
Continued installing cable tray over MF skids
HLF Earthworks – Ewing
Continued working on Lateral #4 West

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	240	7,320
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	528	6,360
Winfield/VETS	Mech/Pipe	13	1,092	8,136
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	516	21,252
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**27**	**2,376**	**66,828**
Visitors		-	-	-
Total - Site		**27**	**2,376**	**66,828**

PROJECT PHOTOS

WTP – Installing Reaction Tank Mixers on Mixer Stands

WTP – Installing MF header Pipes in Support Racks

HLF – Continued Working on Lateral #4 West

JDS	Victoria Gold Daily Construction Report				September 4, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		3°C	16°C	Slightly Windy	Intermittent rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Substantial Mechanical Completion	September 15, 2022	September 15, 2022	Approximately 51% complete
Substantial Completion of Cable Tray Installation	August 16, 2022	September 15, 2022	Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

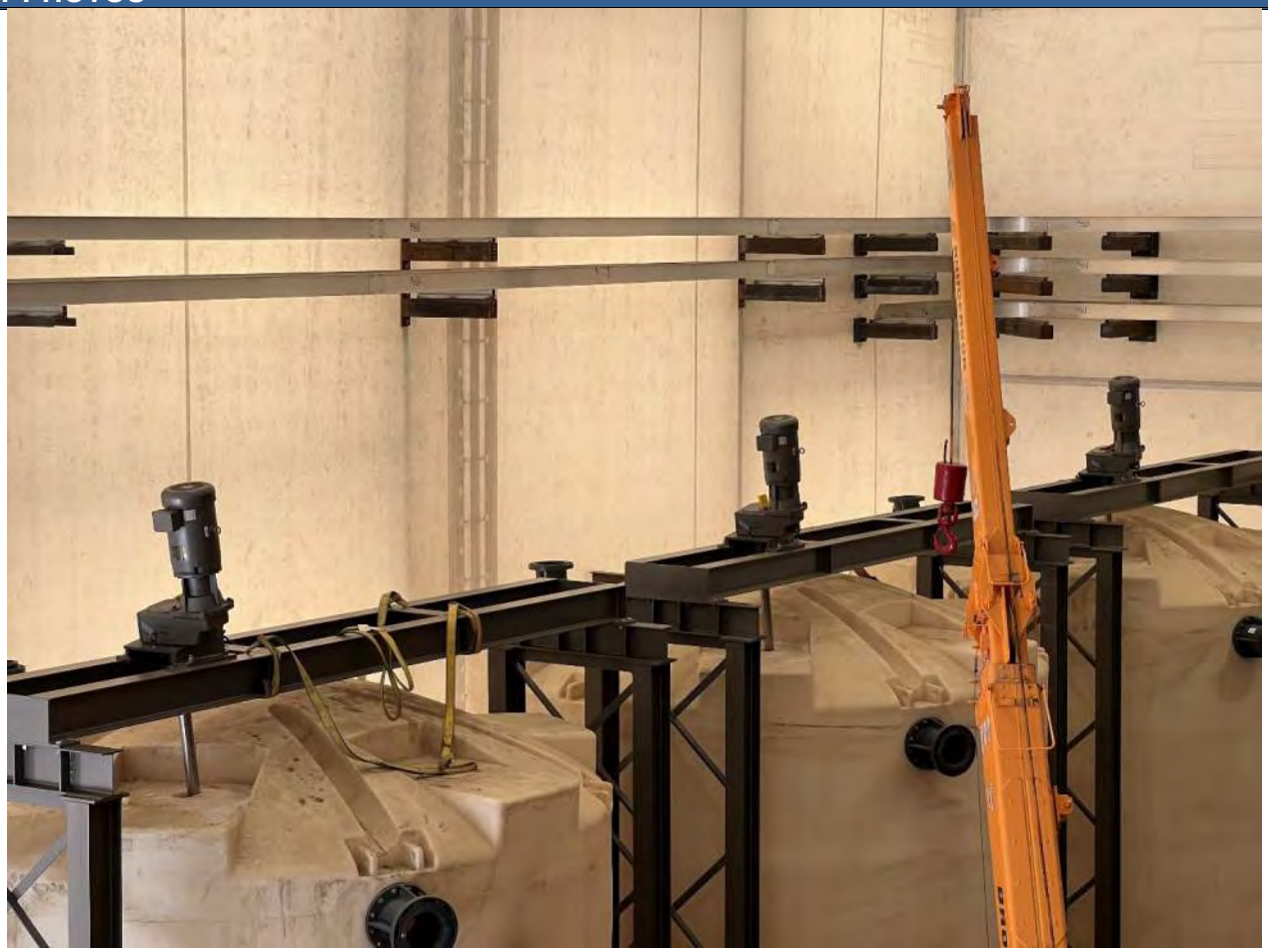
TODAY'S ACTIVITIES

Activity
Ewing continued hauling in material, grading, and packing pad for WTP propane skid
WTP Mechanical and Piping - Winfield
Completed leveling mixer stands and anchors
Installed ladders on tanks TK-101, TK-102, and TK-103
Connected 8" PVC header to MF, started connecting 4" PVC from header to MF
Welded flanges on 16" drop from clarifiers
WTP Electrical – Mueller
Mounted the main MF control panel
Worked on fabricating extra supports to account for fittings
Continued installing cable tray over MF skids
HLF Earthworks – Ewing
Continued working on Lateral #4 West

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	36	7,356
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	72	6,432
Winfield	Mech/Pipe	15	180	8,316
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	72	21,324
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**30**	**360**	**67,188**
Visitors		-	-	-
Total - Site		**30**	**360**	**67,188**

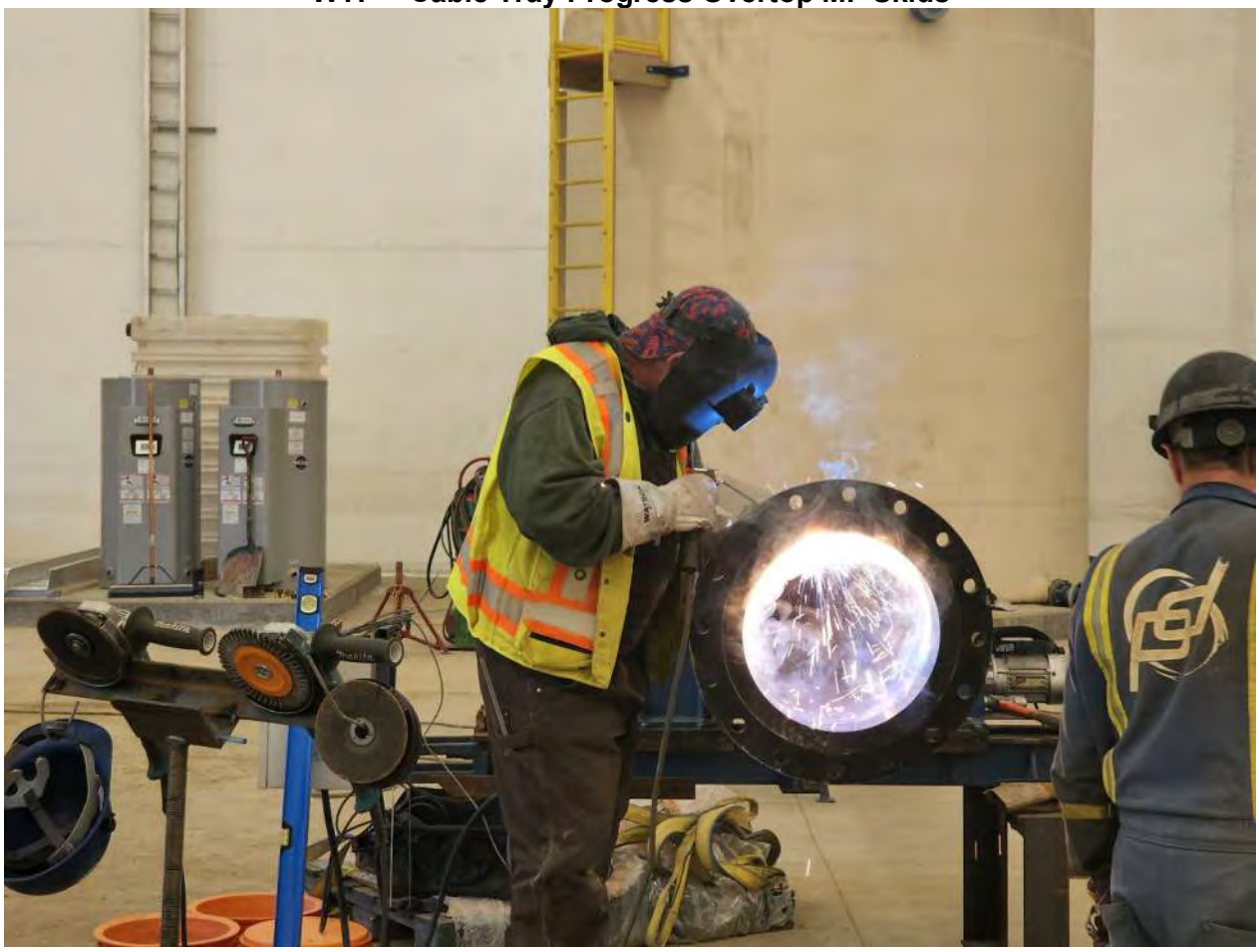
PROJECT PHOTOS



WTP – Installing Reaction Tank Mixers on Mixer Stands

WTP – Installing MF header Pipes

WTP – Cable Tray Progress Overtop MF Skids



WTP – Welding flanges on 16” Clarifier Drops

WTP – Packing Pad for Propane Skid

JDS	Victoria Gold Daily Construction Report				September 5, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		7°C	11°C	Calm	Rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Substantial Mechanical Completion	September 15, 2022	September 15, 2022	Approximately 51% complete
Substantial Completion of Cable Tray Installation	August 16, 2022	September 15, 2022	Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

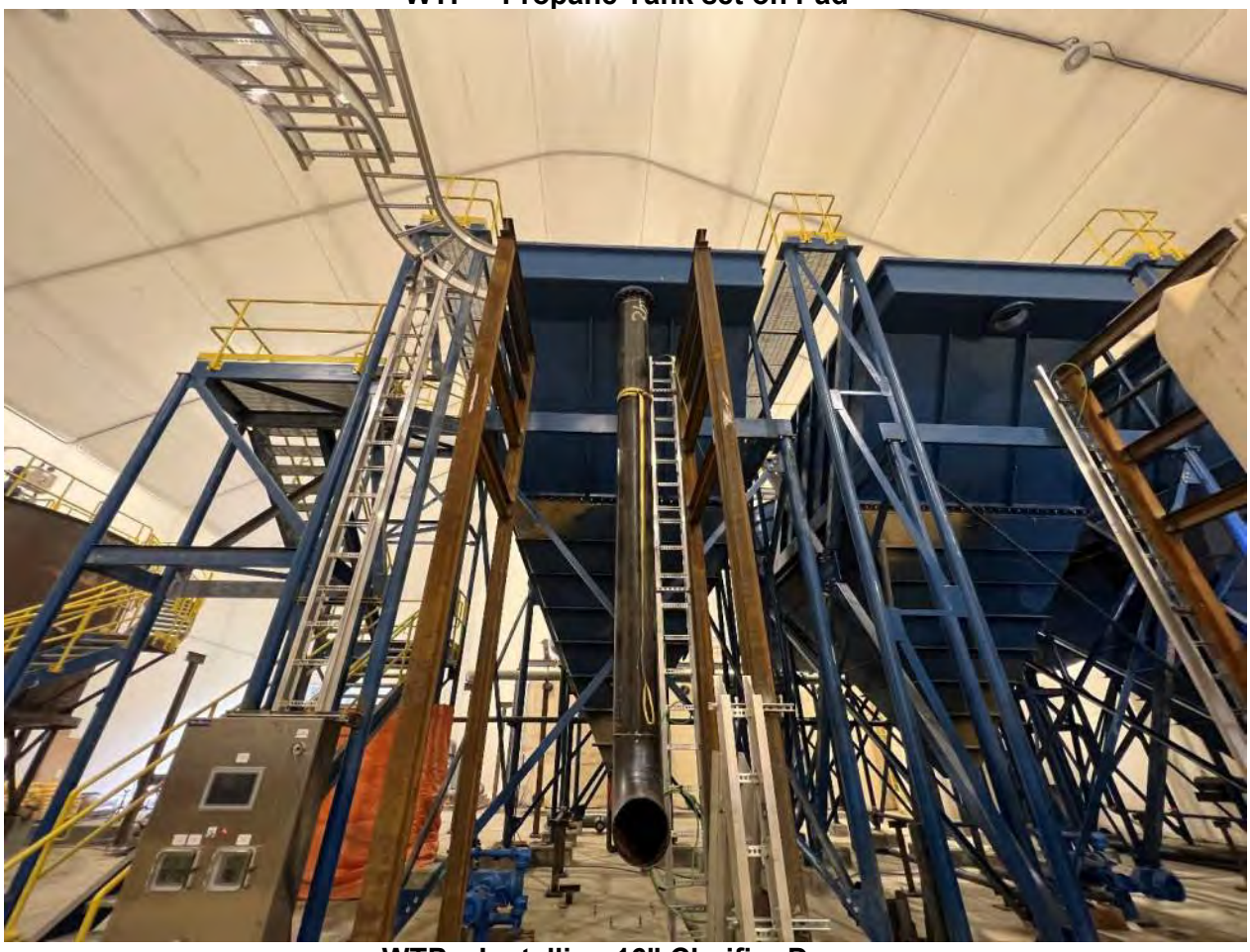
Activity
Completed hauling in material, grading, and packing pad for WTP propane skid
WTP Mechanical and Piping - Winfield
Connected 16" CS drop to Clarifier C-103
Continued installing PVC header piping to MF skids
Continued welding 16" CS piping for clarifiers
WTP Electrical – Mueller
Started working on tray for the air compressors
Continued working on South wall supports
Continued installing cable tray over MF skids
HLF Earthworks – Ewing
Working on slope shaping on lateral #3 West

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	72	7,392
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	144	6,504
Winfield	Mech/Pipe	15	360	8,496
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	144	21,396
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**30**	**720**	**67,548**
Visitors		-	-	-
Total - Site		**30**	**720**	**67,548**

PROJECT PHOTOS

WTP – Propane Tank set on Pad



WTP – Installing 16” Clarifier Drops

WTP – Installing PVC Piping on MF-203

JDS	Victoria Gold Daily Construction Report				September 6, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		6°C	12°C	Calm	Intermittent rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Substantial Mechanical Completion	September 15, 2022	September 15, 2022	Approximately 51% complete
Substantial Completion of Cable Tray Installation	August 16, 2022	September 15, 2022	Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

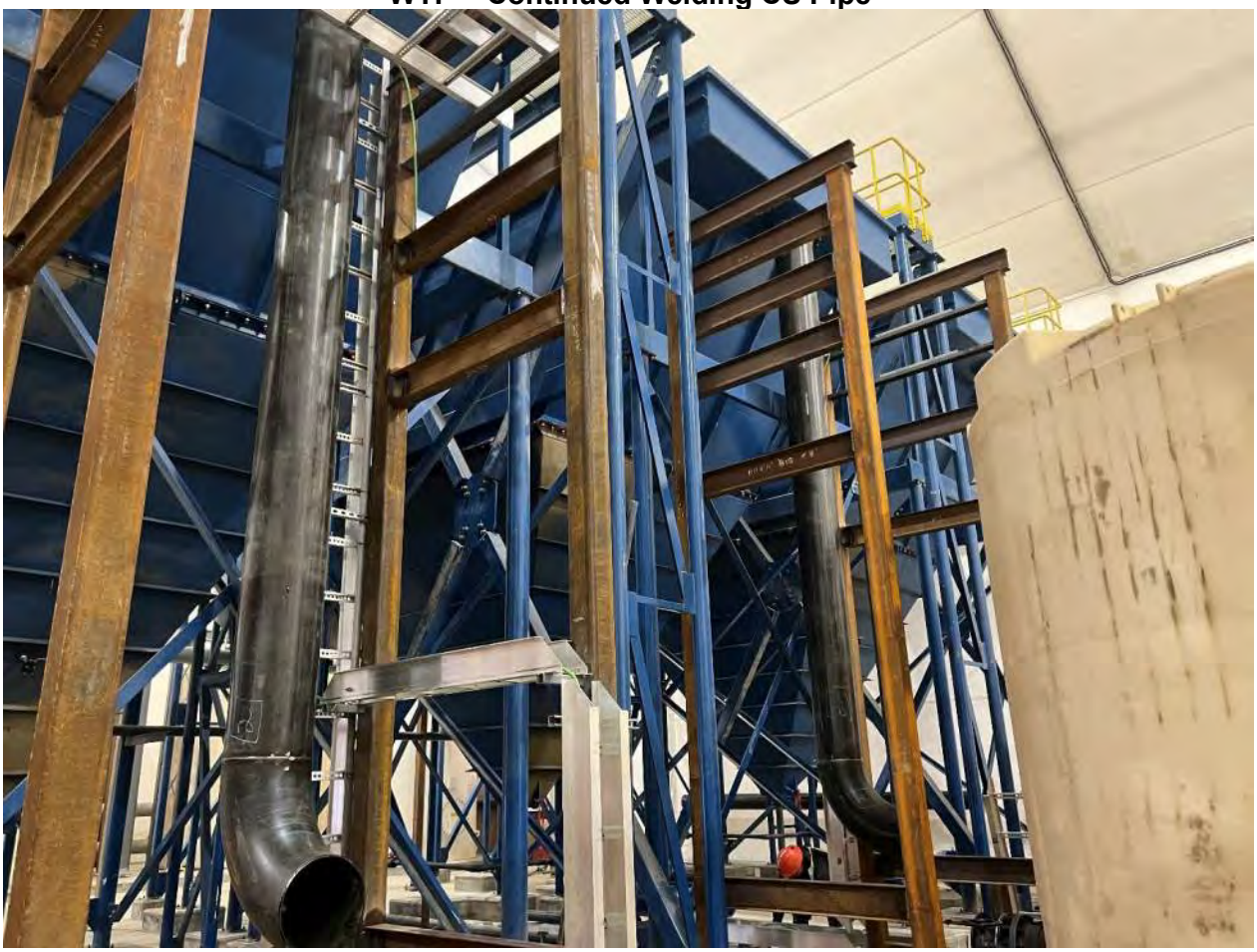
Activity
Continued working on the well pump house's roof and cladding exterior walls
Ewing started working on CV-28 E-house pad
WTP Mechanical and Piping - Winfield
Completed connecting 16" CS drops to clarifiers
Continued installing PVC header piping to MF skids
Continued fabricating CS spools
WTP Electrical – Mueller
Started working on cable tray for clarifier underflow pumps
Continued working on supports
Continued installing cable tray over MF skids
HLF Earthworks – Ewing
Working on installing drain rock and backfilling lateral #4 West

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	108	7,428
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	216	6,576
Winfield	Mech/Pipe	15	540	8,676
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	216	21,468
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**30**	**1,080**	**67,908**
Visitors		-	-	-
Total - Site		**30**	**1,080**	**67,908**

PROJECT PHOTOS

WTP – Continued Welding CS Pipe



WTP – 16” Drop Pipe Installed on Clarifier C-102

WTP – Continuing to Install PVC Piping to Micro Filtration Skids

JDS	Victoria Gold Daily Construction Report				September 7, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-1°C	14°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Substantial Completion of Cable Tray Installation	August 16, 2022	September 15, 2022	Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Continued working on the well pump house's roof and cladding exterior walls
Ewing continued working on CV-28 E-house pad
WTP Mechanical and Piping - Winfield
Fabricating 12" and 14" Carbon Steel Pipe
Welding Epoxy Coated Steel for reinstall
Installing PVC drains for the MF to verify support locations required
WTP Electrical – Mueller
Started working on cable tray for clarifier underflow pumps
Continued working on supports
Worked on getting temporary heat and power to MCC #1
Installing wiring in the pump house
HLF Earthworks – Ewing
Complete backfilling lateral #4 West

MANPOWER ON SITE

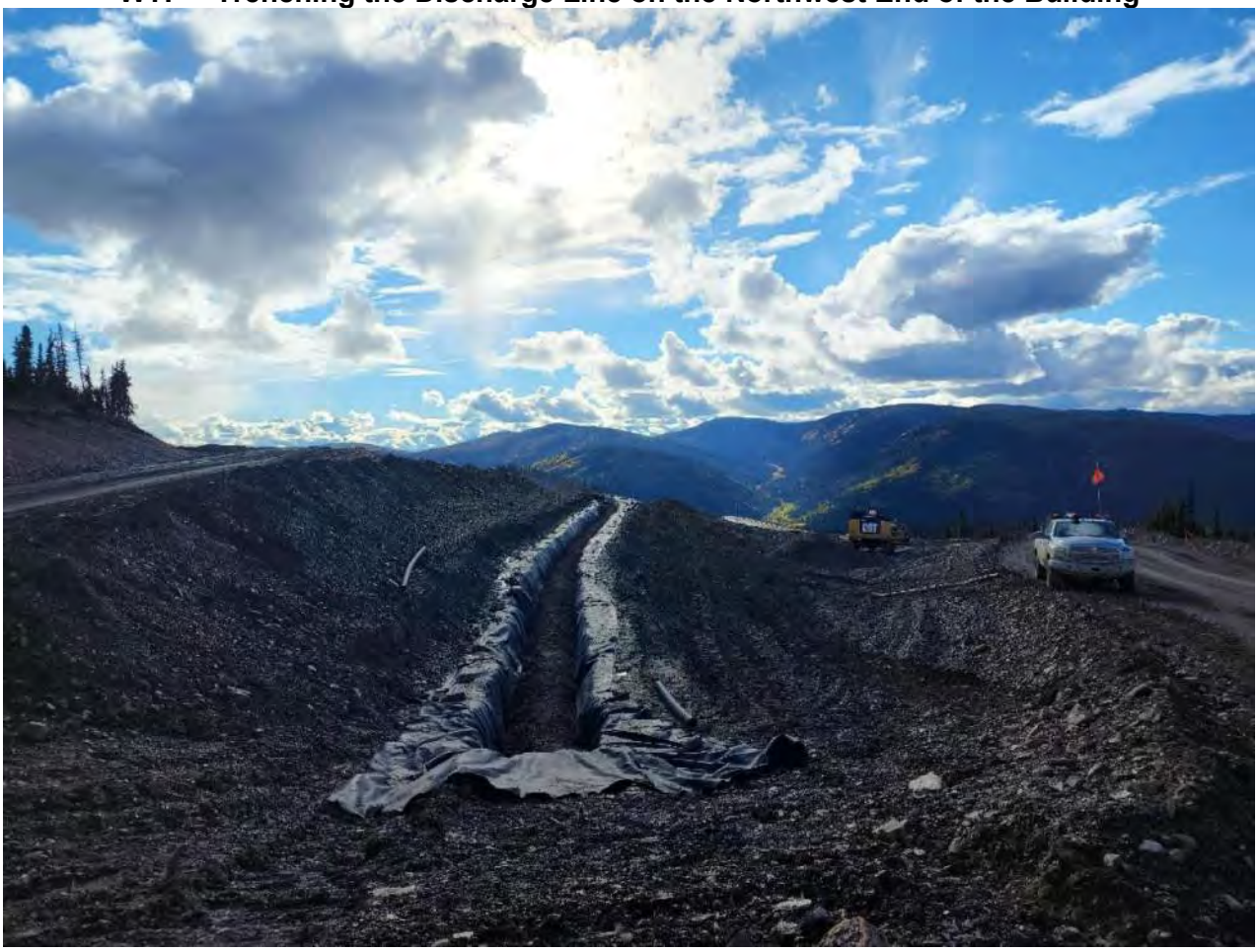
Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	132	7,452
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	288	6,648
Winfield	Mech/Pipe	7	624	8,760
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	288	21,540
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**21**	**1,332**	**68,160**

PROJECT PHOTOS

CV-28 – E-House Pad Earthworks

WTP – Welding CS Pipe

WTP – Trenching the Discharge Line on the Northwest End of the Building



HLF – Lateral #4 West Backfill Preparation

JDS	Victoria Gold Daily Construction Report				September 8, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-1°C	9°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Substantial Completion of Cable Tray Installation	August 16, 2022	September 15, 2022	Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Continued working on the well pump house's roof and cladding exterior walls
Ewing continued working on CV-28 E-house pad
Walked the East perimeter berm with Ewing and VGCX to talk through berm grade options along the CV-28 conveyor and for future fixed conveyors
WTP Mechanical and Piping - Winfield
Continued fabricating 12" and 14" (350-210-CS-PW) Carbon Steel Pipe running between MF feed pumps and MF feed tanks
Continued welding Epoxy Coated Steel for reinstall
Fabricating supports for drains off MF
Pulled material for 6" PVC for 150-604-PVC-PW, 300-402-CS-PW
WTP Electrical – Mueller
Built cable tray under the clarifiers, the waterfall on the South wall and completed the run through the middle of the building
Drilled holes for the South wall supports
Grounded cable tray that has been installed to date
HLF Earthworks – Ewing
Excavating lateral #4 East trench

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	180	7,500
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	360	6,720
Winfield	Mech/Pipe	7	708	8,844
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	360	21,612
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**1,608**	**68,436**

PROJECT PHOTOS

CV-28 – E-House Pad Earthworks

WTP – MF Drain Supports

HLF – Lateral #4 East Excavation

JDS	Victoria Gold Daily Construction Report				September 9, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		2°C	16°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Substantial Completion of Cable Tray Installation	August 16, 2022	September 15, 2022	Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Continued working on the well pump house's roof and painted the fascia
Ewing continued working on CV-28 E-house pad
WTP Mechanical and Piping - Winfield
Continued fabricating 14" (350-210-CS-PW) Carbon Steel Pipe running between MF feed pumps and MF feed tanks
Continued welding Epoxy Coated Steel for reinstall
Started fabrication on 300-402-CS-PW
Measured 300-404-CS-PW for fabrication
WTP Electrical – Mueller
Progressed on constructing instrument tray
Began constructing the tray for the MF main control panel
Prepped the receptacles and built of the stands required
HLF Earthworks – Ewing
Continued excavating lateral #4 East trench

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	216	7,536
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	432	6,792
Winfield	Mech/Pipe	7	792	8,928
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	432	21,684
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**22**	**1,872**	**68,700**

PROJECT PHOTOS

WTP – Welding 14” 350-210-CS-PW

WTP – Fabricated MF Cable Tray Support

WTP – Pump House Roofed and Fascia Painted

JDS	Victoria Gold Daily Construction Report				September 10, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		0°C	12°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Substantial Completion of Cable Tray Installation	August 16, 2022	September 15, 2022	Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Lined the interior of the pump house with poly sheeting
WTP Mechanical and Piping - Winfield
Welded 4 – 16" welds for 400-202-303-CS-PW, 2 – 8" welds for 300-404-402-CS-PW, 2 – 12" welds for 300-402-CS-PW, 4 6" welds for 300-402-CS-PW
Installed 80-506-PVC-PW
Began installing 50-507-PVC-PW
Took measurements and began pulling materials for 200-303-PVC-PW
WTP Electrical – Mueller
Installed I tray in the chemical area above TK – 1201
Continued building cable tray
Built up receptacle stands
HLF Earthworks – Ewing
Completed excavation of lateral #4 East with Victoria Gold completing the subgrade inspection

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	252	7,572
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	7	516	6,876
Winfield	Mech/Pipe	8	888	9,024
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	504	21,756
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**2,160**	**68,988**

PROJECT PHOTOS

WTP – Welding 16” 400-202-CS-PW

WTP – 80-506-PVC-PW Tying into P-504/505

JDS	Victoria Gold Daily Construction Report				September 11, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-2°C	14°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Substantial Completion of Cable Tray Installation	August 16, 2022	September 15, 2022	Ongoing

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

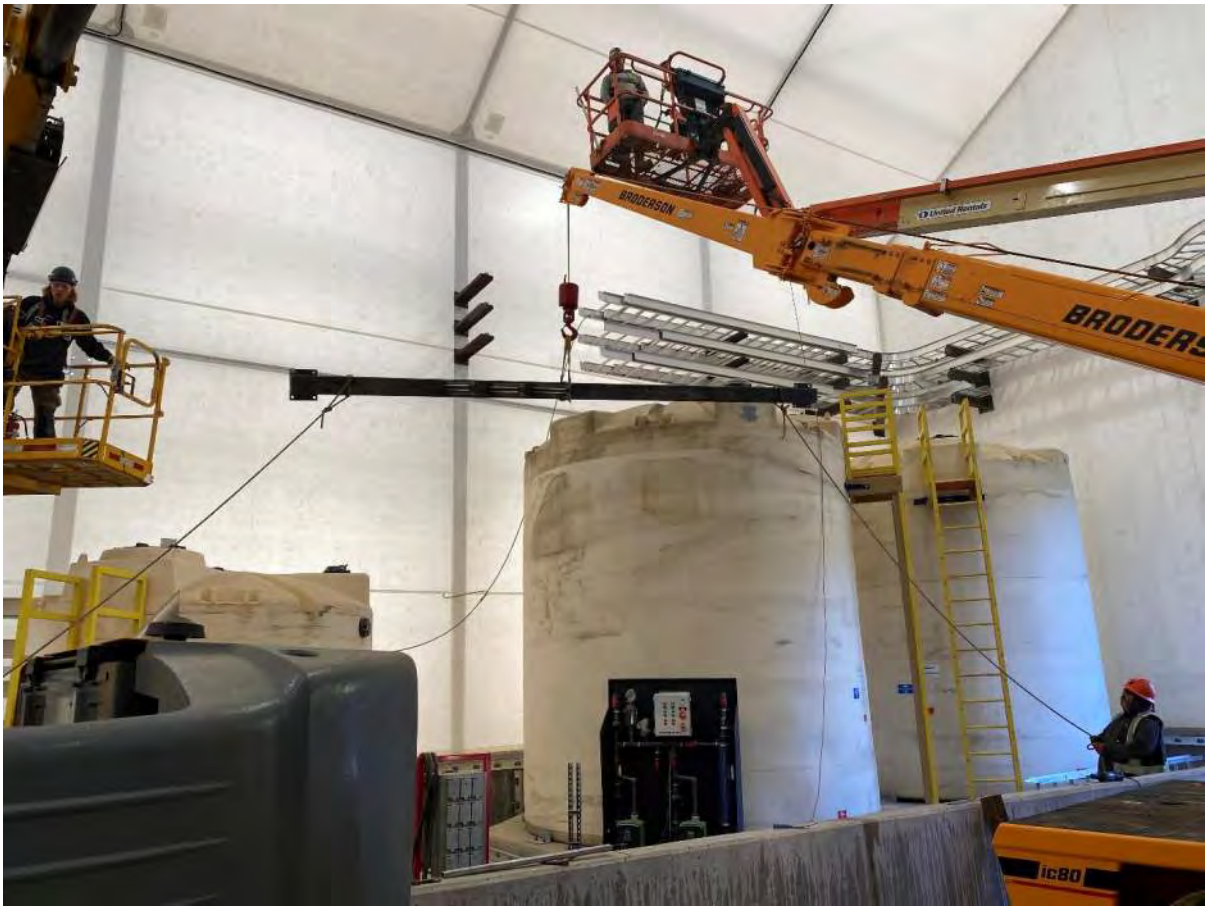
TODAY'S ACTIVITIES

Activity
Began to line the interior of the pump house with plywood
WTP Mechanical and Piping - Winfield
Assisted Mueller with flying in cable tray support along the Southwest wall
Flew in pipe for 350-003-ECS-PW to take measurements, flew back out to make modifications
Welded 6 – 8" Welds, 2- 4" Welds, tacked 3-12" welds on 300-404-CS-PW
Welded 2 – 6" Welds, 1 – 12" weld for 300-402-CS-PW
Continued measuring and started fitting pipe for 200-203-PVC-PW
Installed PVC piping from the overflow up to the vertical drop on TK-204
WTP Electrical – Mueller
Continued installing structural cable tray support on the Southwest wall with Winfield's support
Installed I tray in the chemical area and installed plugs
Installed cable tray and built additional stands for the cable tray waterfalls outside the MCC along with tray supports near the MF skids
Worked on the level switches for the clarifiers
HLF Earthworks – Ewing
50% complete the backfill of Lateral #4 East
CV - 28 – Ewing & Mueller
Ewing Excavated grounding grid for the E-House and backfilled once installation was completed
Mueller installed E-House grounding grid

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	36	7,608
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	7	84	6,960
Winfield	Mech/Pipe	8	96	9,120
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	72	21,828
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**288**	**69,276**

PROJECT PHOTOS



WTP – Flying in Cable Tray Support on the Southwest Wall

WTP – Installation of Concentric Reducers on Finish Water Pumps (P-401/402)

HLF – Continued Installation of Lateral #4 East

CV-28 – Installation of E-House Grounding Grid

JDS	Victoria Gold Daily Construction Report				September 12, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-1°C	17°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Substantial Completion of Cable Tray Installation	August 16, 2022	September 13, 2022	Completed

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Began to line the interior of the pump house with plywood
WTP Mechanical and Piping - Winfield
Completed 2 – 12" Welds, 4 – 8" Welds, 2 – 6" Welds tacked up 2 – 12" Welds on 300-404-CS-PW
Completed 1 – 14" Weld on 350-003-ECS-PW
Completed 1 – 12" Weld on 300-402-CS-PW
Continued Piping 8" PVC and 6" PVC For 150-604-PVC-PW
Continued Piping 2" PVC for 50-509-PVC-PW
Flew long run into rack and for 350-210-CS-PW
WTP Electrical – Mueller
Shot pins for instrumentation cabling on the clarifiers
Built supports for the 45-degree tray fittings
Installed the last support for tray on the South wall
HLF Earthworks – Ewing
Lateral #4 East - 100 meters remaining on the backfill

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	72	7,644
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre- Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	7	168	7,044
Winfield	Mech/Pipe	8	192	9,216
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	144	21,900
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**576**	**69,564**

PROJECT PHOTOS

WTP – Flew In Long Run of 300-210-CS-PW into Rack

WTP – Flanges Tacked and Prepped for Welding

JDS	Victoria Gold Daily Construction Report				September 13, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		0°C	17°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Installation of Buried Propane Line	September 16, 2022	September 16, 2022	To begin Sept 14
Establish WTP Internet Comms Connection	September 22, 2022	September 22, 2022	Meeting w/ VGCX IT scheduled for Sept 17
Move the Office Trailer Beside the WTP	September 23, 2022	September 23, 2022	Pending internet comms connection

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Completed construction of well pump house
WTP Mechanical and Piping - Winfield
Completed 3 6" Welds for 300-402-CS-PW
Completed 2 – 8" Welds for 300-404-CS-PW
Completed 2 – 12" Welds for 300-404-CS-PW
Completed 3 – ½" Olet Welds for 300-404-CS-PW
Completed 6 – 8" Welds for 300-212-CS-PW
Completed 3 – ½" Olet Welds for 300-212-CS-PW
Fit, tacked and started positional weld on 90 to South wall on 300-216-CS-PW
Continued Fitting PVC Headers leading from TK-101, TK-102, TK-103
WTP Electrical – Mueller
Installed instrument tray in the chemical area followed by pulling cable in the afternoon
Hung a light in the WTP contractor parking lot due to shortening days – we are losing on average 35 minutes of daylight per week currently
Pulled cable for lighting and receptacles
HLF Earthworks – Ewing
Ewing shaped along the Phase 2B East perimeter to add another bench for the CV-27 cables to be pushed over to
Continued laying lateral drain on sand bed

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	108	7,680
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	240	7,116
Winfield	Mech/Pipe	8	288	9,312
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	216	21,972
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**852**	**69,840**

PROJECT PHOTOS

WTP – Completed Construction of Well Pump House

WTP – Welded Finished Water Tank Spool Outlet 300-402-CS-PW

WTP – Last Cable Tray Run Installed

JDS	Victoria Gold Daily Construction Report				September 14, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		6°C	14°C	Calm	Intermittent Rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Installation of Buried Propane Line	September 16, 2022	September 16, 2022	Borealis arrived to the WTP site in the late afternoon and assessed the work required
Establish WTP Internet Comms Connection	September 22, 2022	September 22, 2022	Meeting w/ VGCX IT scheduled for Sept 17
Move the Office Trailer Beside the WTP	September 22, 2022	September 22, 2022	Pending internet comms connection
Modification of Phase 2A Liner for CV-28 Head End	September 20, 2022	September 20, 2022	Layfield crew scheduled to arrive on site Sept 17

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Borealis arrived to the WTP site in the late afternoon and assessed the work required
Received shipment of 8" insulated HDPE w/ fittings
WTP Mechanical and Piping - Winfield
Completed 1 – 8" Weld for 300-212-CS-PW
Completed 1 – ½" OLET for 300-212-CS-PW
Completed Fitting Flow Meter onto – 300-216-CS-PW
Flew in pipe leading to 90 for vertical on 300-216-CS-PW
Flew in spool for tie into outside flange into building on 300-216-CS-PW
WTP Electrical – Mueller
Continued welding cable tray supports
Pulled cables in the plant
HLF Earthworks – Ewing
Nuway beginning to crush additional ODF for remainder of lateral drains
Progressed backfill of Lateral #4 East with 50m remaining
CV-28 - Ewing
Ewing and JDS met at Phase 2A to discuss with survey where we will be needing Layfield to cut back the liner to allow for the head end of CV-28

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	156	7,728
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	4	288	7,164
Winfield	Mech/Pipe	7	372	9,396
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	288	22,044
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**21**	**1,104**	**70,092**

PROJECT PHOTOS

CV-28 – JDS Team Overlooking the Mine from the E-House Pad

CV-28 – Marking Line Where Liner Needs to be Cut Back for the Head End Pad

WTP – Excavated Man Doors for Apron Forms

WTP – Receipt of 8” Insulated HDPE

JDS	Victoria Gold Daily Construction Report				September 15, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		7°C	14°C	Calm	Sun & Rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Installation of Buried Propane Line	September 16, 2022	September 16, 2022	Borealis began installation of the buried propane service line
Establish WTP Internet Comms Connection	September 22, 2022	September 22, 2022	Meeting w/ VGCX IT scheduled for Sept 17
Move the Office Trailer Beside the WTP	September 22, 2022	September 22, 2022	Pending internet comms connection
Modification of Phase 2A Liner for CV-28 Head End	September 20, 2022	September 20, 2022	Layfield crew scheduled to arrive on site Sept 17

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Flew in spool for tie into outside flange into building on 300-216-CS-PW
Pulled Materials to begin fab on 12" x 8" header on 300-212-CS-PW
Continued tacking and welding south run un 300-216-CS-PW
Began fabricating 12"x8" header for 300-216-CS-PW
WTP Electrical – Mueller
Crew change trailered a load of cable up to site
Pulled cable for all lighting and small power feeds
Welded brackets for instrument tray runs in the Northwest corner of the building
HLF Earthworks – Ewing
Completed backfill of Lateral #4 East
Began excavating Lateral #3 East
WTP – Ewing & Borealis
Ewing excavated both the electrical and propane service trench from the WTP to the Borealis propane tank
Installed propane service line and back filled with sand before moving to larger material for fill
Ensured that buried service line tape was buried at a depth of 12" from the surface for the safety of any future excavations

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	204	7,776
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	10	408	7,284
Winfield	Mech/Pipe	4	420	9,444
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	360	22,116
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**1,392**	**70,380**

PROJECT PHOTOS

WTP – Installation of Return Line Spool to Tie into Insulated HDPE Return Line

WTP – Prep for West Man Door - Styrofoam to Bear Frost Compression During Winter

WTP – Burying of Propane Service Line

JDS	Victoria Gold Daily Construction Report				September 16, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		0°C	14°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Installation of Buried Propane Line	September 16, 2022	September 16, 2022	Completed
Establish WTP Internet Comms Connection	September 22, 2022	September 22, 2022	Meeting w/ VGCX IT scheduled for Sept 17
Move the Office Trailer Beside the WTP	September 22, 2022	September 22, 2022	Pending internet comms connection
Modification of Phase 2A Liner for CV-28 Head End	September 20, 2022	September 20, 2022	Layfield crew scheduled to arrive on site Sept 17

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	0
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	10

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Finished prepping man door forms and tied rebar
WTP Mechanical and Piping - Winfield
Completed two pipe layouts for upcoming fab on 300-216-CS-PW
Established execution plan for completing low line fit and weld on pump side of 350-210-CS-PW
Completed 1 – 12" weld on 216-CS-PW and cut 6 sections of pipe for 300-216-CS-PW
Completed 3 – 12" welds, 1 positional on 300-212-CS-PW
WTP Electrical – Mueller
Pulled cable for the Borealis propane skid
Installed grounding on the clarifiers
Pulled cable for the outside lights and terminated the junction boxes
HLF Earthworks – Ewing
75m of Lateral #3 East trench excavated and drain pipe set on 10cm of sand
WTP – Ewing & Borealis
Completed installation of electrical service line running to the Borealis propane tank
Passed propane line pressure test
CV-28 – Ewing & Layfield
Ewing prepared groundworks on the perimeter berm adjacent to the head end of CV-28

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	252	7,824
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	10	528	7,404
Winfield	Mech/Pipe	4	468	9,492
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	432	22,188
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**1,680**	**70,668**

PROJECT PHOTOS

WTP – Installation of Electrical Cables for Propane Skid

WTP – Buried Electrical Service Warning Tape

WTP – Wiring Western Exterior Light

JDS	Victoria Gold Daily Construction Report				September 17, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		0°C	14°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Establish WTP Internet Comms Connection	September 22, 2022	September 22, 2022	Determined path forward for remote internet access for Linkan and the WTP control center
Move the Office Trailer Beside the WTP	September 22, 2022	September 22, 2022	Pending internet comms connection
Modification of Phase 2A Liner for CV-28 Head End	September 20, 2022	September 20, 2022	Layfield arrived on site

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	1	1
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	11

Incidents:

- Property Damage – Mueller contractor was cutting up de-energized cable for disposal. While cutting the cable, a live fiber cable was cut resulting in a loss of communication to the Deep Well. E&I team in discussion over repairs required.

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Poured East, West and South man door concrete aprons
WTP Mechanical and Piping - Winfield
Drilled, installed, and epoxied PS-045, additional supports for 350-210-CS-PW, 100-514-PVC-PW,
Completed 4 – 12" Welds for 300-212-CS-PW
Completed 4 – 12" Welds for 300-216-CS-PW (3 Positional)
WTP Electrical – Mueller
Completed exterior building lighting
Pulled cables for small power
Removed 15kV that ran to the Deep Well pump shack
HLF Earthworks – Ewing
Completed excavating 30m of Lateral #3 East trench and drain pipe set on 10cm of sand, with backfilling previous day's 75m
CV-28 – Ewing & Layfield
Ewing continued preparing groundworks on the perimeter berm adjacent to the head end of CV-28
Layfield arrived on site and began completing orientation

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	300	7,872
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	12	672	7,548
Winfield	Mech/Pipe	10	588	9,612
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	504	22,260
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**32**	**2,064**	**71,052**

PROJECT PHOTOS

WTP – Hoarded the Water Tote in Preparation of the Concrete Pour

WTP – Finished West Man Door Apron

WTP – Fabrication of Line Junction for 300-212-CS-PW

JDS	Victoria Gold Daily Construction Report				September 18, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		0°C	14°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Establish WTP Internet Comms Connection	September 22, 2022	September 22, 2022	Materials are on hand, JDS to coordinate work with Mueller and VGCX IT
Move the Office Trailer Beside the WTP	September 22, 2022	September 22, 2022	Pending internet comms connection
Modification of Phase 2A Liner for CV-28 Head End	September 20, 2022	September 20, 2022	Cut the liner and began to pull it back

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	11

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Continued taking elevations due to support layout on 300-216-CS-PW
Flew in lowline 14" x 12" and set for welding on 350-210-CS-PW
Received Materials - (pipe power positioner, u-bolts, pvc, misc parts and missing fittings for 350-210-CS-PW to complete low line)
Bolted up to tanks on 350-210-CS-PW
Pulled materials and staged for 250-213-CS-PW, 250-214-CS-PW, 250-215-CS-PW
WTP Electrical – Mueller
Whole team focussed on pulling CAT6 cable throughout the plant
HLF Earthworks – Ewing
Backfilled Lateral #3 East trench – 125m completed overall
Likely finished with Lateral work front for the year due to uncertainty of whether Phase 2B slope will need to be cut deeper for CV28/29
CV-28 – Ewing & Layfield
Ewing building up head end pad
Layfield cut the Phase 2A liner back for the earthworks to be completed

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	48	7,920
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	12	144	7,692
Winfield	Mech/Pipe	10	120	9,732
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	72	22,332
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**32**	**384**	**71,436**

PROJECT PHOTOS

HLF – Backfill of Lateral #3 East

CV-28 – Cutting Back Phase 2A Liner to Allow for the Head End Pad

WTP – CAT6 Cable Spool for Today's Pull

JDS	Victoria Gold Daily Construction Report				September 19, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		0°C	13°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Establish WTP Internet Comms Connection	September 22, 2022	September 22, 2022	Materials are on hand, JDS to coordinate work with Mueller and VGCX IT
Move the Office Trailer Beside the WTP	September 22, 2022	September 22, 2022	Pending internet comms connection
Modification of Phase 2A Liner for CV-28 Head End	September 20, 2022	September 21, 2022	Completed top section of Phase 2A

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	11

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Poured North man door apron

WTP Mechanical and Piping - Winfield

Continued fabrication of header for 300-212-CS-PW

Making last measurements to complete 300-216-CS-PW

Cut pipe lengths for 250-213CS-PW, 250-214-CS-PW and 250-215-CS-PW out of waste material

Began to fabricate 400-205-CS-PW and 250-215-CS-PW

WTP Electrical – Mueller

Continuing the CAT6 cable pull

Five crew members left site

HLF Earthworks – Ewing

Focusing their manpower on the liner modifications with Layfield

CV-28 – Ewing & Layfield

Completed liner modifications and fusing of liner along the head end pad

Moving the work front to the lower section of Phase 2A

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	48	7,920
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	12	144	7,692
Winfield	Mech/Pipe	10	120	9,732
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	72	22,332
Layfield	Laying Liner	-	-	4,608
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**32**	**384**	**71,436**

PROJECT PHOTOS

WTP – Poured North Man Door Apron

WTP – Connected 300-210-CS-PW to TK-201

JDS	Victoria Gold Daily Construction Report				September 20, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		3°C	14°C	Calm	Slightly Cloudy

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Establish WTP Internet Comms Connection	September 22, 2022	September 22, 2022	Materials are on hand, JDS to coordinate work with Mueller and VGCX IT
Move the Office Trailer Beside the WTP	September 22, 2022	September 22, 2022	Pending internet comms connection
Modification of Phase 2A Liner for CV-28 Head End	September 20, 2022	September 21, 2022	Completed top section of Phase 2A

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	11

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

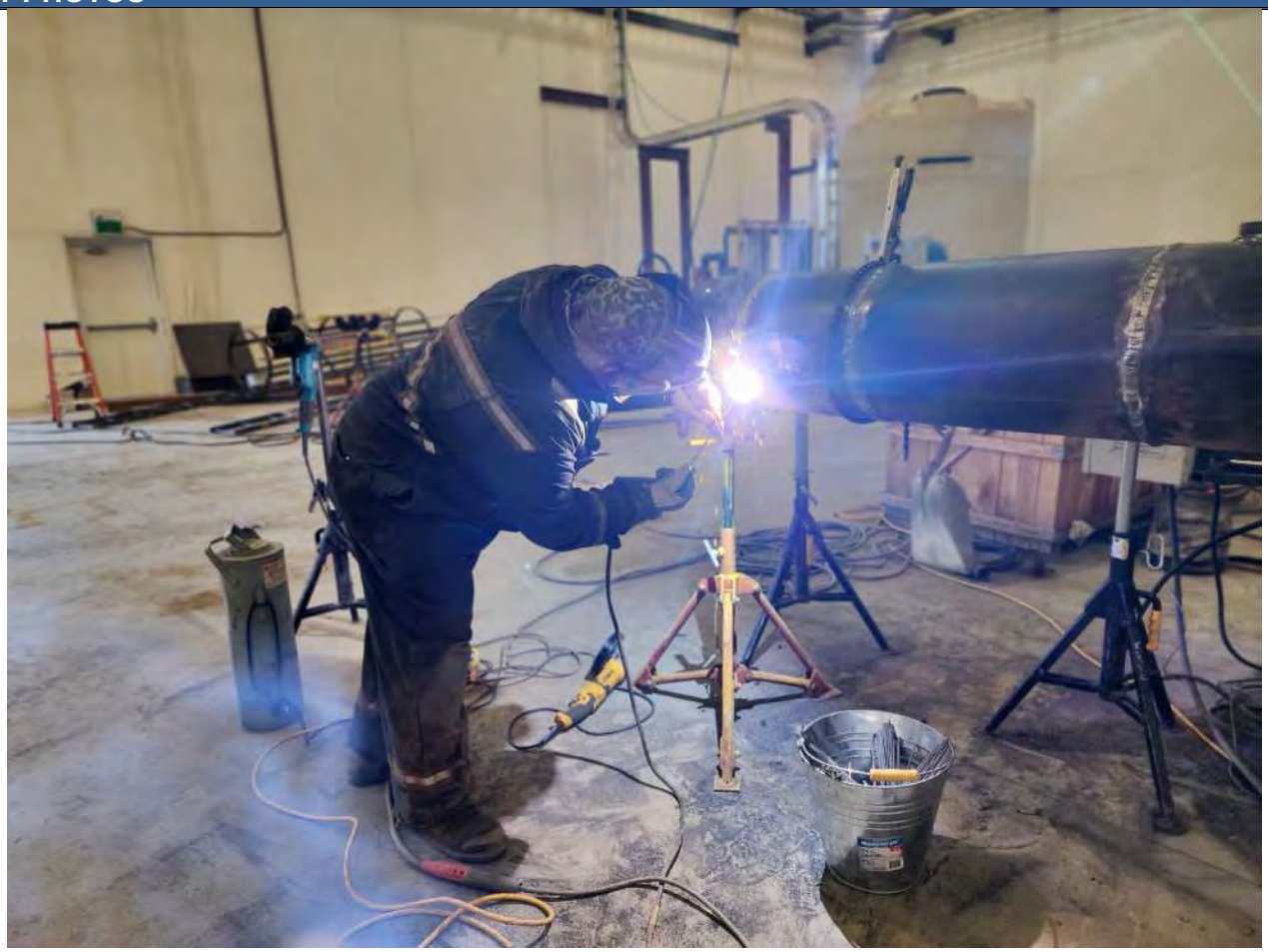
TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Competed Welding 90-degree elbow on 350-210-CS-PW
Measured final tie-in spool to MF feed pumps
Welded reducing spools and discharge header for MF feed pumps
Reinstalled ECS spool and started final placement of pumps and piping
WTP Electrical – Mueller
Worked on pulling all cables for the DIO2 cabinet
HLF Earthworks – Ewing
Focusing their manpower on the liner modifications with Layfield
CV-28 – Ewing & Layfield
Started work on the lower section of Phase 2A

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	6	168	8,040
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	300	7,848
Winfield	Mech/Pipe	9	348	9,960
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	216	22,476
Layfield	Laying Liner	3	108	4,716
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**30**	**1,140**	**72,192**
Visitors		-	-	-
Total - Site		**30**	**1,140**	**72,192**

PROJECT PHOTOS



WTP – Welding Carbon Steel Pipe Spools

WTP – Flaring Propane Tanks

HLF – Earthworks for Phase-2A Liner Modifications

HLF – Top Section of Phase-2A Liner Backfilled

JDS	Victoria Gold Daily Construction Report				September 21, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		7°C	12°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Establish WTP Internet Comms Connection	September 22, 2022	September 22, 2022	Materials are on hand, JDS to coordinate work with Mueller and VGCX IT
Move the Office Trailer Beside the WTP	September 22, 2022	September 22, 2022	Pending internet comms connection
Modification of Phase 2A Liner for CV-28 Head End	September 20, 2022	September 21, 2022	Completed Top section of Phase 2A

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	11

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Started constructing fire water spool enclosure
WTP Mechanical and Piping - Winfield
Bush hammered pad for clarifier feed pumps and installed anchors
Completed spooling 12" riser for 300-216-CS-PW
Installed clarifier feed pumps P-101, P-102, P-103
Completed spooling header for MF feed pumps P-201, P-202, P-203
Bolted valves and spools to MF feed pumps P-202, P-202, P-203
WTP Electrical – Mueller
Worked on pulling all cables for the DIO2 cabinet
HLF Earthworks – Ewing
Focusing their manpower on the liner modifications with Layfield
CV-28 – Ewing & Layfield
Started work on the lower section of Phase 2A

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	5	228	8,100
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	372	7,920
Winfield	Mech/Pipe	10	468	10,080
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	288	22,548
Layfield	Laying Liner	3	144	4,752
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**30**	**1,500**	**72,552**
Visitors		-	-	-
Total - Site		**30**	**1,500**	**72,552**

PROJECT PHOTOS

WTP – Welding Carbon Steel Pipe Spools

WTP – Bolting Spools and Valves to MF Feed Pumps

HLF – Placing and Cutting Liner for Lower End of CV-028

HLF – Backfilling Lower End of CV-028 Anchor Trench

JDS	Victoria Gold Daily Construction Report				September 22, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		3°C	8°C	Calm	Rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Move the Office Trailer Beside the WTP	September 22, 2022	September 22, 2022	Completed
Modification of Phase 2A Liner for CV-28 Head End	September 20, 2022	September 21, 2022	Completed

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	11

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Completed constructing fire water spool enclosure
Completed relocating the command center to the West side of the WTP
WTP Mechanical and Piping - Winfield
Completed three welds on MF Feed Pumps 14" header line
Coated and installed spool in Southeast corner
Continued bolting up clarifier feed pump spools
WTP Electrical – Mueller
Worked on ty-wrapping all the pulled cables
Disconnected the power and communications to the JDS command center, and reconnected in the new location
HLF Earthworks – Ewing
Focusing their manpower on the liner modifications with Layfield
CV-28 – Layfield & Ewing
Completed

MANPOWER ON SITE

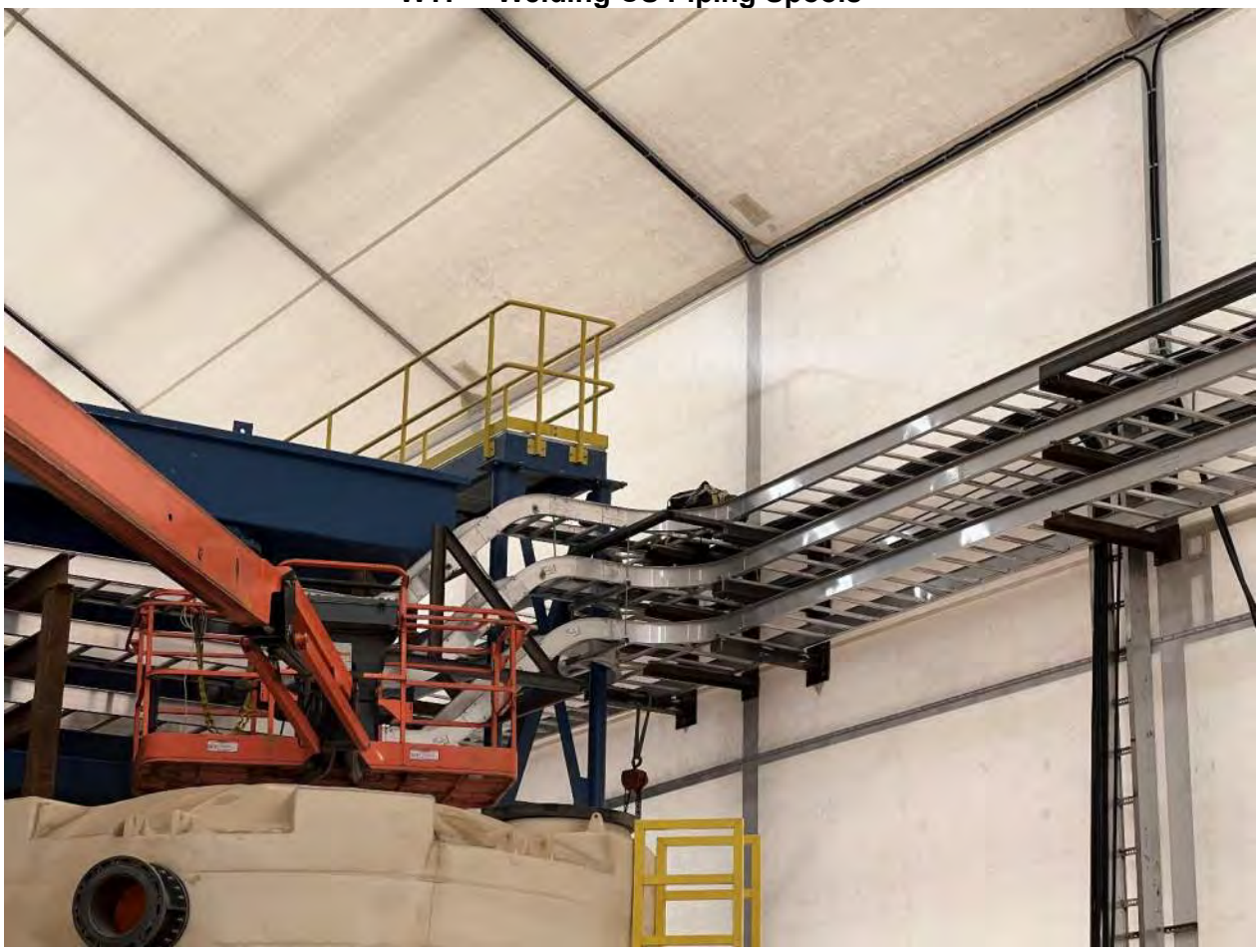
Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	5	288	8,160
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	444	7,992
Winfield	Mech/Pipe	10	588	10,200
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	360	22,620
Layfield	Laying Liner	3	180	4,788
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**30**	**1,860**	**72,912**
Visitors		-	-	-
Total - Site		**30**	**1,860**	**72,912**

PROJECT PHOTOS

WTP – Placing Fire Water Spool Enclosure

WTP – Completed Fire Water Spool Enclosure

WTP – Welding CS Piping Spools



WTP – Ty-wrapping Pulled Cables

HLF – Bolted up Spools in Southeast Corner

JDS	Victoria Gold Daily Construction Report				September 23, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-4°C	8°C	Calm	Slightly Cloudy

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Temporary Power to Skids	October 3, 2022	October 3, 2022	Continuing to pull cables
Air piping to MF	October 1, 2022	October 1, 2022	Started shaking out materials
Large Bore CS Complete	October 8, 2022	October 8, 2022	Continuing to weld 12" CS spools

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	11

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Continued fusing return line for WTP

WTP Mechanical and Piping - Winfield

Completed internal installation on reaction tanks TK-101, TK-102, and TK-103

Tacked header for feed water to MF in East to West rack

Cleaned up ECS weld in preparation for coating riser to reaction tanks

Welded 12" header for main return line to pond

WTP Electrical – Mueller

Worked on pulling cables in the reagents area

Helped Victoria Gold with getting Wi-Fi connected to the command center

HLF Earthworks – Ewing

Started phase 3 test-pitting, permafrost encountered in 2 out of 6 test pits

CV-28 – Ewing

Continued packing anchor trench

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	312	8,184
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	516	8,064
Winfield	Mech/Pipe	10	708	10,320
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	432	22,692
Layfield	Laying Liner	-	180	4,788
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**2,148**	**73,200**
Visitors		-	-	-
Total - Site		**24**	**2,148**	**73,200**

PROJECT PHOTOS

WTP – Fusing HDPE Return Line

WTP – Welding 12” CS Pipe Header

JDS	Victoria Gold Daily Construction Report				September 24, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		3°C	12°C	Calm	Slightly Cloudy

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Air piping to MF	October 1, 2022	October 1, 2022	Continued shaking out materials
Temporary Power to Skids	October 3, 2022	October 3, 2022	Continued pulling and ty-wrapping cables
Large Bore CS Complete	October 8, 2022	October 8, 2022	Continuing to weld and install 12" CS headers

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	11

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Completed fusing 500 feet of 12" HDPE for the WTP return line

WTP Mechanical and Piping - Winfield

Installed 16" header between clarifiers and MF feed tanks

Started welding CS header for MF

Cleaned up filter press bay for overhead door installation

WTP Electrical – Mueller

Continued ty-wrapping the cables in the reagents area

Completed disconnecting the well shack from the generator and connecting it to permanent power

HLF Earthworks – Ewing

Completed phase 3 test-pitting, permafrost encountered

CV-28 – Ewing

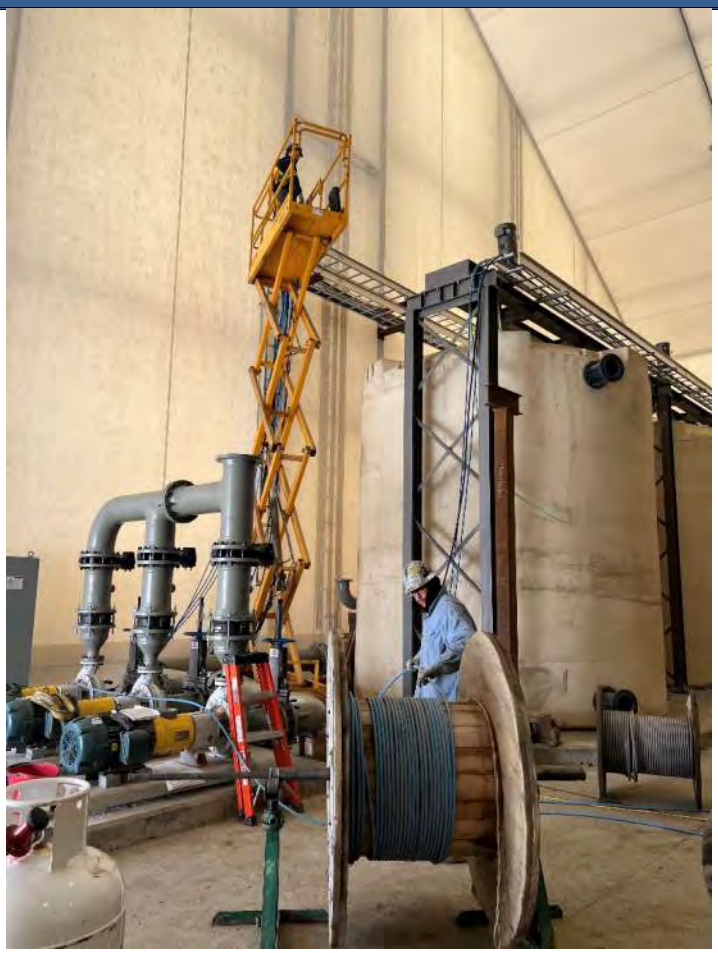
Completed packing anchor trench

Continued bulk cut for the conveyer alignment

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	336	8,208
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	588	8,136
Winfield	Mech/Pipe	8	804	10,416
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	504	22,764
Layfield	Laying Liner	-	180	4,788
Yukon Door	Over head doors	1	12	12
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**2,424**	**73,476**
Visitors		-	-	-
Total - Site		**23**	**2,424**	**73,476**

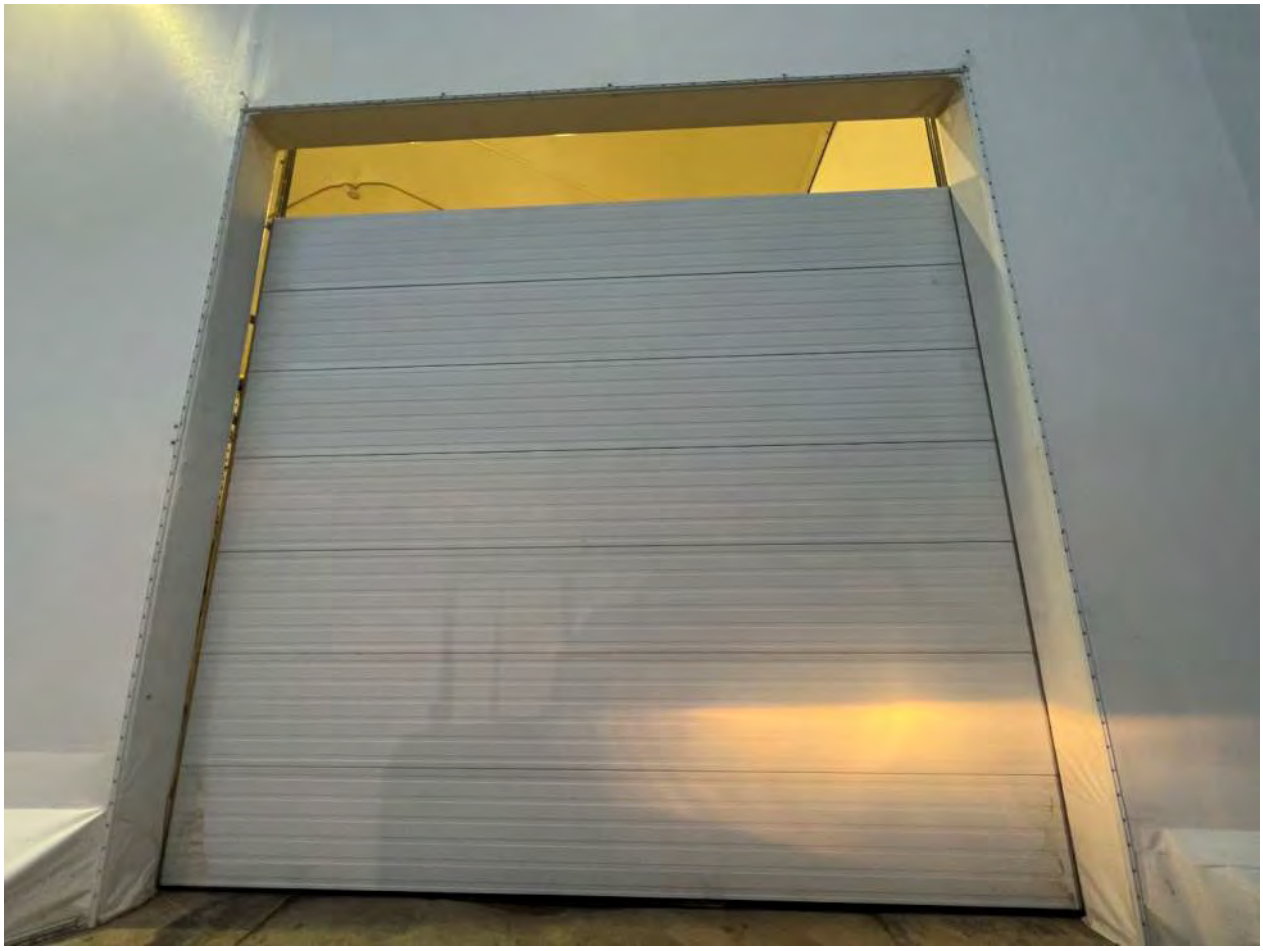
PROJECT PHOTOS



WTP – Pulling Cables on East Wall

WTP – Moving 12” CS Pipe Header to Work Front

WTP – Tacked CS Header Between MF Feed Tanks and Clarifiers



WTP – Overhead Door Installation on East Wall

JDS	Victoria Gold Daily Construction Report				September 25, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		0°C	11°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Air piping to MF	October 1, 2022	October 1, 2022	Received shipment of Air Lines
Temporary Power to Skids	October 3, 2022	October 3, 2022	Continued pulling and ty-wrapping cables
Large Bore CS Complete	October 8, 2022	October 8, 2022	Continuing to weld and install 12" CS headers

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	11

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

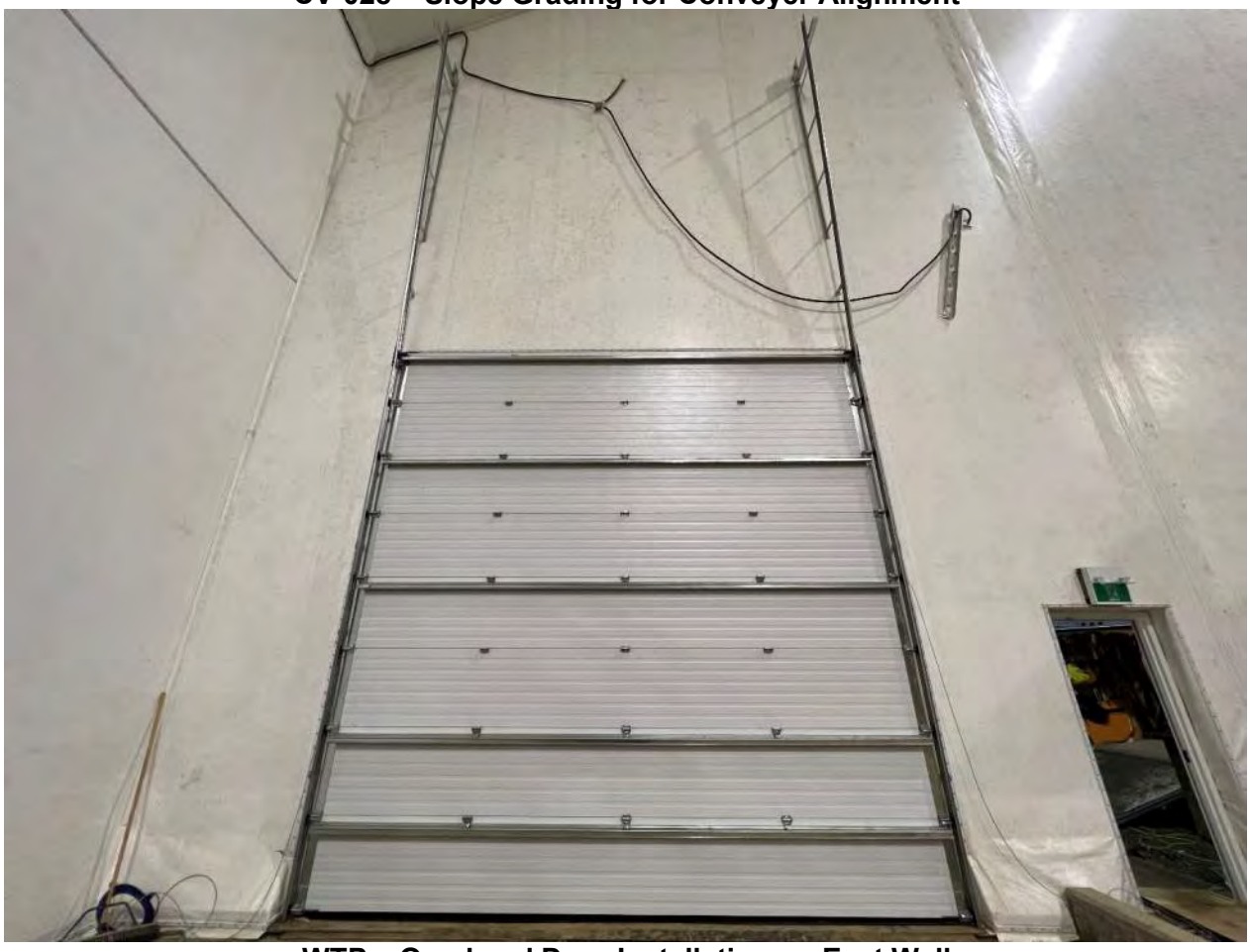
Activity
Completed 12" HDPE WTP return line
Received shipment of air line piping from Wolseley
WTP Mechanical and Piping - Winfield
Installed 12" header to riser in-between clarifier and MF feed tanks
Installed North end of 16" header in preparation of tacking and welding
Completed fabrication on 12" header for MF
WTP Electrical – Mueller
Worked on pulling and ty-wrapping motor control cables
Started pulling heat trace for the HDPE feed line
HLF Earthworks – Ewing
Completed test pitting for phase 3 and sludge cell
CV-28 – Ewing
Continued cutting and shaping for conveyer alignment

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	24	8,232
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	72	8,208
Winfield	Mech/Pipe	10	120	10,560
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	6	72	22,836
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	1	12	24
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**25**	**300**	**73,800**
Visitors		-	-	-
Total - Site		**25**	**300**	**73,800**

PROJECT PHOTOS

CV-028 – Slope Grading for Conveyer Alignment



WTP – Overhead Door Installation on East Wall

WTP – HDPE Return Line Placed in LDSP

WTP – Installed CS Header for Return Line

WTP – Fabricating 12” CS Header for MF Return Line

JDS	Victoria Gold Daily Construction Report				September 26, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		2°C	7°C	Calm	Rain and Snow

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Air piping to MF	October 8, 2022	October 8, 2022	Received shipment of Air Lines
Motor Control Cables Complete	October 1, 2022	October 1, 2022	Continued pulling and ty-wrapping cables
Large Bore CS Complete	October 8, 2022	October 8, 2022	Continuing to weld and install 12" CS headers

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	11

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

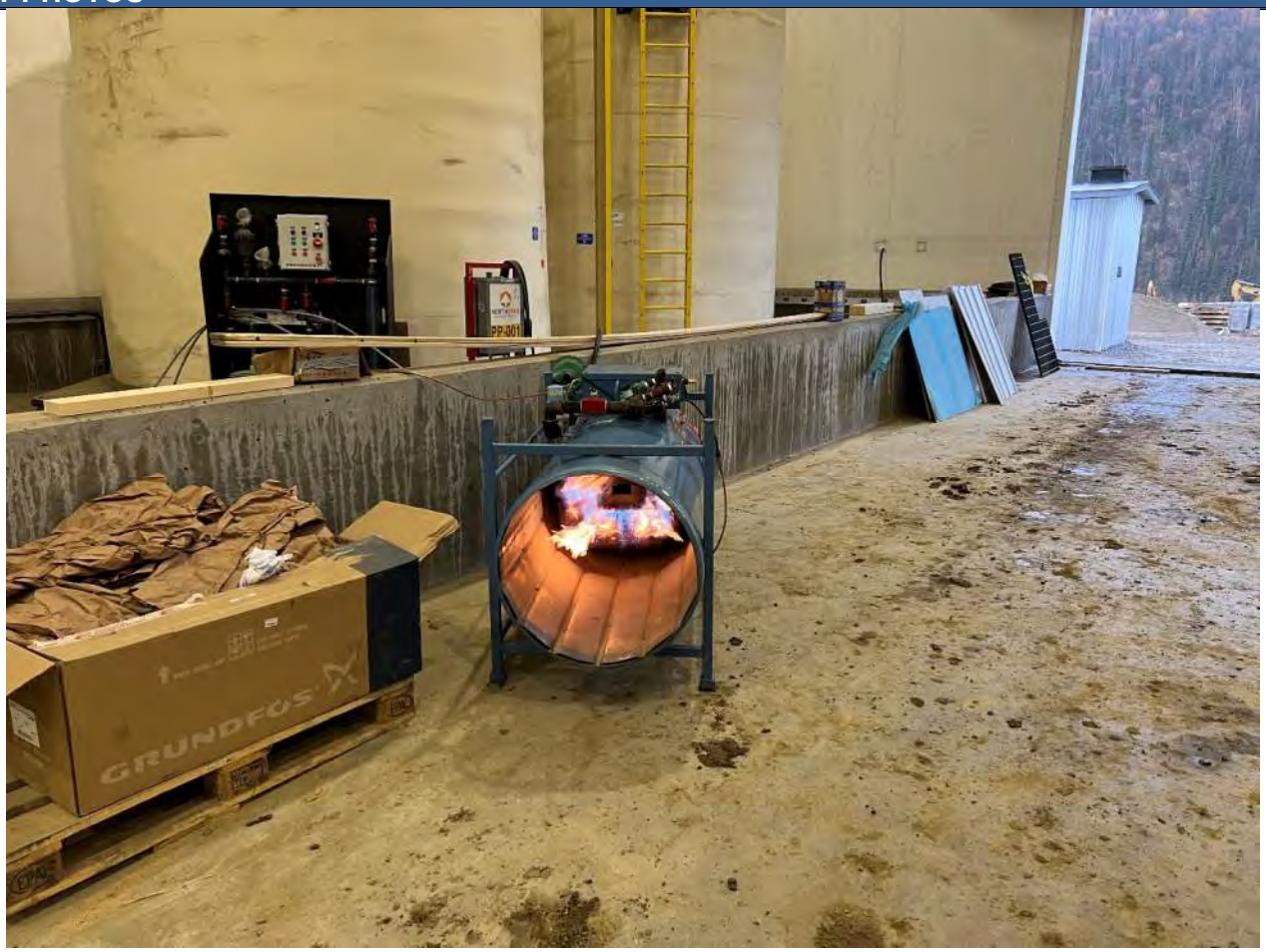
TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Welded elbows to headers on West rack for return water
Sorted and shelved all threaded fittings for air and gas piping
Installed injection quills and small-bore valves on inlet pipe
Installed 12" riser on South wall
Connected Sure-Flame heater to propane
WTP Electrical – Mueller
Continued pulling and ty-wrapping motor control cables
Moved exterior lighting cable out of the way for the overhead door installation
CV-28 – Ewing
Continued cutting and shaping for conveyer alignment

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	48	8,256
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	144	8,280
Winfield	Mech/Pipe	9	216	10,656
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	2	96	22,860
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	1	24	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**20**	**528**	**74,028**
Visitors		-	-	-
Total - Site		**20**	**528**	**74,028**

PROJECT PHOTOS



WTP – Sure Flame Heater Connected to Propane

WTP – CS Spool Installed on Finished Water Tank

WTP – Air and Gas Fittings Organized on Shelves

JDS	Victoria Gold Daily Construction Report				September 27, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-2°C	8°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Motor Control Cables Complete	October 1, 2022	October 1, 2022	Continued pulling and ty-wrapping cables
Large Bore CS Complete	October 8, 2022	October 8, 2022	Continuing to weld and install 12" CS headers

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	1
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	11

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Installed risers from clarifier onto 16" header
Welded 90° elbows onto pups for 16" candy canes
Continued repairing coating on ECS spools
Installed 12" ECS riser onto reaction tank TK-102
Installed instruments and small-bore valves on feed water line to oxidation tank
WTP Electrical – Mueller
Continued pulling and ty-wrapping motor control and power cables
CV-28 – Ewing
Continued cutting and shaping for conveyer alignment

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	72	8,280
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	216	8,352
Winfield	Mech/Pipe	9	324	10,740
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	2	120	22,884
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	24	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Hatch	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**19**	**756**	**74,232**
Visitors		-	-	-
Total - Site		**19**	**756**	**74,232**

PROJECT PHOTOS

CV-28 – Cutting and Shaping for Conveyer Alignment

WTP – 16” CS Risers Installed on Clarifiers

WTP – 8” ECS Riser Fabricated for Reaction Tanks

WTP – Injection Quills Installed on Feed Line

JDS	Victoria Gold Daily Construction Report				September 28, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-6°C	8°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Motor Control Cables Complete	October 1, 2022	October 1, 2022	Continued pulling and ty-wrapping cables
Large Bore CS Complete	October 8, 2022	October 8, 2022	Continuing to weld and install 12" CS headers

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	1	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	1	12

Incidents:

- Nothing to report

Other HSE Activities:

- Near miss

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Continued welding on 16" candy canes into MF feed tanks
Completed installing and bolting up ECS spools
Continued welding 12" header for clarifier
WTP Electrical – Mueller
Continued installing heat trace for the plant water feed line
Continued pulling and ty-wrapping power and motor control cables
Started working on solution to open pneumatic butterfly valve ACV-001
CV-28 – Ewing
Continued shaping and packing for conveyer alignment

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	96	8,304
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	12	360	8,496
Winfield	Mech/Pipe	9	432	10,848
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	2	144	22,908
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	24	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Linkan	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**25**	**1,056**	**74,532**
Visitors		-	-	-
Total - Site		**25**	**1,056**	**74,532**

PROJECT PHOTOS

CV-28 – 8” ECS Reaction Tank Risers Installed

WTP – 12” CS Header Installed for Recirculation Line

WTP – Final Coating Repair for ECS Spools

WTP – Cable Pull Progress

CV-28 – Packing Slope for Conveyer Alignment

JDS	Victoria Gold Daily Construction Report				September 29, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		4°C	14°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Motor Control Cables Complete	October 1, 2022	October 1, 2022	Continued pulling and ty-wrapping cables
Large Bore CS Complete	October 8, 2022	October 8, 2022	Continuing to weld and install 12" CS headers

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	12

Incidents:

- Nothing to report

Other HSE Activities:

- Near miss

TODAY'S ACTIVITIES

Activity
16" valve opened from LDSP – first water introduced into the WTP
WTP Mechanical and Piping - Winfield
Installed all instruments into ECS piping up to clarifiers
Installed 12" CS header in MF rack to MF Skids
Fabricated header for MF feed pumps
Started building air line to ACV-001
WTP Electrical – Mueller
Continued installing heat trace for the plant water feed and return lines
Started glanding cables going into DIO2
Continued pulling and ty-wrapping cables
CV-28 – Ewing
Continued cutting and shaping backslope

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	120	8,328
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	12	504	8,640
Winfield	Mech/Pipe	9	540	10,956
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	2	168	22,932
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	24	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Linkan	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**25**	**1,356**	**74,832**
Visitors		-	-	-
Total - Site		**25**	**1,356**	**74,832**

PROJECT PHOTOS

WTP – 16” Valve from LDSP Opened

WTP – First Water into Oxidation Tank

WTP – Welding Header for MF Feed Pumps

CV-28 – Cutting and Shaping Backslope

JDS	Victoria Gold Daily Construction Report				September 30, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		6°C	13°C	Calm	Rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Air Line Piping Complete to Priority Control Valves	October 10, 2022	October 10, 2022	Started Installing ½" CS lines
Large Bore CS Complete	October 8, 2022	October 8, 2022	Continuing to weld and install 16" CS headers

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	2
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	12

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

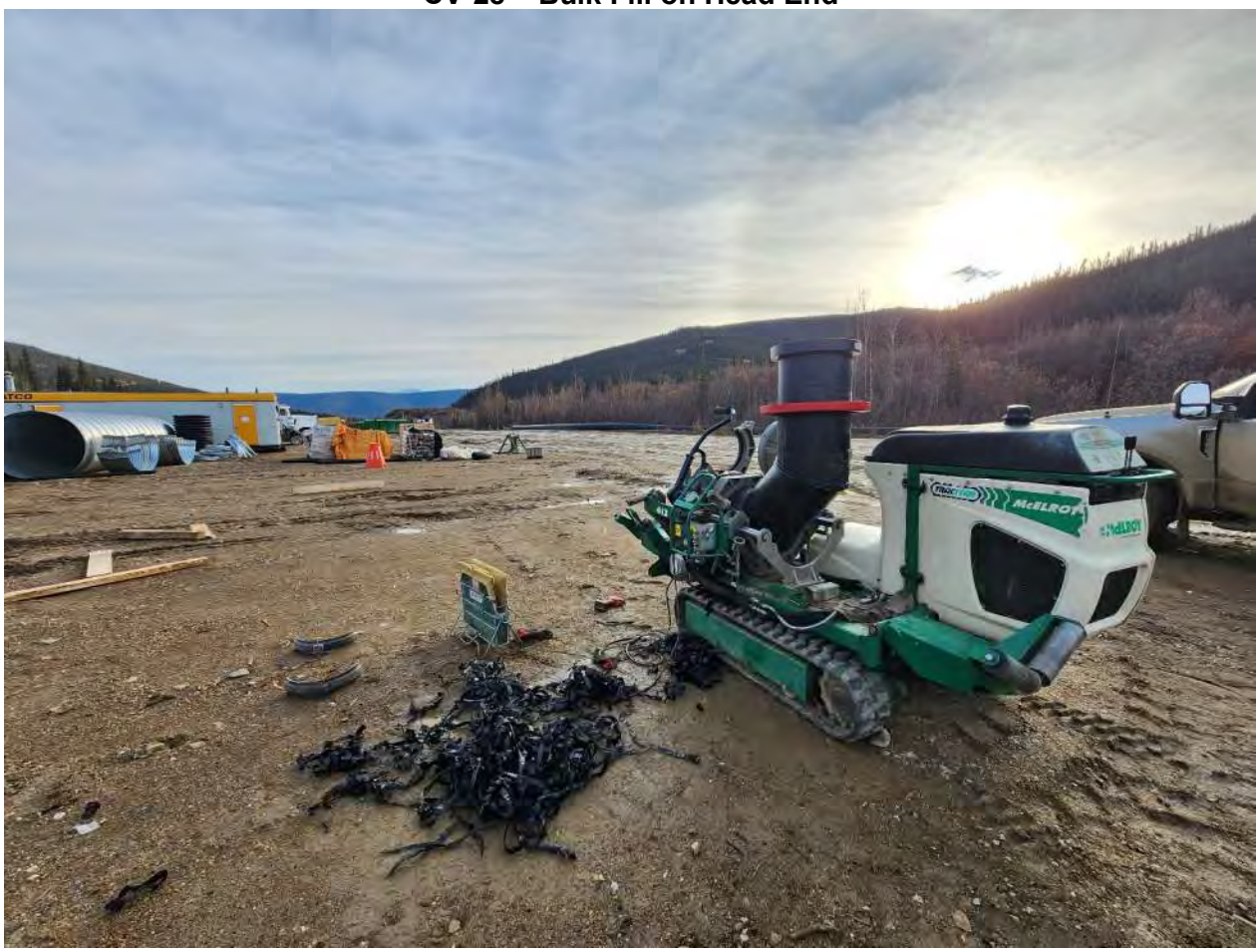
Activity
WTP Mechanical and Piping - Winfield
Cleaned oxidation tank from any debris gathered by the main feed line
Continued welding 16" candy canes for MF feed tanks
Cut hole in MF feed tank TK-202 for pipe install
Started installing ½" air line to ACV's on clarifiers
WTP Electrical – Mueller
Continued installing heat trace for the plant water feed and return lines
Continued preparing gland cables from exterior to CCP
Continued pulling and ty-wrapping cables
CV-28 – Ewing
Started bulk fill on head-end

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	144	8,352
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	12	648	8,784
Winfield	Mech/Pipe	12	684	11,100
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	2	192	22,956
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	24	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Linkan	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**28**	**1,692**	**75,168**
Visitors		-	-	-
Total - Site		**28**	**1,692**	**75,168**

PROJECT PHOTOS

CV-28 – Bulk Fill on Head End



WTP – Fusing 12” Finished Water Line

WTP – ½” Airline Installed for Clarifier ACVs

JDS	Victoria Gold Daily Construction Report				October 1, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		2°C	7°C	Calm	Rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Air Line Piping Complete to Priority Control Valves	October 10, 2022	October 10, 2022	Continued Installing ½" CS lines
Large Bore CS Complete	October 8, 2022	October 8, 2022	Continuing to weld and install 16" CS headers

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	1	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	1	13

Incidents:

- Winfield worker strained right shoulder while drilling a hole on an I-beam. Employee was sent to Mayo for X-ray.

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

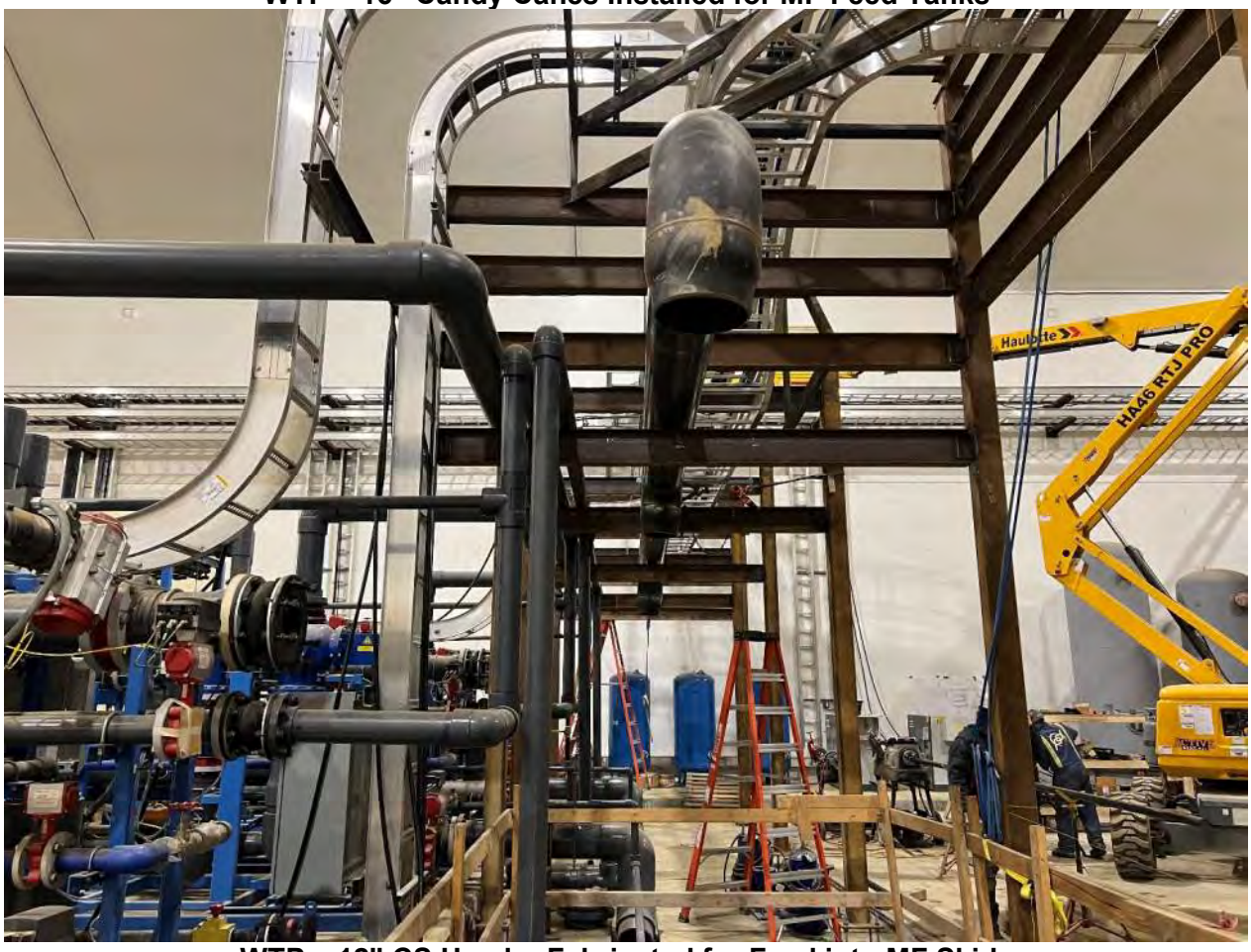
Activity
WTP Mechanical and Piping - Winfield
Started cutting in PVC valves underneath clarifier
Completed welding and installing 16" candy canes for MF feed tanks
Installed header on top of MF feed pumps
Continued installing air line header to MF skids
Completed fabricating main 12" header from clarifier to MF skids
WTP Electrical – Mueller
Started installing heat trace controllers
Continued boding tray to structural
Continued pulling and ty-wrapping cables
CV-28 – Ewing
Continued bulk fill on head-end

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	168	8,376
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	12	792	8,928
Winfield	Mech/Pipe	12	828	11,244
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	2	216	22,980
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	24	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Linkan	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**28**	**2,028**	**75,504**
Visitors		-	-	-
Total - Site		**28**	**2,028**	**75,504**

PROJECT PHOTOS

WTP – 16” Candy Canes Installed for MF Feed Tanks



WTP – 12” CS Header Fabricated for Feed into MF Skids

WTP – Fusing 12” HDPE Finished Water Line

JDS	Victoria Gold Daily Construction Report				October 2, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-4°C	3°C	Calm	Snow

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Air Line Piping Complete to Priority Control Valves	October 10, 2022	October 10, 2022	Began installing 2" header off the compressors
Large Bore CS Complete	October 8, 2022	October 8, 2022	16" CS complete

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

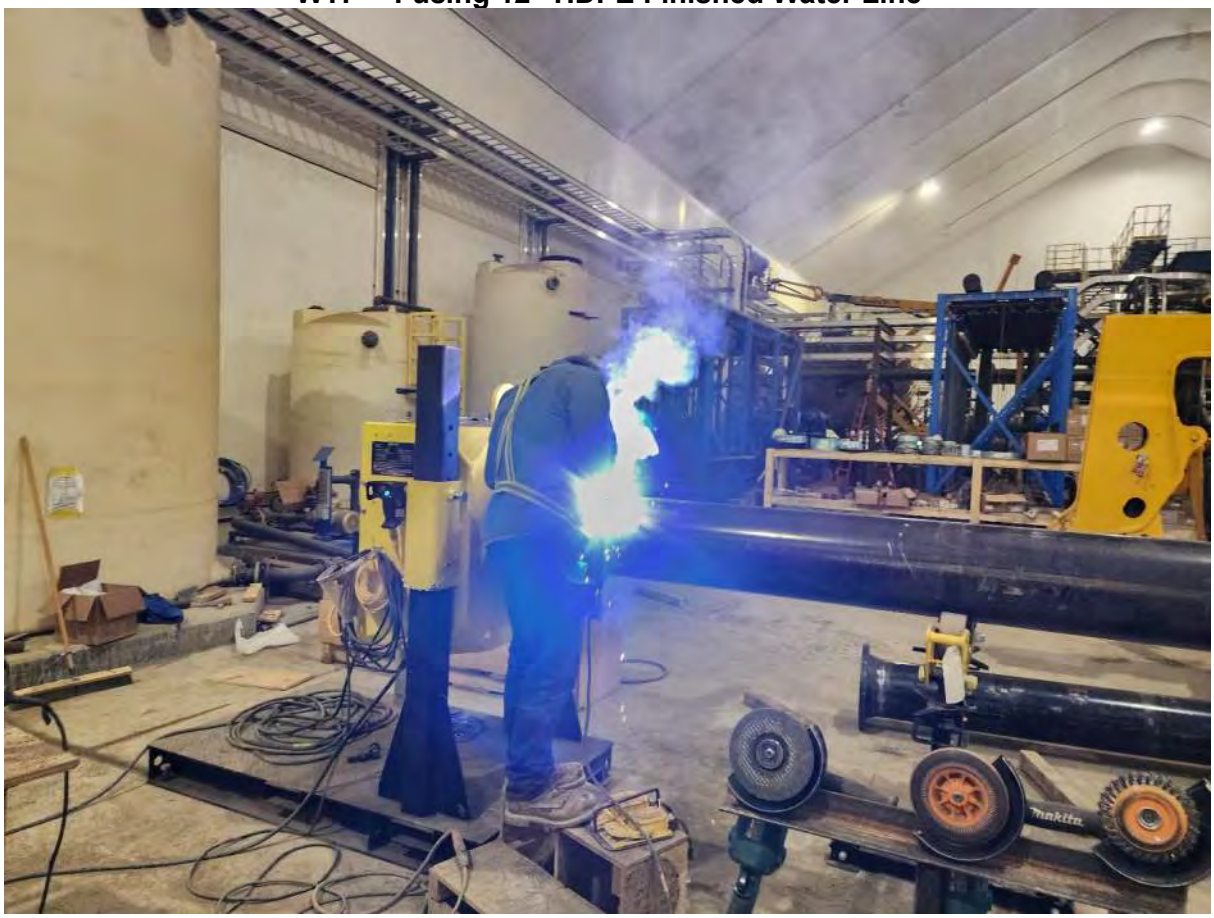
Activity
Continued fusing 12" HDPE finished water line
WTP Mechanical and Piping - Winfield
Continued cutting in PVC valves underneath clarifier
Installed air header to the MF skids and started the second air header for the ACVs
Continued fabricating the 12" return line and feed line to the MF skids
Started installing the 2" header from the compressors
WTP Electrical – Mueller
Completed installing heat trace controllers
Continued bonding tray to structural
Continued pulling and ty-wrapping cables
Dressed and entered cables at the MCC's, clarifier motors, reagent area control panels, RF pump skid and DIO1
CV-28 – Ewing
Continued bulk fill on head-end

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	36	8,412
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	12	144	9,072
Winfield	Mech/Pipe	10	120	11,316
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	2	24	23,004
Layfield	Laying Liner	-	-	4,788
Yukon Door	Overhead doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Linkan	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**27**	**324**	**75,780**

PROJECT PHOTOS

WTP – Fusing 12” HDPE Finished Water Line



WTP – 12” CS Header Fabricated for Feed into MF Skids

CV-28 – Continued Bulk Fill on Head End

JDS	Victoria Gold Daily Construction Report				October 3, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-1°C	5°C	Calm	Flurries & Rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Air Line Piping Complete to Priority Control Valves	October 10, 2022	October 10, 2022	Installed the header for the ACV's supplying the clarifiers
Large Bore CS Complete	October 8, 2022	October 8, 2022	Installing the 12" header from clarifier to MF skids

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Continued fusing 12" HDPE finished water line
Began to organize/clear laydown across from Ewing's shop in preparation for backfilling West bay door chemical delivery ramp
WTP Mechanical and Piping - Winfield
Continued cutting in PVC valves underneath clarifier
Aligned P-101 for first fill on the clarifiers
Ran air header for ACV's supplying the clarifiers
Continued fabricating 12" spools
Punched lines in preparation of first fill for clarifiers
WTP Electrical – Mueller
Continued installing cable tray supports and bonding cable tray to structural
Dressing and entering cables
CV-28 – Ewing
Began shaping on head-end

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	60	8,436
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	12	288	9,216
Winfield	Mech/Pipe	10	240	11,436
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	2	48	23,028
Layfield	Laying Liner	-	-	4,788
Yukon Door	Overhead doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Linkan	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**26**	**636**	**76,092**

PROJECT PHOTOS

WTP – Dressing and Entering Cables into the Clarifier Control Panel

CV-28 – Shaping Fill on Head End

WTP – Fusing 12” HDPE Finished Water Line

JDS	Victoria Gold Daily Construction Report				October 4, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-2°C	8°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Air Line Piping Complete to Priority Control Valves	October 10, 2022	October 10, 2022	Continued running air lines
Large Bore CS Complete	October 8, 2022	October 8, 2022	Continued installing the 12" header from clarifier to MF skids

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Continued fusing 12" HDPE finished water line
Completed clearing laydown across from Ewing's shop in preparation for backfilling West bay door chemical delivery ramp
WTP Mechanical and Piping - Winfield
Unbolted the 4" PVC lines under the clarifiers in preparation of initial draining
Aligned coupling on Pump 101 and complete first fill
Fixed mixer in the flocculation tank and double checked the other two prior to beginning first fills
Ran water to the flocculation tanks, clarifiers and MF feed tanks as a first fill test
Staged 12" HDPE header inside the building
Continued running air lines
WTP Electrical – Mueller
Cleaned out clarifier tanks in preparation of first fill
Grounded the outside 24" waterfall feeding into the MCCs
Built up the plates for the EJBs and IO modules
CV-28 – Ewing
Continued shaping on head-end

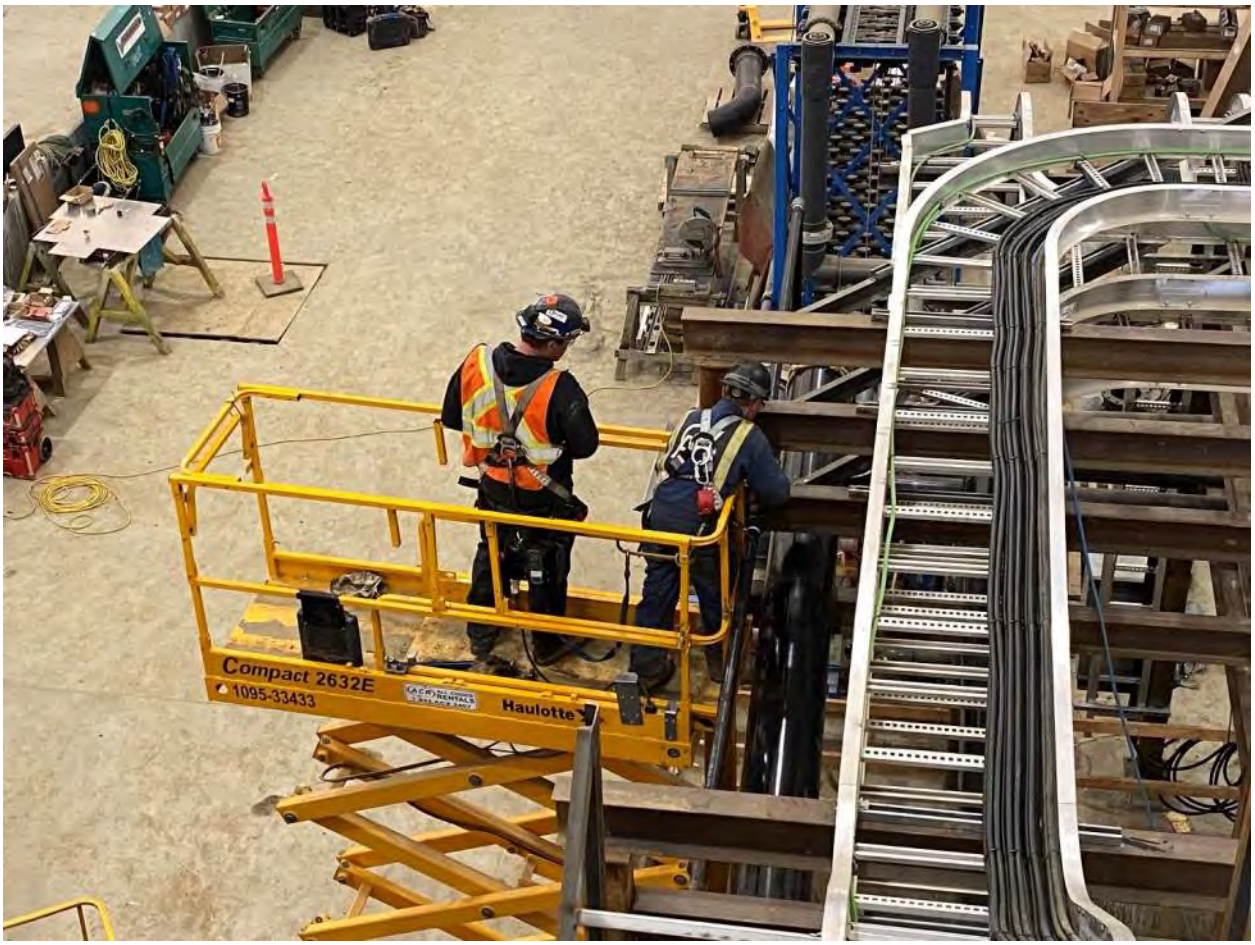
MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	84	8,460
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	10	408	9,336
Winfield	Mech/Pipe	12	384	11,580
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	2	72	23,052
Layfield	Laying Liner	-	-	4,788
Yukon Door	Overhead doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Linkan	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**26**	**948**	**76,404**

PROJECT PHOTOS

WTP – Backfilling Chemical Delivery Ramp

WTP – First Fill of the Clarifiers



WTP – Installing 2” Air Line

First Fill of the Flocculation Tank

JDS	Victoria Gold Daily Construction Report				October 5, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		0°C	10°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Air Line Piping Complete to Priority Control Valves	October 10, 2022	October 10, 2022	Continued threading pipe
Large Bore CS Complete	October 8, 2022	October 8, 2022	Continued installing the 12" pipe from clarifier to MF skids

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Continued fusing 12" HDPE finished water line
WTP Mechanical and Piping - Winfield
Installed 12" HDPE header running from the MF to the finished water tank
Continued threading 2" pipe for airlines
Installed temporary cover (human traffic only) across large sump to open workspace for commissioning
Installed remaining flow element on the PVC pipe underneath the clarifiers
Fabricate supports for the 12" carbon steel that runs along the North wall
Bolted up check valve and butterfly on the 12" return line
WTP Electrical – Mueller
Continued building the EJBs and the JBs for the I/O modules
Ty-wrapped and routed the cabling for the MF feed pumps
Continued grounding the cable tray and ensuring that the connection made in each device was satisfactory
Planned the JBs that will be required for the Pall equipment
WTP - Ewing
Extended the chemical delivery ramp outside the building
CV-28 – Ewing
Substantially completed earthworks

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	132	8,508
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	7	492	9,420
Winfield	Mech/Pipe	11	516	11,712
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	2	96	23,076
Layfield	Laying Liner	-	-	4,788
Yukon Door	Overhead doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Linkan	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**1,236**	**76,692**

PROJECT PHOTOS

CV-28 – Completed Shaping of Head End

WTP – Fusing of 12” HDPE Line

JDS	Victoria Gold Daily Construction Report				October 6, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-2°C	12°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Air Line Piping Complete to Priority Control Valves	October 10, 2022	October 10, 2022	Connected air lines to the compressors
Large Bore CS Complete	October 8, 2022	October 8, 2022	Installed 12" CS spool in the North-South MF pipe rack

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

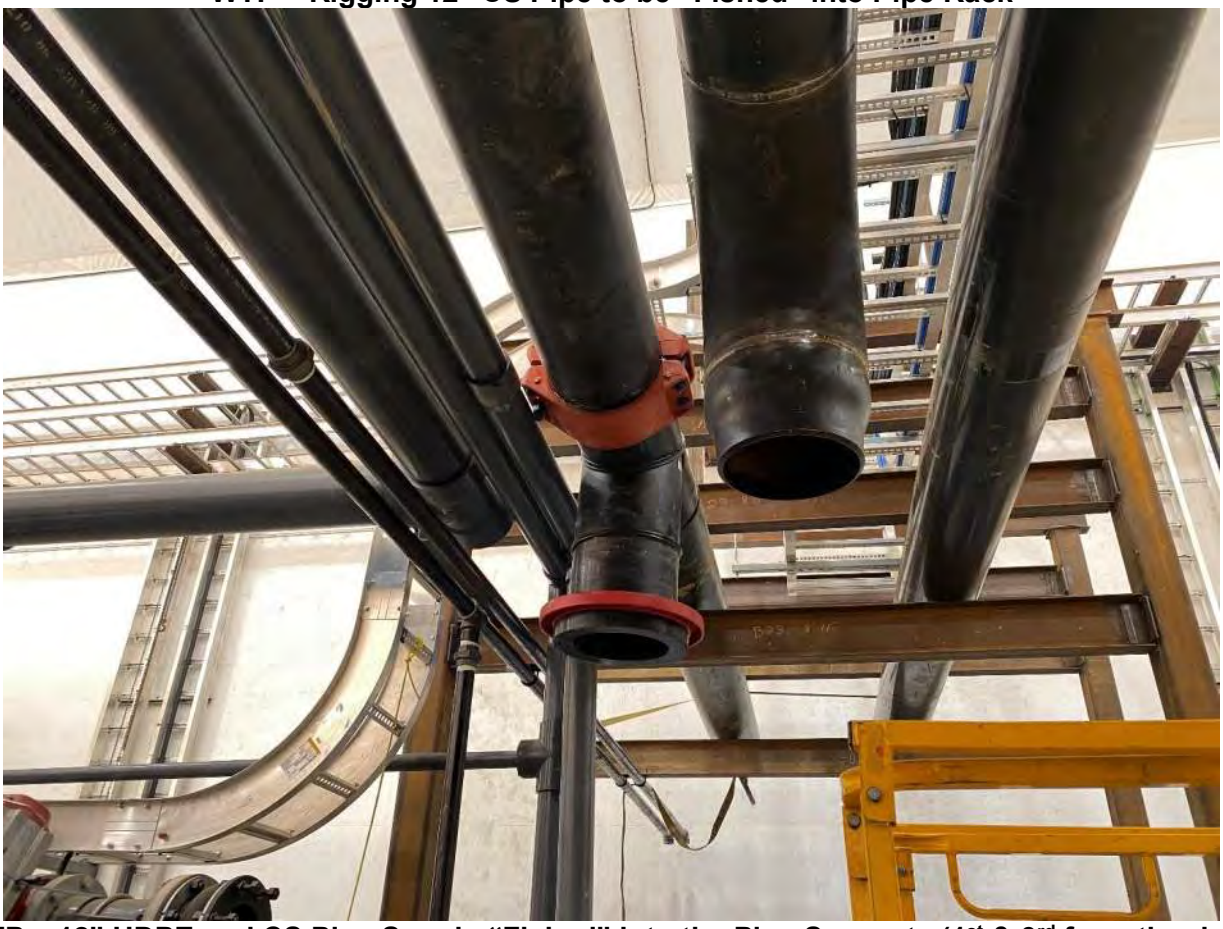
Activity
Completed fusing the 12" HDPE finished water line
WTP Mechanical and Piping - Winfield
Installed 12" HDPE in the East-West rack in front of the MF skids
Installed 12" carbon steel return water line in front of the MF skids
Welding two 12" carbon steel spools together in the North-South pipe rack in front of the MF skids
Fabricated PVC sample points on the clarifiers
Fabricated pipe supports for 12" carbon steel pipe along the North wall
Began on the 1.5" hanger for the 1.5" gas line through the center of the building
WTP Electrical – Mueller
Completed wiring of PDP-202
Fabricated I/O module stands and mounting brackets
Installed small sections of instrument tray to I/O modules
Planned out the temporary power to the MF skids and Pall equipment
CV-28 – Ewing
Extended the pad cut behind the head end to allow for vehicle traffic to loop around

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	180	8,556
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	7	576	9,504
Winfield	Mech/Pipe	10	636	11,832
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	2	120	23,100
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Linkan	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**1,512**	**76,968**

PROJECT PHOTOS

WTP – Rigging 12” CS Pipe to be “Fished” into Pipe Rack



WTP – 12” HDPE and CS Pipe Spools “Fished” into the Pipe Supports (1st & 3rd from the right)

WTP – Connected Air Compressors to the Air Line

JDS	Victoria Gold Daily Construction Report				October 7, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-4°C	6°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Air Line Piping Complete to Priority Control Valves	October 10, 2022	October 10, 2022	Continuing to thread pipe for long air runs
Large Bore CS Complete	October 8, 2022	October 15, 2022	Welded two 12" spools in position

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Began fabricating permanent stair access for the WTP office building
WTP Mechanical and Piping - Winfield
Continued installing 12" HDPE in the East-West rack in front of the MF skids
Welding two 12" carbon steel spools together in the North-South pipe rack in front of the MF skids
Continued fabricating PVC sample points on the clarifiers
Calculated North wall elevations for pipe runs
Running hangers for gas lines
WTP Electrical – Mueller
Pulled Cat 6 cable and the remainder of the cables required for the Pall tech visit Oct 11
Met with Victoria Gold E&I to discuss the fibre installation
CV-28 – Ewing
Widening road along 1065 bench to allow for a 395 excavator to pass when it comes to placing the head end of the conveyor

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	216	8,592
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	7	660	9,588
Winfield	Mech/Pipe	10	756	11,952
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	2	144	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Linkan	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**22**	**1,776**	**77,232**

PROJECT PHOTOS

WTP – Completed Installation 12” CS Pipe in the MF Feed Pump Area

WTP – Installation of Clarifier Sampling Lines Prior to Support Fabrication

JDS	Victoria Gold Daily Construction Report				October 8, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		0°C	6°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Air Line Piping Complete to Priority Control Valves	October 10, 2022	October 10, 2022	Completed tying in air line to priority ACV's for commissioning
Large Bore CS Complete	October 8, 2022	October 15, 2022	Beginning fabrication of 12" North wall CS spools

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

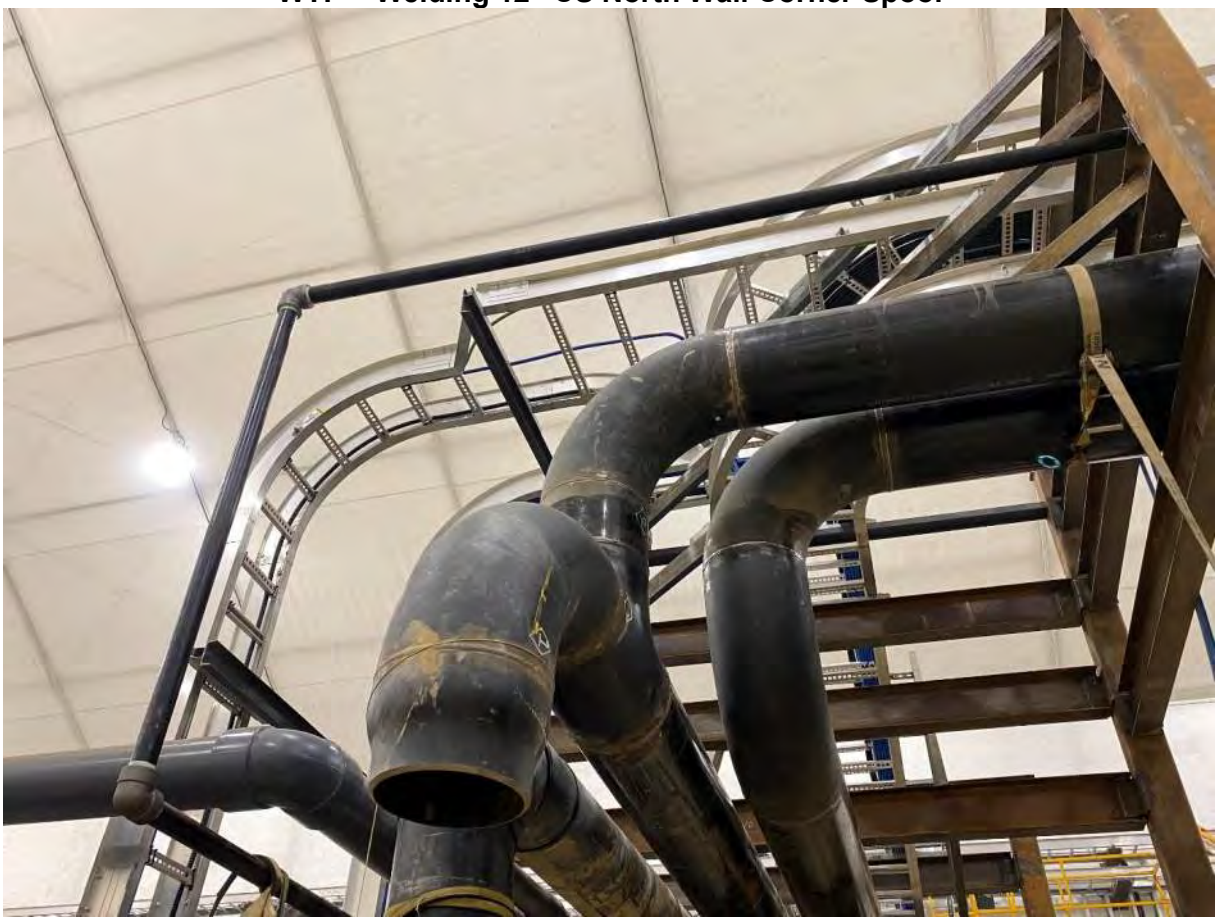
Activity
Continuing to fabricate permanent stair access for the WTP office building
WTP Mechanical and Piping - Winfield
Continued installing 12" HDPE in the East-West rack in front of the MF skids
Tied in HDPE to PVC to MF skids
Completed air line for ACV for commissioning
Installing hangers for gas lines
Moved PVC fittings from Sea-Can to newly built shelving inside the WTP building
Removed belt off compressors for rotation check of motors
Bolted HDPE spool to finished water tank
Fabricated corner spool for 12" CS on the North wall
WTP Electrical – Mueller
Collected empty cable reels to be sent back to Whitehorse and return with structural steel, instrument tray and additional materials
Continued ty-wrapping cables
Continued working on wiring I/O cabinets
Large focus on wiring Pall instruments
CV-28 – Ewing
No work completed today due Process needing all the Ewing operators

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	252	8,628
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	732	9,660
Winfield	Mech/Pipe	13	912	12,108
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	144	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Overhead doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Linkan	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**22**	**2,040**	**77,496**

PROJECT PHOTOS

WTP – Welding 12” CS North Wall Corner Spool



WTP – Completed Position Welding of LDSP Return Line (Rightmost Spool)

WTP – Tying in HDPE to PVC to MF Skid

WTP – Completing Air Line to ACVs for Commissioning

JDS	Victoria Gold Daily Construction Report				October 9, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-3°C	6°C	High	Rain

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Large Bore CS Complete	October 8, 2022	October 15, 2022	Beginning fabrication of 12" North wall CS spools
Commencing Pre-Commissioning with Linkan, Pall and DC Engineering	October 11-16, 2022	October 11-16, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
Completed fabricating permanent stair access for the WTP office building
WTP Mechanical and Piping - Winfield
Drilling holes for pipe supports on the North wall
Installing 3" PVC off the MF tanks to the main pipe rack
Aligning pump couplings on P-101, P-102, P-201
Bolted up expansion joint for 10" tie into the MF skid
Began fabricating discharge piping from finished water to external pipeline
WTP Electrical – Mueller
Installed a ground bar in the JBs inside the MCC
Stripped all cabling for the CCP and installed the 1 ¼" piping from the JB to the CCP
Continued wiring the clarifiers and flocculation tank motors
Ran field device wires where needed for the I/O modules

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	36	8,664
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	7	84	9,744
Winfield	Mech/Pipe	13	156	12,264
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Linkan	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**276**	**77,772**

PROJECT PHOTOS

WTP – Completed Permanent Office Stair Access

WTP – Installing Pipe Supports on the North Wall

WTP – Shelf Units to Store PVC Fittings at the Workfront

JDS	Victoria Gold Daily Construction Report				October 10, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-3°C	2°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Large Bore CS Complete	October 8, 2022	October 15, 2022	Continuing fabrication of 12" North wall CS spools and began to hang spools on the North wall
Commencing Pre-Commissioning with Linkan, Pall and DC Engineering	October 11-16, 2022	October 11-16, 2022	

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

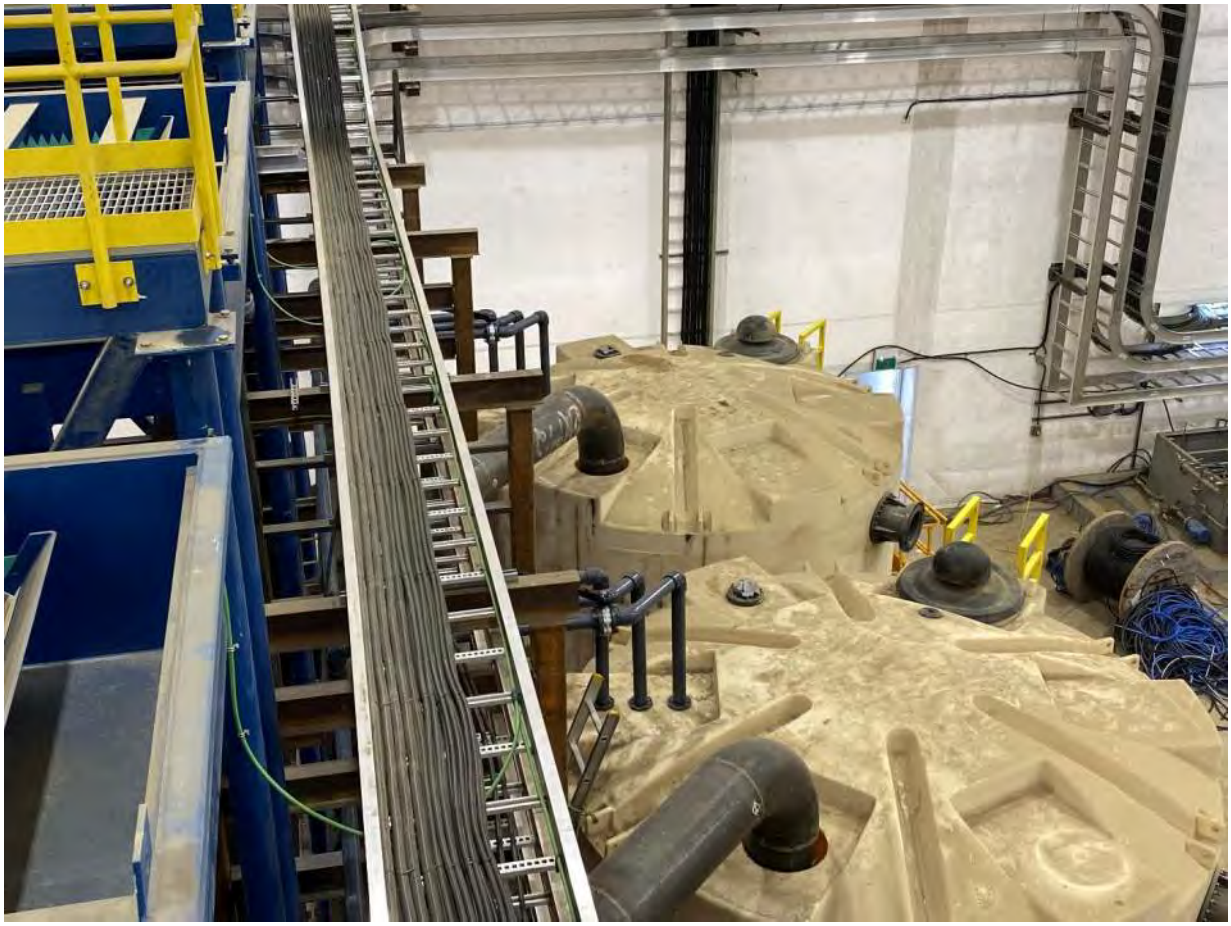
TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Finished drilling holes for supports in the North wall and began installing 12" CS
Spent time cleaning up inside the WTP
Continued running 3" PVC lines from the MF Feed Tanks to the MF skids
Continued initial alignments of pumps prior to grouting
Installed 6" PVC sump pump lined in the North -South rack
Continued final bolt ups on installed pipe runs
WTP Electrical – Mueller
Ran discrete cable cabling to the CCP from the JB/pull box
Spent some time cleaning up inside the WTP
Pulled SOOW cable to all pumps requiring power, air compressor and the two RF VFDs
Terminated the CAT 6 ends in each of the cabinets and all Pall skids excluding the neutralization skid

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	72	8,664
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	7	168	9,744
Winfield	Mech/Pipe	13	312	12,264
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Overhead doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Linkan	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**552**	**77,772**

PROJECT PHOTOS



WTP – 3” PVC Lines Tied into MF Feed Tank from the MF Skids

WTP – Welds on the 12” CS LDSP Return Line

JDS	Victoria Gold Daily Construction Report				October 11, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-3°C	1°C	Calm	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Large Bore CS Complete	October 8, 2022	October 15, 2022	Completed installation of North wall mounted 12" CS
Commencing Pre-Commissioning with Linkan, Pall and DC Engineering	October 11-16, 2022	October 11-16, 2022	Linkan and DC Engineering reps arrived on site in the afternoon

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Finished hanging 12" CS on the North wall racks
Installed HDPE riser at the East end of the Line on the North wall
Installed hangers off of the North wall CS for the HDPE
Installed brackets on the sample lines underneath the clarifiers
Fabricated 12" spool off the top of the Finish Water return pumps
Fabricated 10" drops into the MF skids
WTP Electrical – Mueller
Terminated CAT 6 into each Pall cabinet and the DIOs
Pulled cable for the Pall equipment and glanded the cables into the cabinets
Pulled cable from the temporary power skids required for the pumps and cabinets needed

MANPOWER ON SITE

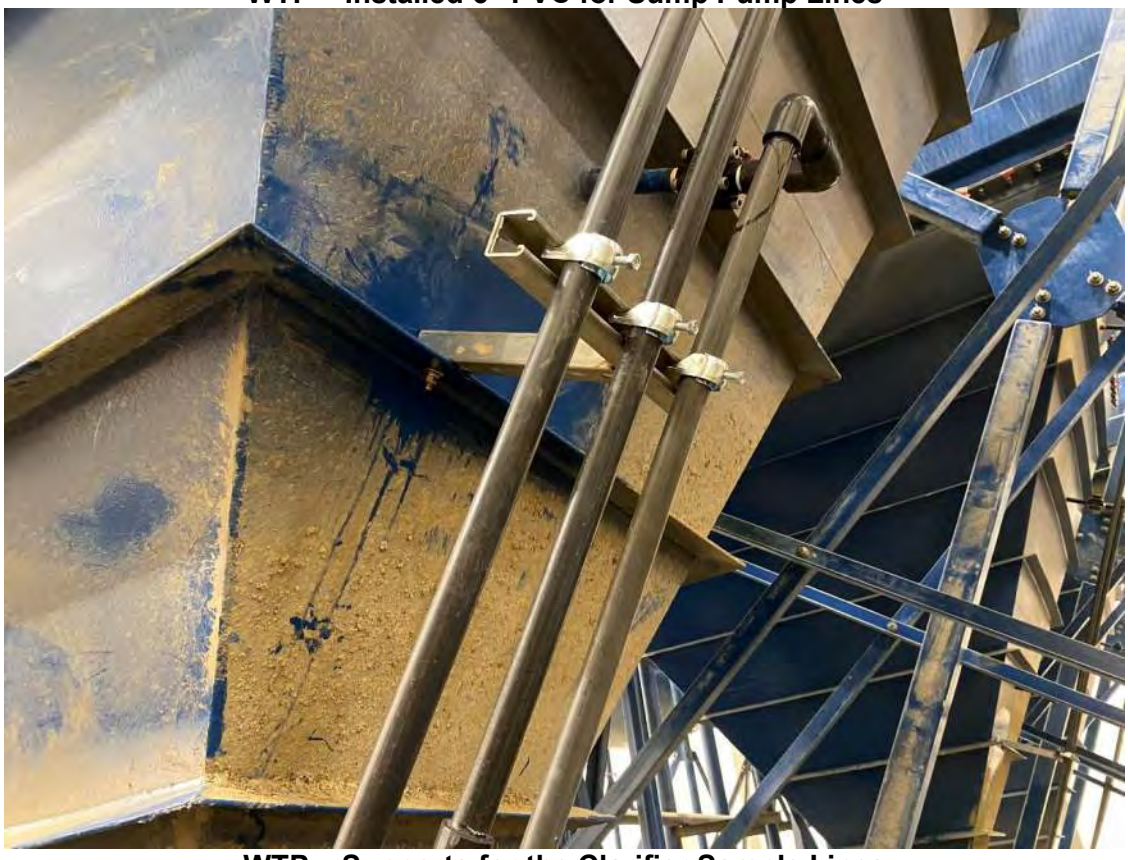
Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	108	8,736
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	7	252	9,912
Winfield	Mech/Pipe	13	468	12,576
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Overhead doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Linkan	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**23**	**828**	**78,324**

PROJECT PHOTOS

WTP – 12” CS Hung on the North Wall

WTP – Installing the 12” HDPE Riser on the East End of the North Wall

WTP – Installed 6” PVC for Sump Pump Lines



WTP – Supports for the Clarifier Sample Lines

JDS	Victoria Gold Daily Construction Report				October 12, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-5°C	-1°C	Calm	Flurries

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Large Bore CS Complete	October 8, 2022	October 15, 2022	Began installation of North wall mounted 12" HDPE
Commencing Pre-Commissioning with Linkan, Pall and DC Engineering	October 11-16, 2022	October 11-16, 2022	Linkan and DC Engineering providing technical support and answering pre-commissioning questions as they arise Pall rep arrived on site in the afternoon

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

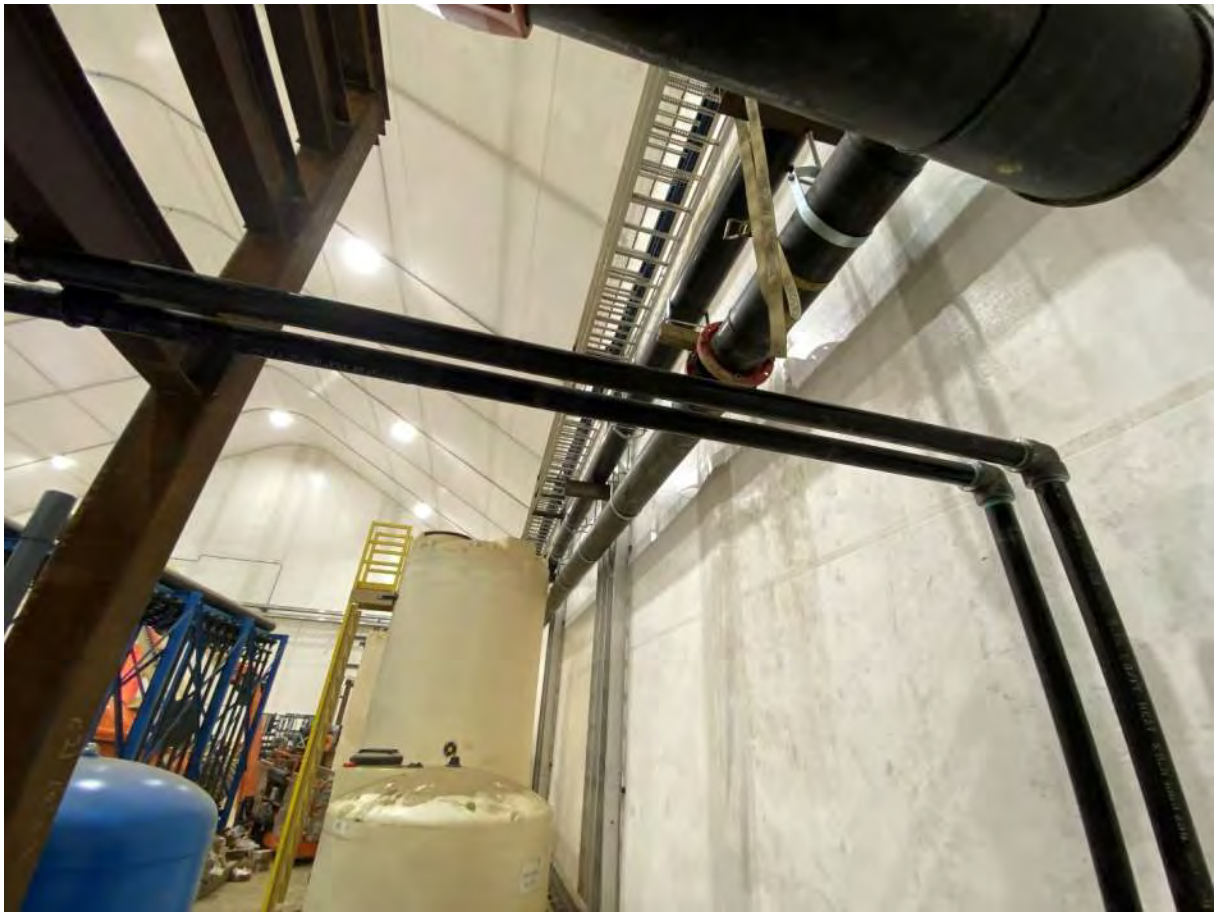
TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping - Winfield
Installed 2 of 3 10" drops to MF from main header and welded the tie in
Installed hangers for HDPE along the North wall and began to hang spools
Installed 8" butterfly valve and expansion joint on TK-401
Welded 12" spools for discharge water line
WTP Electrical – Mueller
Terminated the power for each of the DIO cabinets and tied in all of the required CAT 6 for communication
Tied in the temp power panel to provide power to the 600V heat trace along with other 600V skids
Assisted the MSCP rep with commissioning the heat trace
Pulled CAT 6 from the CCP to the L-CP and tied in each end
Progressed with the Pall and DC Engineering reps to support them for their requirements in testing equipment
Began to plan layouts for top hats to be installed in the MCC

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	5	168	8,796
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	7	336	9,996
Winfield	Mech/Pipe	-	468	12,576
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Linkan	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**12**	**972**	**78,468**

PROJECT PHOTOS



WTP – Hanging 12” HDPE from the 12” CS on the

WTP – Terminating Power for DIO Cabinet #2

WTP – Installed HDPE Elbow on the Finished Water Tank

JDS Civil & Electrical Superintendents

JDS	Victoria Gold Daily Construction Report				October 13, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-6°C	-1°C	High	Snow

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Large Bore CS Complete	October 8, 2022	October 15, 2022	Fabricated spool for from the finished water pump to the header on the North wall Completed installation of 10" CS pipe
Commencing Pre-Commissioning with Linkan, Pall and DC Engineering	October 11-16, 2022	October 11-16, 2022	Checked terminations in the I/O panel and continued working on the MF skids

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping – Winfield
Fabricated spool from finished water pump header to the North wall CS 12" line
Installed 12" HDPE riser from finished water tank to the main run on the North wall
Fabricated PVC line from the CIP tank to the RF skid
Fabricated 8" PVC line to run from the RF skid down the North wall
Completed installation of 10" CS pipe
WTP Electrical – Mueller
Supported DC Engineering while working through I/O checks
Discovered a grounding fault in the heat trace – worked to diagnose the cause
Fabricated a stand for an additional cable tray support required for the clarifier feed pumps
Terminated the CAT 6 and main feeds to the RF VFDs

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	5	228	8,856
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	7	420	10,080
Winfield	Mech/Pipe	8	660	12,768
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Overhead doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Linkan	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**20**	**1,308**	**78,804**

PROJECT PHOTOS

WTP – Completed Installing 12” HDPE Line to the Finished Water Tank

WTP – Pre-Commissioning of the MF Master Control Panel

WTP – Installed and Welded the Last 10” CS Drop into the MF Skid

JDS	Victoria Gold Daily Construction Report				October 14, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-17°C	-10°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Large Bore CS Complete	October 8, 2022	October 22, 2022	Continued welding 12" finished water discharge line
Commencing Pre-Commissioning with Linkan, Pall and DC Engineering	October 11-16, 2022	October 11-16, 2022	Tested actuated control valves and continued working on the MF skids

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping – Winfield
Installed spool from finished water pump header to the North wall CS 12" line
Plastic tank flange of the finished water HDPE return line failed when bolting the flange to the HDPE line
- Due to Linkan being on site, we were able to come up with a quick solution to reroute the line
- Put a blind flange over the finished water tank outlet and are planning to relocate the outlet elsewhere on the tank
Continued to weld 12" CS pipe for the plant discharge of the finished water tank
WTP Electrical – Mueller
Continued supporting DC Engineering in programming the 3 of 4 ACVs
Built instrument tray for the flow meter underneath the clarifiers
Installed heat trace for the WTP office trailer
Continued diagnosing the heat trace for the feed and return lines to the LDSP – it is believed to be a manufacturing default
Completed wiring in communication and power cables for the CIP and Neutralization skid

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	5	288	8,916
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	11	552	10,212
Winfield	Mech/Pipe	8	756	12,864
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Overhead doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Linkan	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**1,596**	**79,092**

PROJECT PHOTOS

WTP – Tied in Spool from Finished Water Feed Pumps to the North Wall Run

WTP – Failed Finished Water Tank Return Flange

WTP – Verifying ACV-001 Positioner Function

JDS	Victoria Gold Daily Construction Report				October 15, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-17°C	-7°C	Low	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Large Bore CS Complete	October 8, 2022	October 22, 2022	Continued welding 12" finished water discharge line
Commencing Pre-Commissioning with Linkan, Pall and DC Engineering	October 11-16, 2022	October 11-16, 2022	Continued testing actuated control valves and continued working on the MF skids, CIP and Neutralization Skid

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping – Winfield
Cut, prepped and fit in modified line due to the failed tank flange on the 12" HDPE line
Installed additional hangers for the modified HDPE line
Continuing to fabricate and install PVC lines from the CIP skid to the water softener
Installing additional supports for the PVC piping running from MF feed tanks to the MF skids
WTP Electrical – Mueller
Continued supporting DC Engineering
Completed the water softener installation
Worked on the fibre installation
Began installation of the instrumentation tray for the MF feed pump devices
Planned the MCC cable routing

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	5	348	8,976
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	11	684	10,344
Winfield	Mech/Pipe	8	852	12,960
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Overhead doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Linkan	Engineering	-	-	-
Subtotal - EPCM Construction Contractors		**24**	**1,884**	**79,380**

PROJECT PHOTOS

WTP – Relocated the 12” HDPE Inlet Feeding the Finished Water Tank from the MF Skid

JDS	Victoria Gold Daily Construction Report				October 16, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-2°C	3°C	Low	Overcast

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Large Bore CS Complete	October 8, 2022	October 22, 2022	Continued welding 12" finished water discharge line
Commencing Pre-Commissioning with Linkan, Pall and DC Engineering	October 11-16, 2022	October 11-16, 2022	Flushed MF skid #1 & 2, sending water to the finished water tank with some minor leaks spotted which will be addressed

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

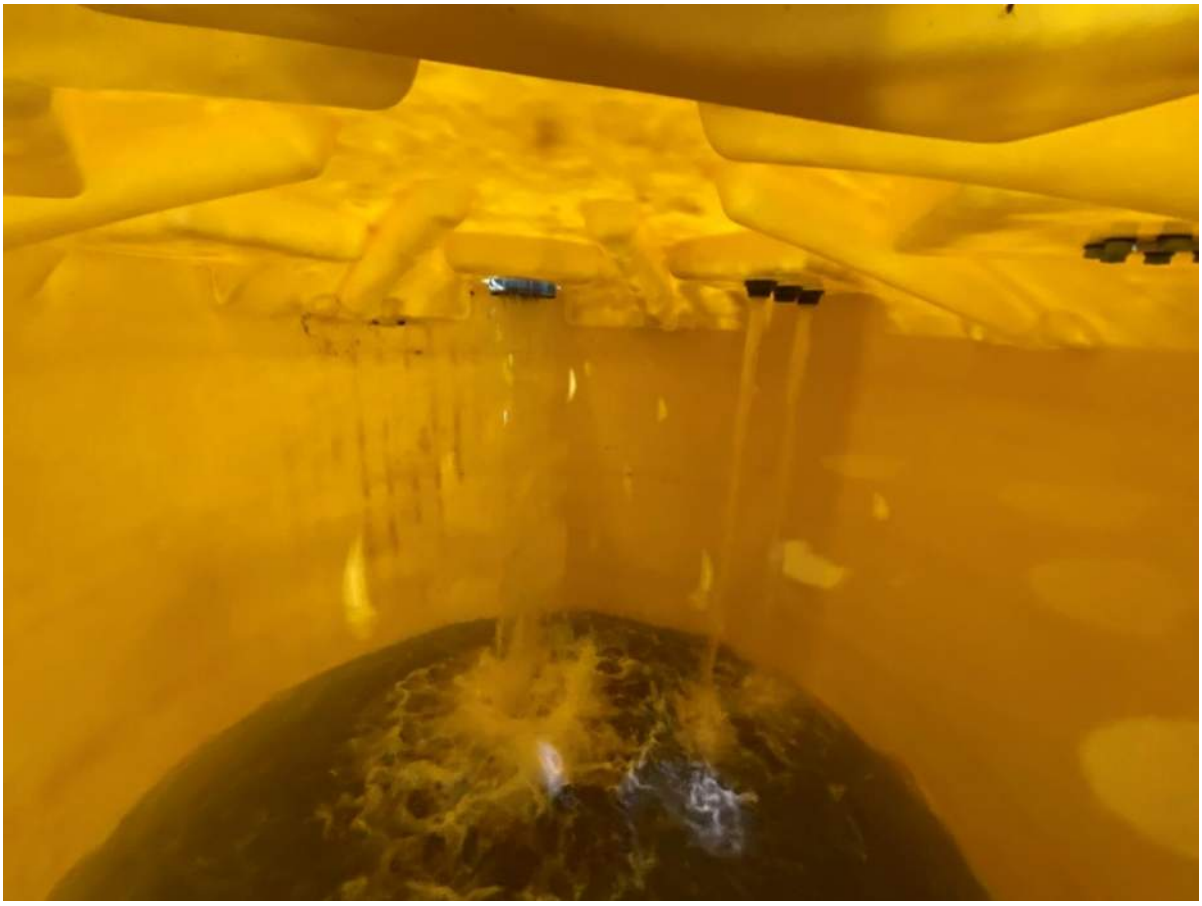
TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping – Winfield
Continued welding the 12" CS finished water tank discharge line
Commenced flushing the #1 & #2 MF skids
Chased minor leaks that appeared during the commissioning process
Brought PS-85 to PS-88 into the building to thaw out prior to installation
Pulled HV-207 in order to flush the MF feed tank line and replaced it after flushing the MF skids
WTP Electrical – Mueller
Crew attended LOTO training as we are now moving into commissioning the plant and needing to lock out equipment daily
Glanded the cables in DIO 2
Installed instrument tray for the MF feed pumps
Fabricated supports for instrument tray
Dressed and entered cables around the plant

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	6	72	9,048
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	11	132	10,476
Winfield	Mech/Pipe	7	84	13,044
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Overhead doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Pall	Pall Vendor Pkgs	1	12	60
DC Engineering	Electrical Eng	1	12	72
Linkan	Engineering	1	12	72
Subtotal - EPCM Construction Contractors		**27**	**324**	**79,872**

PROJECT PHOTOS



WTP – Filling of the MF Feed Tanks

WTP – Minor Leak from the Hugger on the 12” HDPE Line Feeding the Finished Water Tank

JDS	Victoria Gold Daily Construction Report				October 17, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-2°C	3°C	Low	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Large Bore CS Complete	October 8, 2022	October 22, 2022	Continued welding 12" finished water discharge line
Commencing Pre-Commissioning with Linkan, Pall and DC Engineering	October 11-16, 2022	October 17, 2022	Linkan and DC Engineering reps left site. Pall remained on site for a half day to oversee the running of water back to the control pond

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

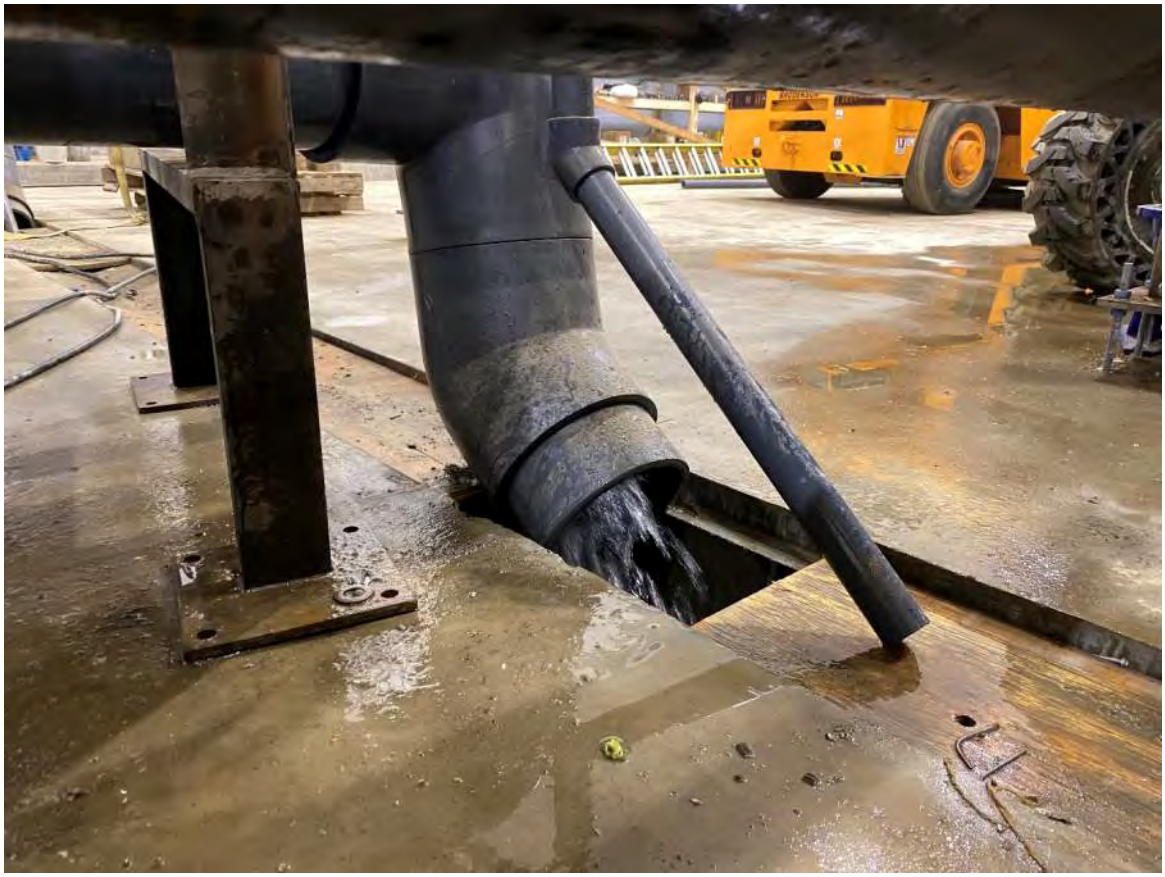
Activity
WTP Mechanical and Piping – Winfield
Installed ladder for the finished water tank
Drilled set and epoxied studs for PS-85 through 88
Began threading and hanging gas line for the North wall heater line
Retorqued flanges that had leaked during the previous day's testing
Flowed water back to the control pond
WTP Electrical – Mueller
Majority of Crew Travelled out for Turnaround
Continued pulling power cables to pumps and devices

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	5	132	9,108
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	204	10,548
Winfield	Mech/Pipe	7	168	13,128
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Pall	Pall Vendor Pkgs	1	24	72
DC Engineering	Electrical Eng	-	12	72
Linkan	Engineering	-	12	72
Subtotal - EPCM Construction Contractors		**19**	**552**	**80,100**

PROJECT PHOTOS

WTP – Commissioning the Return Line to the Control Pond



WTP – Draining of MF Skid #2 into the Sump After Flushing the Unit

JDS	Victoria Gold Daily Construction Report				October 18, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-1°C	6°C	Low	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Large Bore CS Complete	October 8, 2022	October 22, 2022	Continued welding 12" finished water discharge line
Commencing Pre-Commissioning with Linkan, Pall and DC Engineering	October 11-16, 2022	October 17, 2022	Completed

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping – Winfield
Installed pipe supports PS-86, PS-85, PS-84
Flew in 12" CS piping to NW corner for finished water tank
Started Welding tie in spool and 2–½" olets on discharge line
Hung 1–½", and ¾" gas lines
WTP Electrical – Mueller
Started dressing cables in preparation of entering the MCC junction boxes

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	180	9,156
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	276	10,620
Winfield	Mech/Pipe	7	252	13,212
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Pall	Pall Vendor Pkgs	-	24	72
DC Engineering	Electrical Eng	-	12	72
Linkan	Engineering	-	12	72
Subtotal - EPCM Construction Contractors		**17**	**756**	**80,304**
Visitors		-	-	-
Total - Site		**17**	**756**	**80,304**

PROJECT PHOTOS

WTP – Welding Tie-in spool for Discharge Line

WTP – 12” CS Discharge Line Spool Set in Place

	Victoria Gold Daily Construction Report				October 19, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		0°C	6°C	Low	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Large Bore CS Complete	October 8, 2022	October 22, 2022	Continued welding 12" finished water discharge line
Propane Piping Complete to Heaters	November 7, 2022	November 7, 2022	Continuing to install supports and piping

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Completed assembling feed line control valve shed

WTP Mechanical and Piping – Winfield

Completed welding transition spool for exterior tie-in of 300-401-CS-TW

Completed bolting exterior transition spool to flange on 300-401-CS-TW

Installed additional hanger supports along South wall, and hung heater piping

WTP Electrical – Mueller

Continued installing cables into the MCC junction boxes

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	4	228	9,204
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	6	408	10,752
Winfield	Mech/Pipe	7	336	13,296
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Pall	Pall Vendor Pkgs	-	24	72
DC Engineering	Electrical Eng	-	12	72
Linkan	Engineering	-	12	72
Subtotal - EPCM Construction Contractors		**17**	**1,020**	**80,568**
Visitors		-	-	-
Total - Site		**17**	**1,020**	**80,568**

PROJECT PHOTOS

WTP – Transition Spool Bolted to Discharge Line

WTP – Feed Line Control Valve Shed

	Victoria Gold Daily Construction Report				October 20, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-1°C	2°C	Low	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Large Bore CS Complete	October 8, 2022	October 22, 2022	Substantially Completed
Propane Piping Complete to Heaters	November 7, 2022	November 7, 2022	Continuing to install supports and piping

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

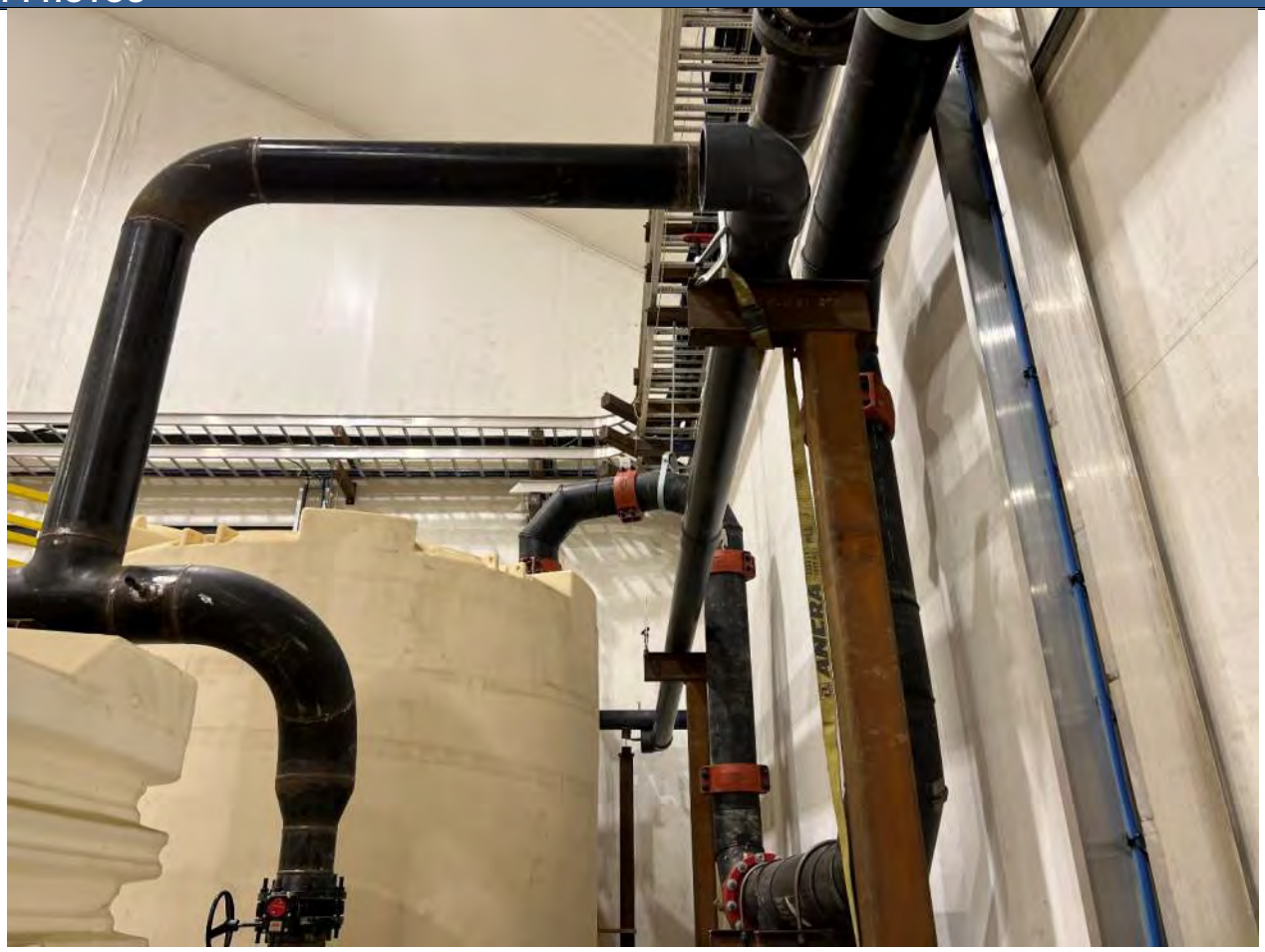
TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping – Winfield
Continued modifying and welding supports for 12" CS discharge line
Drilled holes in wall columns for 8" PVC North wall run cantilever supports
Installed 4 supports for 8" PVC North wall run
Continued installing 8" PVC piping for RF system
WTP Electrical – Mueller
Continued installing cables into the MCC junction boxes

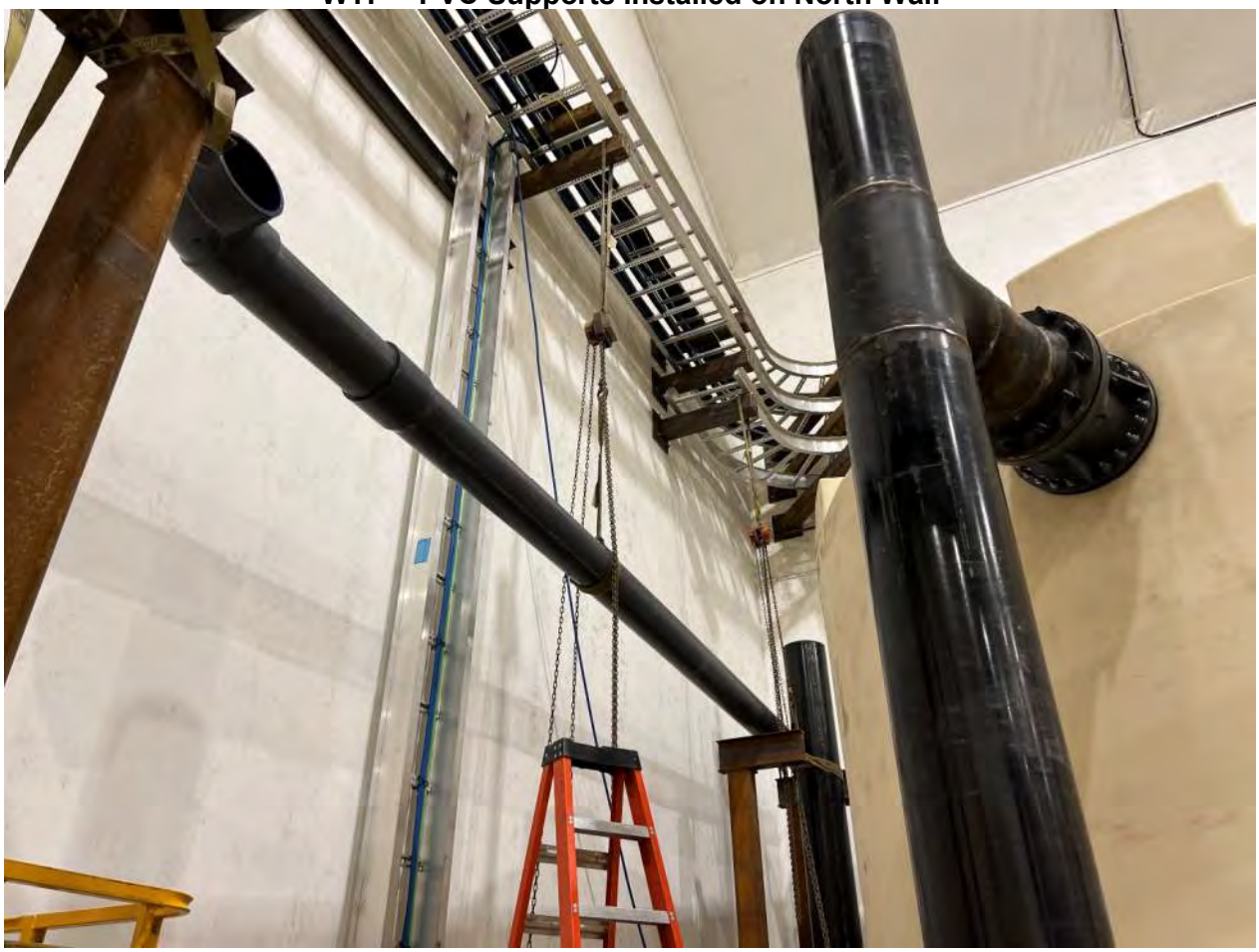
MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	264	9,240
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	5	468	10,812
Winfield	Mech/Pipe	7	420	13,380
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Pall	Pall Vendor Pkgs	-	24	72
DC Engineering	Electrical Eng	-	12	72
Linkan	Engineering	-	12	72
Subtotal - EPCM Construction Contractors		**15**	**1,200**	**80,748**
Visitors		-	-	-
Total - Site		**15**	**1,200**	**80,748**

PROJECT PHOTOS



WTP – PVC Supports Installed on North Wall



WTP – Progress on 8” PVC Piping for RF System

JDS	Victoria Gold Daily Construction Report				October 21, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-3°C	1°C	Low	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete Pulling Instrument Cables	October 29, 2022	October 29, 2022	Continued pulling cables
Terminate Instrumentation into Control Cabinets	November 4, 2022	November 4, 2022	Continued entering cables into MCC JB's
Propane Piping Complete to Heaters	November 7, 2022	November 7, 2022	Continuing to install supports and piping

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

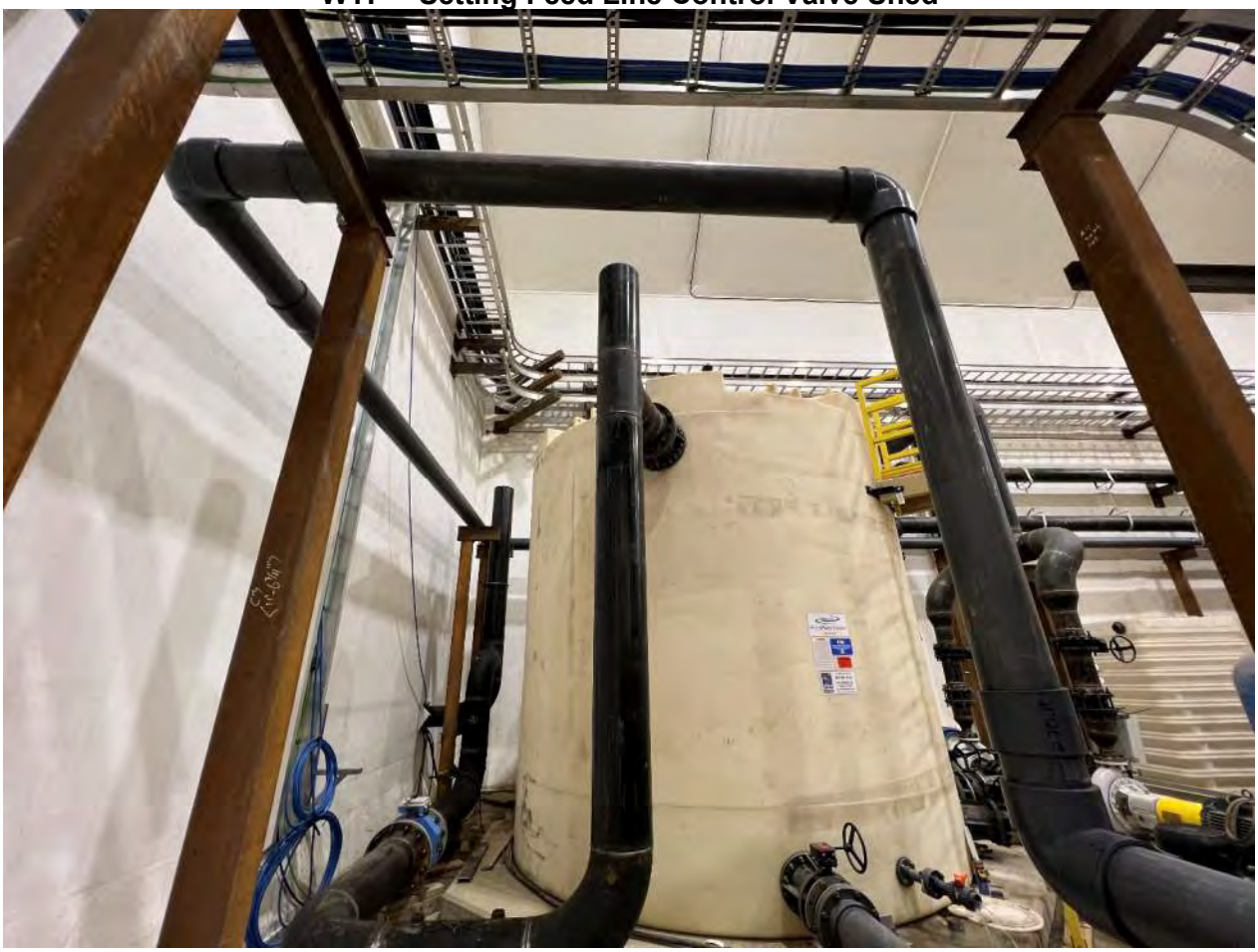
Activity
WTP Mechanical and Piping – Winfield
Moved Pall filter boxes inside of building for storage
Continued modifying and welding pipe supports
Re-routed air lines to avoid interference with PVC lines
Completed drilling and installing cantilever supports for 4" PVC lines from CIP to MF
WTP Electrical – Mueller
Continued installing cables into the MCC junction boxes
Continued pulling cables

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	300	9,276
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	5	528	10,872
Winfield	Mech/Pipe	7	504	13,464
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Pall	Pall Vendor Pkgs	-	24	72
DC Engineering	Electrical Eng	-	12	72
Linkan	Engineering	-	12	72
Subtotal - EPCM Construction Contractors		**15**	**1,380**	**80,928**
Visitors		-	-	-
Total - Site		**15**	**1,380**	**80,928**

PROJECT PHOTOS

WTP – Setting Feed Line Control Valve Shed



WTP – 8” PVC Line Progress for RF System

WTP – Current Interior Overview

JDS	Victoria Gold Daily Construction Report				October 22, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-5°C	-2°C	Low	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete Pulling Instrument Cables	October 29, 2022	October 29, 2022	Continued pulling cables
Terminate Instrumentation into Control Cabinets	November 4, 2022	November 4, 2022	Continued dressing and installing cables
Propane Piping Complete to Heaters	November 7, 2022	November 7, 2022	Continuing to modify and install pipe supports

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Installed Insulation on exposed portion of 18" feed line

Completed backfilling and grading around feed line for control valve shed

WTP Mechanical and Piping – Winfield

Completed piping and tie-in for 8" PVC line from RF to MF

Continued drilling, epoxying, and setting pipe supports

Continued modifying pipe supports off East end

WTP Electrical – Mueller

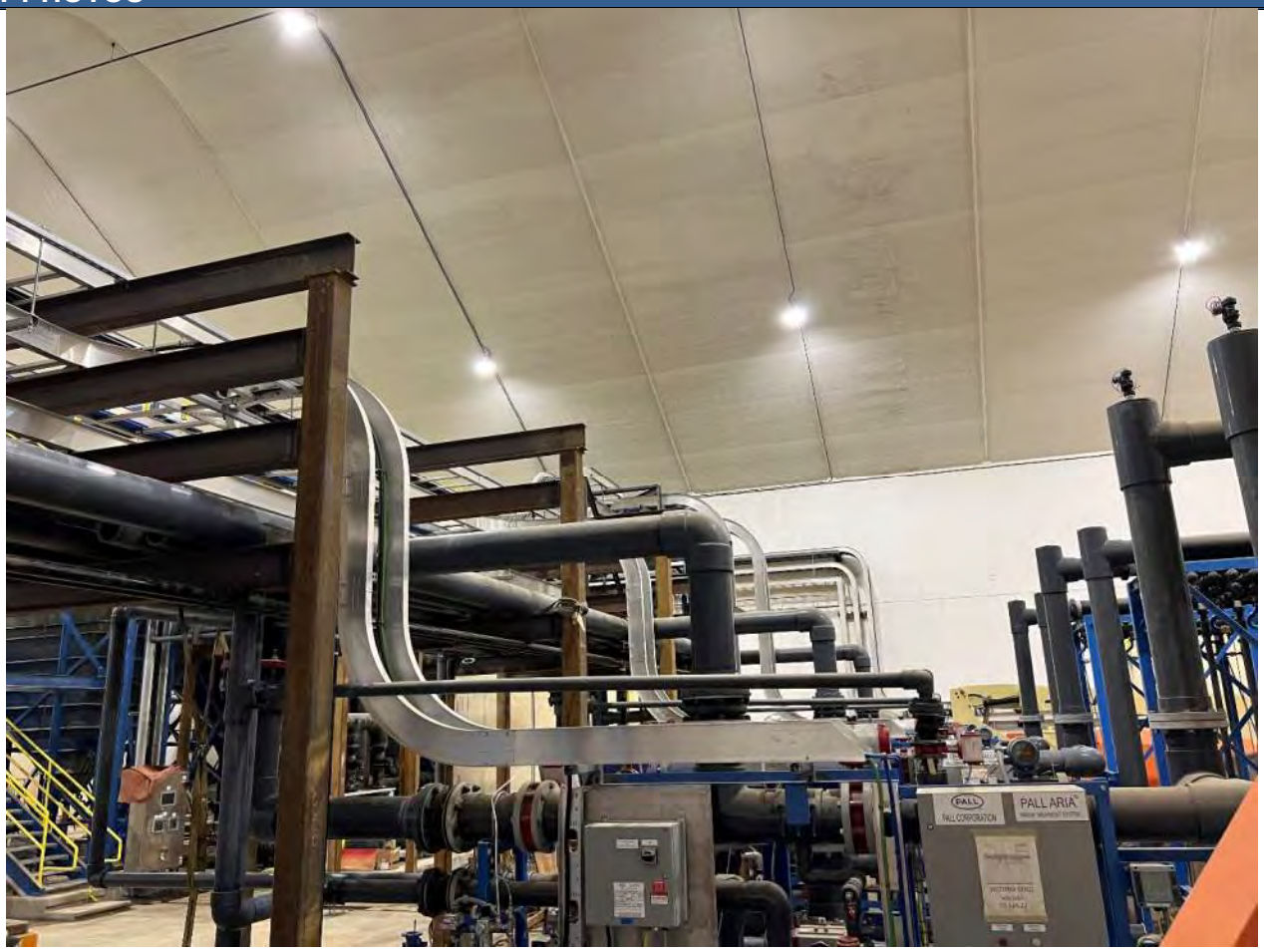
Continued dressing and installing cables that have been pulled

Tusk automation on site to begin fiber splicing

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	336	9,312
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	5	588	10,932
Winfield	Mech/Pipe	7	588	13,548
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Pall	Pall Vendor Pkgs	-	24	72
DC Engineering	Electrical Eng	-	12	72
Linkan	Engineering	-	12	72
Subtotal - EPCM Construction Contractors		**15**	**1,560**	**81,108**
Visitors		-	-	-
Total - Site		**15**	**1,560**	**81,108**

PROJECT PHOTOS



WTP – 8” PVC line from RF System Tied into MF Skids

WTP – Control Valve Shed Placed

	Victoria Gold Daily Construction Report				October 23, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-6°C	-1°C	Low	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete Pulling Instrument Cables	October 29, 2022	October 29, 2022	Continued pulling cables
Terminate Instrumentation into Control Cabinets	November 4, 2022	November 4, 2022	Continued dressing and installing cables
Propane Piping Complete to Heaters	November 7, 2022	November 7, 2022	Continuing to modify and install pipe supports

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Ewing started digging trench for the WTP discharge line

WTP Mechanical and Piping – Winfield

Continuing to install 4" PVC lines from neutralization skid to MF

Prepping additional pipe supports for welders arrival tomorrow

WTP Electrical – Mueller

Continued dressing and installing cables that have been pulled

Tusk automation started working on fiber splicing in the MCC

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	36	9,348
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	7	84	11,016
Winfield	Mech/Pipe	4	48	13,560
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Pall	Pall Vendor Pkgs	-	-	72
DC Engineering	Electrical Eng	-	-	72
Linkan	Engineering	-	-	72
Subtotal - EPCM Construction Contractors		**14**	**168**	**81,240**
Visitors		-	-	-
Total - Site		**14**	**168**	**81,240**

PROJECT PHOTOS

WTP – Digging Trench for Discharge Line

WTP – 4” PVC Piping From Neutralization Skid to MF

JDS	Victoria Gold Daily Construction Report				October 24, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-10°C	-6°C	Low	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete Pulling Instrument Cables	October 29, 2022	October 29, 2022	Continued pulling cables
Terminate Instrumentation into Control Cabinets	November 4, 2022	November 4, 2022	Continued dressing and installing cables
Propane Piping Complete to Heaters	November 7, 2022	November 7, 2022	Continuing to modify and install pipe supports

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

Started placing discharge line in trench and installing Victaulic couplings

WTP Mechanical and Piping – Winfield

Completed installing 4" PVC lines from CIP pump skid to MF skids

Completed installing PS-027

Started fabricating angle extensions for MF skid pipe rack

Brought PVC and pipe supports inside the building to thaw

WTP Electrical – Mueller

Continued entering cables into the MCC junction boxes

Tusk automation completed splicing in the MCC, and started splicing in the NETP

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	72	9,384
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	7	168	11,100
Winfield	Mech/Pipe	4	96	13,608
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Pall	Pall Vendor Pkgs	-	-	72
DC Engineering	Electrical Eng	-	-	72
Linkan	Engineering	-	-	72
Subtotal - EPCM Construction Contractors		**14**	**336**	**81,408**
Visitors		-	-	-
Total - Site		**14**	**336**	**81,408**

PROJECT PHOTOS

WTP – Placing Discharge line in Trench and Installing Victaulic Clamps

JDS	Victoria Gold Daily Construction Report				October 25, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-12°C	-7°C	Low	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete Pulling Instrument Cables	October 29, 2022	October 29, 2022	Continued pulling cables
Terminate Instrumentation into Control Cabinets	November 4, 2022	November 4, 2022	Continued dressing and installing cables
Propane Piping Complete to Heaters	November 7, 2022	November 7, 2022	Continuing to modify and install pipe supports

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	7
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

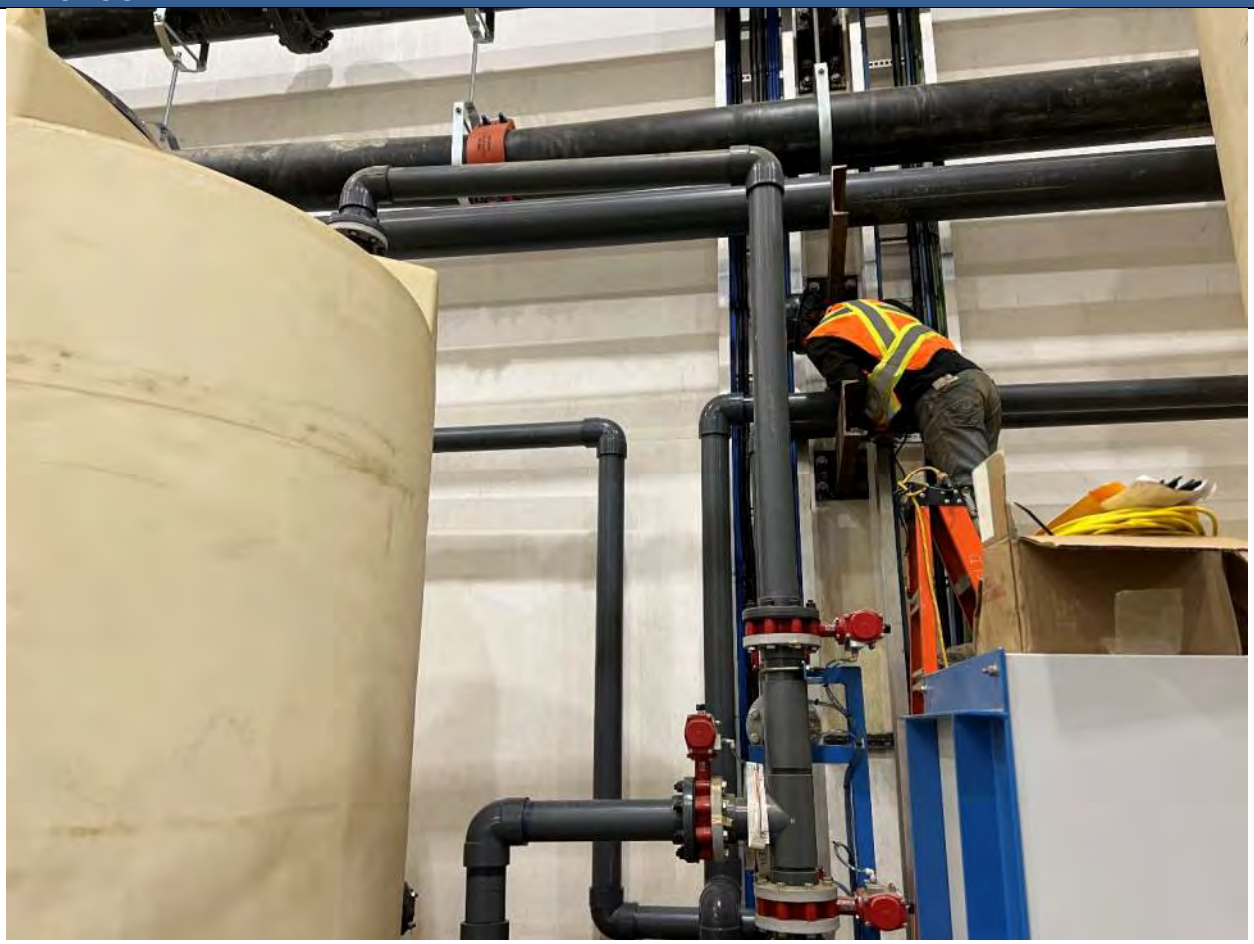
TODAY'S ACTIVITIES

Activity
Ewing completed backfilling over discharge line
WTP Mechanical and Piping – Winfield
Continued installing 8", 3", and 1" PVC piping
Started installing CPVC and PVC lines for chemical lines running to neutralization tank
Continued drilling weep holes in Northwest corner supports
Set brine pumps, P-204 and P-205
Continued modifying and welding supports
WTP Electrical – Mueller
Continued entering cables into the MCC, and organizing JB's
Tusk automation completed splicing and testing fiber at the MCC, NETP, and deep well

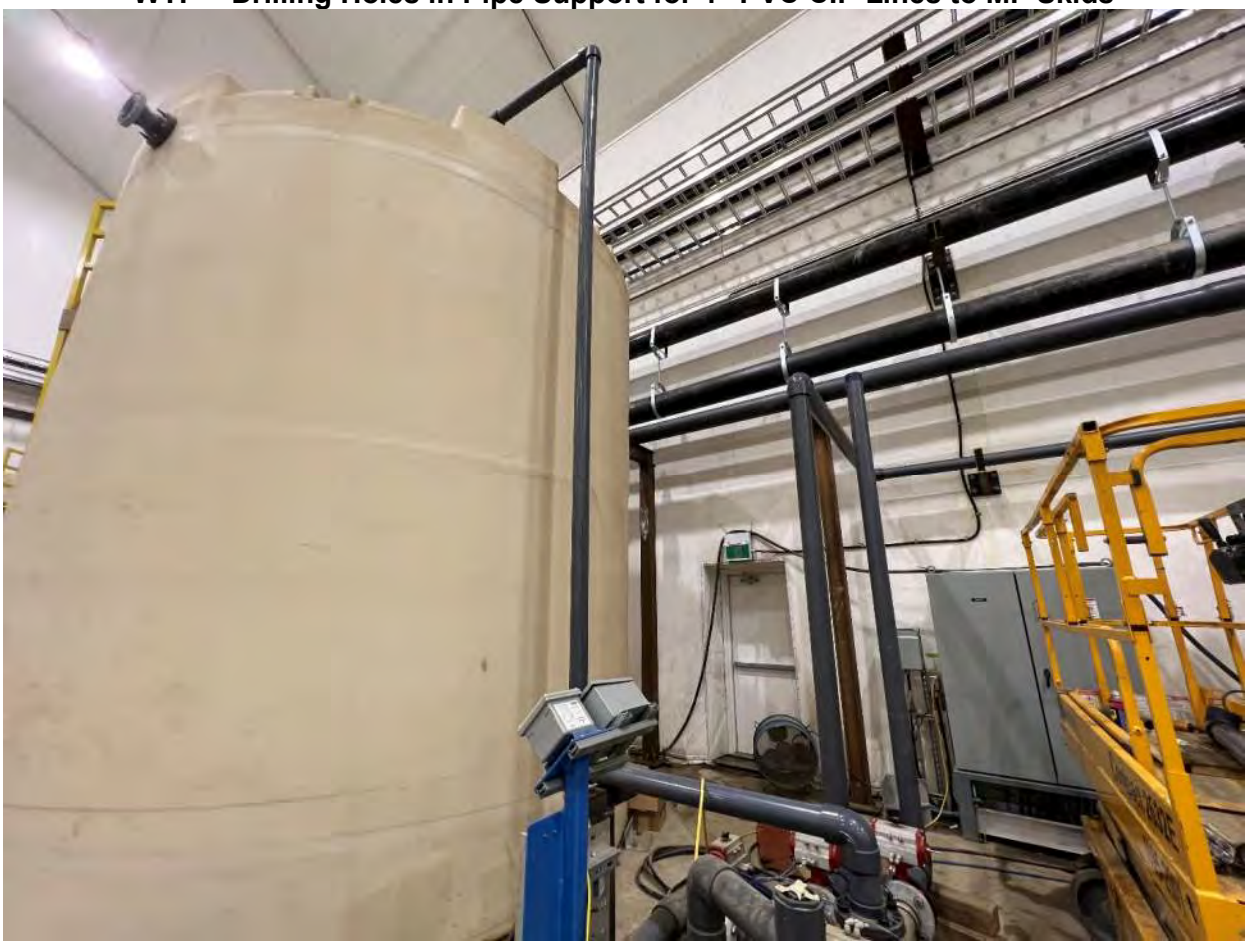
MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	96	9,408
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	5	228	11,160
Winfield	Mech/Pipe	11	228	13,740
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Pall	Pall Vendor Pkgs	-	-	72
DC Engineering	Electrical Eng	-	-	72
Linkan	Engineering	-	-	72
Subtotal - EPCM Construction Contractors		**18**	**552**	**81,624**
Visitors		-	-	-
Total - Site		**18**	**552**	**81,624**

PROJECT PHOTOS



WTP – Drilling Holes in Pipe Support for 4” PVC CIP Lines to MF Skids



WTP – PVC Pipe Progress on Neutralization Pump Skid

JDS	Victoria Gold Daily Construction Report				October 26, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-16°C	-8°C	Low	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete Pulling Instrument Cables	October 29, 2022	November 5, 2022	Continued pulling cables
Propane Piping Complete to Heaters	November 7, 2022	November 7, 2022	Continuing to modify and install pipe supports
MCC Install and Termination	November 20, 2022	November 20, 2022	Waiting for MCCs to arrive, planned to ship November 1st

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	1	8
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	13

Incidents:

- Mueller worker slipped on ice exiting the bathroom and landed on his shoulder. Worker was brought to the medic and returned to work.

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

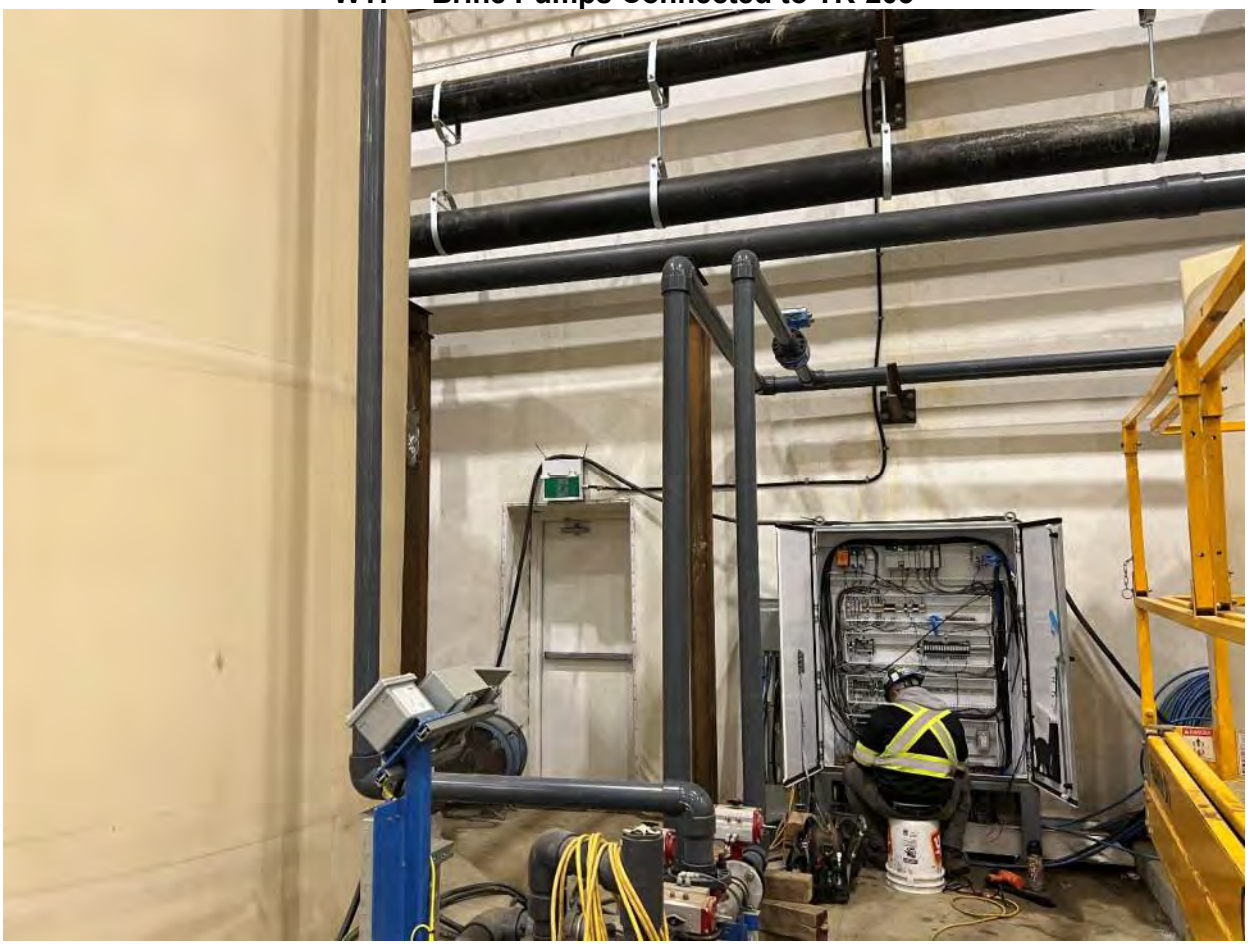
Activity
WTP Mechanical and Piping – Winfield
Continued installing 3" PVC line from neutralization tank to reaction tank TK-101
Completed 4" PVC line from CIP to neutralization tank
Completed 1" PVC pipe from brine pumps to TK-205
Started tying in TK-401 to house water skid
Continued modifying and welding supports
WTP Electrical – Mueller
Continued pulling cables
Completed replacing damaged section of heat trace
Tusk automation completed fiber splicing and started testing all their splices

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	120	9,432
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	8	324	11,256
Winfield	Mech/Pipe	12	372	13,884
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Pall	Pall Vendor Pkgs	-	-	72
DC Engineering	Electrical Eng	-	-	72
Linkan	Engineering	-	-	72
Subtotal - EPCM Construction Contractors		**22**	**816**	**81,888**
Visitors		-	-	-
Total - Site		**22**	**816**	**81,888**

PROJECT PHOTOS

WTP – Brine Pumps Connected to TK-205



WTP – Completed 4” PVC Line From CIP to Neutralization Tank

JDS	Victoria Gold Daily Construction Report				October 27, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-15°C	-8°C	Low	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete Pulling Instrument Cables	October 29, 2022	November 5, 2022	Continued pulling cables
Propane Piping Complete to Heaters	November 7, 2022	November 7, 2022	Started hanging heaters on North wall
MCC Install and Termination	November 20, 2022	November 20, 2022	Started running conduit in the MCC2 Sea-Can

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	8
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	14

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

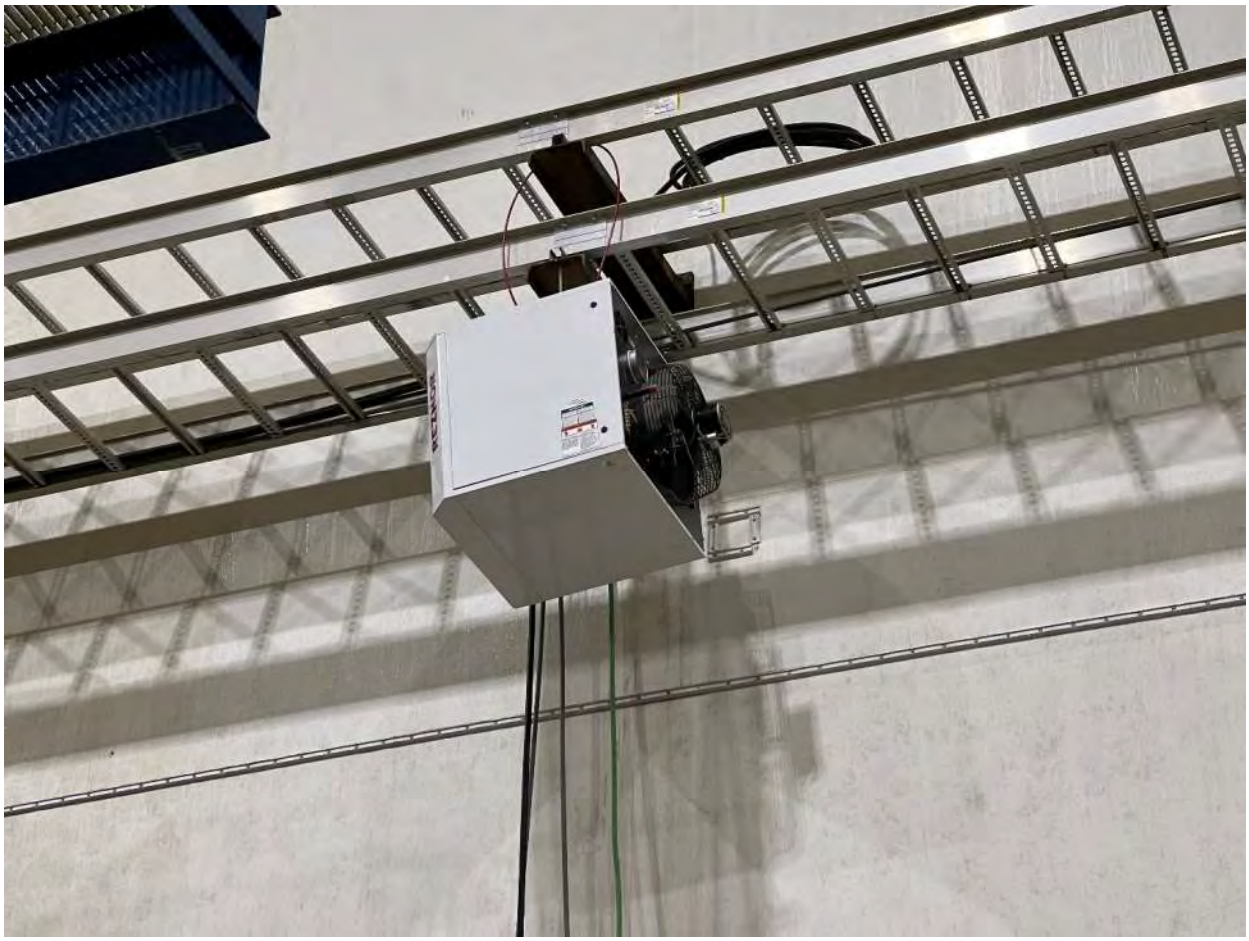
Activity
WTP Mechanical and Piping – Winfield
Started hanging heaters
Started drilling holes for water softener tanks
Started dressing air receivers
Completed installing house water skid piping on West wall
Continued modifying and welding supports on North wall for PVC piping
WTP Electrical – Mueller
Continued dressing cables and installing cable tags
Started running conduit in the MCC2 Sea-Can
Started running all the bonds in the MCC junction boxes

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	144	9,456
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	8	420	11,352
Winfield	Mech/Pipe	9	480	13,992
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Pall	Pall Vendor Pkgs	-	-	72
DC Engineering	Electrical Eng	-	-	72
Linkan	Engineering	-	-	72
Subtotal - EPCM Construction Contractors		**19**	**1,044**	**82,116**
Visitors		-	-	-
Total - Site		**19**	**1,044**	**82,116**

PROJECT PHOTOS

WTP – House Water Skid Connected to TK-401



WTP – First Propane Heater Hung in Northeast Corner

JDS	Victoria Gold Daily Construction Report				October 28, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-18°C	-9°C	Low	Snow

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete Pulling Instrument Cables	October 29, 2022	November 5, 2022	Continued pulling cables
Propane Piping Complete to Heaters	November 7, 2022	November 7, 2022	Completed hanging heaters on North wall
MCC Install and Termination	November 20, 2022	November 20, 2022	Started preparing all MCC JBs for line-up arrival

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	8
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	14

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping – Winfield
Completed installing heaters on North wall
Started working on chemical lines for TK-901 and TK-902
Continued working on house water lines
Continued fabricating and installing pipe supports
WTP Electrical – Mueller
Started working on local control stations
Continued installing I-tray and I-tray supports
Continued preparing all MCC JBs for the arrival of the line-up
Started entering cables pulled for the unit heaters into PDP-202

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	180	9,492
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	-	-	-
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	9	528	11,460
Winfield	Mech/Pipe	9	588	14,100
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Pall	Pall Vendor Pkgs	-	-	72
DC Engineering	Electrical Eng	-	-	72
Linkan	Engineering	-	-	72
Subtotal - EPCM Construction Contractors		**21**	**1,296**	**82,368**
Visitors		-	-	-
Total - Site		**21**	**1,296**	**82,368**

PROJECT PHOTOS

WTP – UDX-100 Heater Hung on North Wall

WTP – Dressing Air Receiver AR-201

JDS	Victoria Gold Daily Construction Report				October 29, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-17°C	-9°C	Low	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete Pulling Instrument Cables	October 29, 2022	November 5, 2022	Completed IFM instruments by clarifier feed pumps
Propane Piping Complete to Heaters	November 7, 2022	November 7, 2022	Started installing supports on South wall
MCC Install and Termination	November 20, 2022	November 20, 2022	Continued terminating cables in the CCP

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	8
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	14

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping – Winfield
Started installing supports on South wall for heaters
Continued installing chemical lines from TK-901, TK-902 to chemical pumps
Continued working on house water lines on the South wall
Started building forms for grout
WTP Electrical – Mueller
Continued working on the motor start/stop stations
Started entering cables into motors
Continued installing I-tray in reagents area
Completed IFM instruments by the clarifier feed pumps
Continued terminating cables in the CCP

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	3	216	9,528
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	8	96	96
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	10	648	11,580
Winfield	Mech/Pipe	9	696	14,208
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Pall	Pall Vendor Pkgs	-	-	72
DC Engineering	Electrical Eng	-	-	72
Linkan	Engineering	-	-	72
Subtotal - EPCM Construction Contractors		**30**	**1,656**	**82,728**
Visitors		-	-	-
Total - Site		**30**	**1,656**	**82,728**

PROJECT PHOTOS

WTP – 2” PVC Line Connected From TK-901 & TK-902 to Chemical Pumps

JDS	Victoria Gold Daily Construction Report				October 30, 2022
	24 hr. Weather Conditions	**Low Temp**	**High Temp**	**Wind Avg.**	**Visibility**
		-13°C	-8°C	Slightly Windy	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete Pulling Instrument Cables	October 29, 2022	November 5, 2022	Completed IFM instruments by clarifier feed pumps
Propane Piping Complete to Heaters	November 7, 2022	November 7, 2022	Completed Hanging Heaters on South Wall
MCC Install and Termination	November 20, 2022	November 20, 2022	Continued terminating motor start/stops

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	8
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	14

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity

WTP Mechanical and Piping – Winfield

Completed hanging heaters on South wall

Started working on supports for center mounted heaters

Continued installing chemical lines for TK-1201 and TK-701

Set stairs over containment wall of reagent area

WTP Electrical – Mueller

Continued entering motor feeds and terminating start/stops

Started pulling out level transmitters

Started installing analyzers

Tertiary Crusher Building – Western Canadian Steel

Crew arrived on site yesterday, currently getting prepared for SOW

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	24	9,552
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	8	96	192
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	10	120	11,700
Winfield	Mech/Pipe	9	108	14,316
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Pall	Pall Vendor Pkgs	-	-	72
DC Engineering	Electrical Eng	-	-	72
Linkan	Engineering	-	-	72
Subtotal - EPCM Construction Contractors		**29**	**348**	**83,076**
Visitors		-	-	-
Total - Site		**29**	**348**	**83,076**

PROJECT PHOTOS

WTP – Reagent Area Stairs Set

WTP – 2” Chemical Piping Connected to TK-1201

JDS	Victoria Gold Daily Construction Report				October 31, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-18°C	-11°C	Calm	Clear

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete Pulling Instrument Cables	October 29, 2022	November 5, 2022	Started finalizing instruments in MF feed pump area
Propane Piping Complete to Heaters	November 7, 2022	November 7, 2022	Started fabricating supports for center heaters
MCC Install and Termination	November 20, 2022	November 20, 2022	Continued preparing sea cans for MCC arrival

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	8
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	14

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping – Winfield
Bolted up remaining nozzles on tanks 901, 902, 801, 701, 1201
Started fabricating heater supports for center heaters
Continued installing chemical lines for TK-801 and TK-701
Continued running house water line along North wall
WTP Electrical – Mueller
Started cleaning out sea cans in preparation of the incoming MCC sections
Completed installing local disconnects for the reaction tanks, brine pumps, and underflow pump P-503
Started final work on pressure switches and PIT runs in MF feed pump area
Started installing tray for devices around the finish water pumps
Continued organizing and installing AIT/AE runs in the Southeast corner
Sec/Tert Building Repairs – Western Canadian Steel
Started Jack hammering out silica that has built up around the column bases
Started pre-tensioning all anchor bolts at the finished floor level

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	48	9,576
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	7	168	168
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	8	216	11,796
Winfield	Mech/Pipe	9	216	14,424
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Pall	Pall Vendor Pkgs	-	-	72
DC Engineering	Electrical Eng	-	-	72
Linkan	Engineering	-	-	72
Subtotal - EPCM Construction Contractors		**26**	**648**	**83,280**
Visitors		-	-	-
Total - Site		**26**	**648**	**83,280**

PROJECT PHOTOS

WTP – PVC Chemical Lines Installed on TK-701

WTP – Local Disconnects Installed on Brine Pumps

WTP – Finalizing Pressure Switches and PIT Runs in MF Feed Area

Sec/Tert Building Repairs – Chiseling out Silica Built up Around Column Bases

JDS	Victoria Gold Daily Construction Report				November 1, 2022
	24 hr. Weather Conditions	Low Temp	High Temp	Wind Avg.	Visibility
		-16°C	-8°C	Calm	Snow

Site Designate: Please contact kevink@jdsmining.ca or adamy@jdsmining.ca with any questions concerning this daily report

UPCOMING MILESTONES

Task	Planned Date	Forecast Date	Status / Comments
Complete Pulling Instrument Cables	October 29, 2022	November 5, 2022	Pulled cable for AIT-001 and AIT-101
Propane Piping Complete to Heaters	November 7, 2022	November 7, 2022	Continued fabricating supports for central heaters
MCC Install and Termination	November 20, 2022	November 20, 2022	Completed relocating stored equipment and instruments to inside the chemical containment

HEALTH, SAFETY, AND ENVIRONMENT

Item	Today	Project To-Date
Near Misses	0	2
Property Damage	0	1
First Aid Incidents	0	8
Medical Aids	0	3
Restricted Work	0	0
Lost Time Injuries	0	0
Environmental Incidents	0	0
Security/Non-Compliance Incidents	0	0
Total Incidents	0	14

Incidents:

- Nothing to report

Other HSE Activities:

- Nothing to report

TODAY'S ACTIVITIES

Activity
WTP Mechanical and Piping – Winfield
Began installing the piping from the air receiver to the compressor
Continued fabricating heater supports for center heaters
Fabricated supports for the chemical lines in the containment area
Continued running the house water line along the West wall
WTP Electrical – Mueller
Installed junction boxes on top of reaction tanks for LIT-101/102/103 and wired the devices
Began completion checks of devices underneath the clarifiers to update the cable pull list
Cleaned out the Sea Cans in preparation of the MCC's arrival
Installed LIT-001, AIT-001 and AIT-101
Sec/Tert Building Repairs – Western Canadian Steel
Continued Jackhammering out silica that has built up around the column bases and testing anchor bolts for the correct torque spec
Ongoing visual inspection for any defective welds

MANPOWER ON SITE

Contractor	Scope of Work	Personnel On Site	Hours This Week	Total Project Hours to Date
EPCM Construction Contractors				
JDS	EPCM	2	72	9,600
Nahanni	Concrete	-	-	8,784
Western Canadian Steel	Pre-Eng	6	240	240
Tetratech Eba	Geotech	-	-	612
Mueller	Electrical	8	324	11,904
Winfield	Mech/Pipe	9	324	14,532
AUL	Structural	-	-	4,608
Norseman	Building erection	-	-	4,632
EWING	Earthworks	-	-	23,124
Layfield	Laying Liner	-	-	4,788
Yukon Door	Over head doors	-	-	36
Clear Stream	Demolition	-	-	96
JDS McCaw	Drilling	-	-	288
RC	Crane	-	-	132
Pall	Pall Vendor Pkgs	-	-	72
DC Engineering	Electrical Eng	-	-	72
Linkan	Engineering	-	-	72
Subtotal - EPCM Construction Contractors		**25**	**960**	**83,592**

PROJECT PHOTOS

WTP – Installed Pipe Supports for 2” PVC on the NaOH Dosing Skid to Tank

WTP – Central Heater Supports in Fabrication

WTP – Installed Level Indicating Transmitter on Reaction Tank #2

Sec/Tert Building Repairs – Bolts Verified for Torque Spec

APPENDIX 7: HEADER DRAIN FUSION LOGS

Aug 26 - 150' → Y → 100' (W)
- 150' → Y → 150' (E)

Aug 29 - 100' → Y' → 150'

Aug 31 - 100' → Y' → 150'

Date:

HDPE Fusion Log

Operator Name:

Fusion Machine (make & model): Tracstar 412 MF (6.01)

Start Time	Fusion #	Pipe Diam & DR	Fusion Pressure	Interfacial Pressure	Drag Pressure	Heater Plate Temperature	Heat Soak Time	Cooling Time	Misc. Comments
Aug 26.	HD-W1	6" DR11	180	75	30	410	3:20	6:40	Tie in location) straight to strai
	HD-W2	6" DR11	180	75	30	420	3:30	6:40	straight to straight
	HD-W3	6" DR11	180	75	30	428	3:40	7:00	straight To "Y"
	HD-W4	6" DR11	180	75	30	436	3:15	6:40	~~straight~~ y" to straight
	HD-W5	6" DR11	180	75	30	422	3:20	6:45	straight to straight.
	HD-E1	6" DR11	180	75	30	415	3:30	6:55	(Tie in location) straight to str
	HD-E2	6" DR11	180	75	30	425	3:20	6:40	straight to straight
	HD-E3	6" DR11	180	75	30	410	3:15	7:10	straight to "Y"
	HD-E4	6" DR11	180	75	30	405	3:15	6:45	"Y" to straight
	HD-E5	6" DR11	180	75	30	435	3:30	7:00	straight to straight
	HD-E6	6" DR11	180	75	30	440	3:30	8:00	straight to straight
Aug 29	HD-E7	6" DR11	180	75	35	432	3:20	7:00	straight to straight
	HD-E8	6" DR11	180	75	35	410	3:15	6:40	straight to straight.
	HD-E9	6" DR11	180	75	35	420	3:30	6:50	straight to 30° section.
	HD-E10	6" DR11	180	75	35	425	3:40	7:00	30° section to 'Y'
	HD-E11	6" DR11	180	75	35	430	3:20	7:00	'Y' to straight
	HD-E12	6" DR11	180	75	35	420	3:15	6:40	straight to straight
	HD-E13	6" DR11	180	75	35	418.	3:20	6:40.	straight to straight w/
Aug 31	HD-W6	6" DR11	180	75	35	435	3:20	6:40	straight to straight.
	HD-W7	6" DR11	180	75	35	445	3:15	6:40	straight to straight
	HD-W8	6" DR11	180	75	35	440	3:15	7:00	straight to straight
	HD-W9	6" DR11	180	75	35	440	3:20	6:40	straight to 'Y'
	HD-W10	6" DR11	180	75	35	435	3:15	6:40	'Y' to straight
	HD-W11	6" DR11	180	75	35	430	3:30	7:00	straight to straight
	HD-W12	6" DR11	180	75	35	435	3:30	7:00.	straight to straight w/ el
	HD-W13								

Note: All Pressure Ratings are in PSI. Temperature is measured in Fahrenheit. Time is in Minutes.

Sept 1. Electrofusion in trench to join HD-W1 to existing, HD-E1 to existing and HD-W5 to HD-W6, HDE6 to HD-E7.

SANDALE

UTILITY PRODUCTS

A Division of EMCO Corporation

Cody Roberts

has completed the Sandale Butt Fusion Program in accordance with recommended procedures to fuse High Density Polyethylene Pipe.

Issue Date: December 22, 2021 Expiry Date: December, 2023

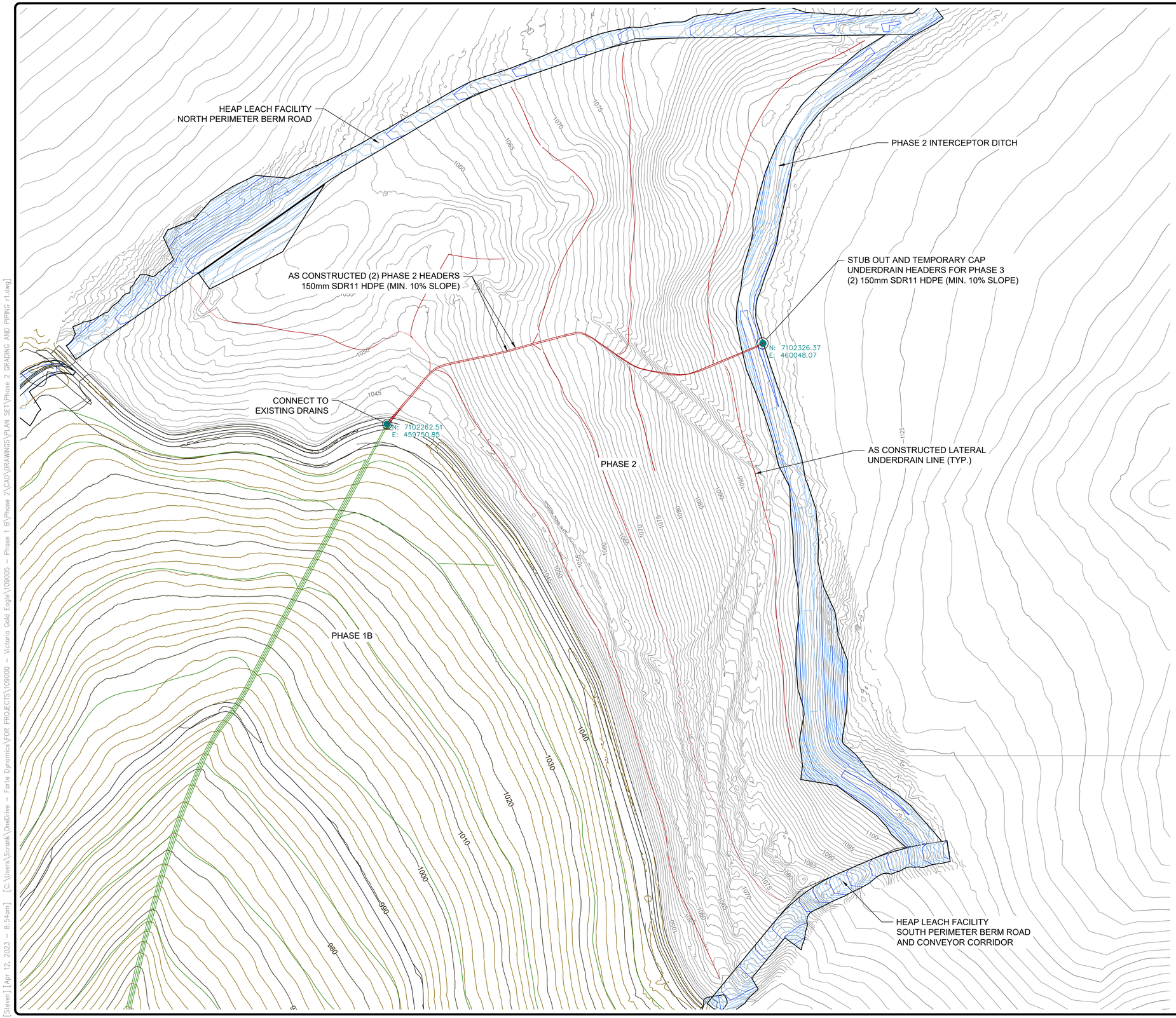
1583

- [x] BF SM - 3/4 - 6"
- [x] BF MED - 8 - 18"
- [x] BF LRG - 20- 36"
- [x] Data Logger

Authorized By: Jared Mohr

Sandale Utility Products
Calgary Location
9716 40th St. S.E.
Calgary, AB T2C 2P3
(P) 403-663-2101
www.sandale.ca

APPENDIX 8: ROC DRAWINGS



45 0 45

(In Meters)
1 cm = 15 M
(1 : 1,500)

NOTES:

1. LATERAL DRAIN LINES SPACED 75 METERS MAXIMUM ALONG UNDERDRAIN MAIN DRAIN LINES. EXTEND FROM MAIN DRAINS TO SEEPAGE AREAS AT APPROXIMATELY 3% (1% MINIMUM) POSITIVE GRADE AS DIRECTED BY FIELD ENGINEER.
2. HLF UNDERDRAINS TO BE CONSTRUCTED AS SHOWN WITH ADDITIONAL DRAINS EXTENDED TO SEEPAGE AREAS BASED ON FIELD OBSERVATIONS DURING CONSTRUCTION.

ISSUE	DATE	DESCRIPTION	DRAWN	DSGN	CHKD	APPD
0	041223	RECORD DRAWING	SMC	SMC	RM	BC

COORD SYSTEM: NAD 83 UTM ZONE 8

THIS DRAWING IS THE PROPERTY OF FORTE DYNAMICS, INC. AND NO REPRODUCTION MAY BE MADE IN WHOLE OR IN PART WITHOUT PERMISSION.

FIELD DEVIATIONS FROM THIS DESIGN ARE NOT PERMITTED WITHOUT DOCUMENTED APPROVAL BY THE ENGINEER.

FDI PROJECT NO: 109005E

PREPARED BY:

FORTE DYNAMICS
120 COMMERCE DRIVE, UNITS 3 & 4
FORT COLLINS, CO 80524

VICTORIA EAGLE GOLD, PHLF PHASE 2

UNDERDRAIN PIPING PLAN VIEW

YUKON, CANADA

DRAWING NUMBER:
109005E-51100-03
CV-F003

RECORD DRAWINGS

[Steven] [Apr 12, 2023 – 8:54am] [C:\Users\Scronk\OneDrive – Forte Dynamics\FOR PROJECTS\109000 – Victoria Gold Eagle\109005 – Phase 1 B\Phase 2\CAD\DRAWINGS\PLAN SET\Phase 2 GRADING AND PIPING r1.dwg]

GOLD EAGLE PHASE 2A - AS-BUILT

LEGEND

- △ LINER FIELD SEAM PATCH
- P101 PANEL NUMBER
- R101 REPAIR NUMBER
- DS101 DESTRUCT LOCATION

NOTES

REV.	RECORD OF CHANGES	DATE	BY
0	NONE	MM/DD/YY	XY

LAYFIELD

EAGLE GOLD PHASE 2A
LLDPE 80MIL TEX-2

VICTORIA GOLD CORP.
YUKON, CANADA

DWG. NUMBER
CT001708-ASBUILT-001

Quote No.	PROJECT No.
P10654C	CT001708
DWG : 1 OF 1	**SCALE :** N.T.S.
DWN: CM	**CHKD:** JW	**APP'D:**
DATE: 07/26/22	**REVISION:** A

APPENDIX 9: LINER QA REPORT

TETRA TECH

Construction Quality Assurance Report
Heap Leach Facility Phase 2A – Geosynthetics Installation
Eagle Gold Mine
Dublin Gulch, Yukon Territory
62°2’N, 135°50’W

PRESENTED TO
Victoria Gold Corp.

OCTOBER 5, 2022
ISSUED FOR USE
FILE: 704-ENG.WARC03235-23

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

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EXECUTIVE SUMMARY

Tetra Tech Canada Inc. has completed the construction quality assurance program during the installation of the geosynthetics liner system at the Eagle Gold Heap Leach Facility – Phase 2A (HLF – Phase 2A) located at Dublin Gulch, Yukon Territory, approximately 85 km north of the Town of Mayo, Yukon Territory, centered at 62° 2'N, -135° 50'W.

The HLF – Phase 2A project includes constructing the subgrade, which includes sloping, installing a central header drain, installing lateral drains, placement of geocomposite liner, and 80 mm LLDPE liner.

This report covers the installation of the geosynthetic liner system for Phase 2A.

The purpose of the construction quality assurance program was to verify the Contractor's quality control program and conformance with the plans and specifications prepared for the project and the final preparation of the subgrade.

The completion of the construction quality assurance program demonstrates that the geosynthetic installation completed to date was in accordance with the project plans and specifications, and any variances documented and accepted by the proper authorities.

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ACRONYMS & ABBREVIATIONS

Acronyms/Abbreviations	Definition
CQA	Construction Quality Assurance
HLF	Heap Leach Facility
Tetra Tech	Tetra Tech Canada Inc.
QC	Quality Control
LLDPE	Linear Low-Density Polyethylene
GCL	Geosynthetic Clay Liner
JDS	JDS Energy and Mining Inc.
StrataGold	StrataGold Corporation
EPCM	Engineering, Procurement, and Construction Management
NELPCo.	NND-EBA Land Protection Corp., operating as NELPCo Limited Partnership
BGC	BGC Engineering Inc.
Layfield	Layfield Group Ltd.
LDRS	Leak Detection and Recovery System
Specs.	Technical Specifications provided by BGC October 16, 2017
ODF	Over-liner Drainage Fill
GRI	Geosynthetic Research Institute
FM	Field Memorandum
RFI	Request for Information
IFC	Issued for Construction

LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Victoria Gold Corp. and their agents. Tetra Tech Canada Inc. (Tetra Tech) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Victoria Gold Corp., or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this document is subject to the Limitations on the Use of this Document attached in the Appendix or Contractual Terms and Conditions executed by both parties.

1.0 INTRODUCTION

1.1 Project Organization

The StrataGold Corporation (StrataGold), a wholly-owned subsidiary of Victoria Gold Corp., who operates the Eagle Gold Mine (EGM), contracted NND-EBA Land Protection Corporation., operating as NELPCo Limited Partnership (NELPCo), to conduct Construction Quality Assurance (CQA) inspections for the Eagle Gold Heap Leach Facility – Phase 2A (Phase 2A) geosynthetic liner installation at the EGM in Central Yukon, north of Mayo, YT. Tetra Tech Canada Inc. (Tetra Tech) is NELPCo's engineering services provider and provided CQA services throughout the project on behalf of NELPCo.

Tetra Tech's Project Manager for the project was Adam Mickey, E.I.T., with Jacob Swartz, E.I.T., and Josh McKenzie acting as Tetra Tech's CQA monitors for the entire geosynthetics portion of the project. Mr. Swartz, Mr. Mickey and Chad Cowan, P.Eng. provided inspection services for header and lateral drain installation prior to the commencement of geosynthetic placement. Tetra Tech's CQA monitor was on site full-time for all geosynthetic installation. They worked closely with the contractor supervising daily activities, such as panel placement, wedge welder and extruder qualifications, liner installation and repair inspection, and all testing completed on the liner materials, both destructive and non-destructive.

Forte Dynamics (Forte), out of Fort Collins, Colorado, was retained to provide design and specifications for Phase 2A and be the Engineer-of-Record (EOR) for the project. Clint Green and Roy Morlan were Forte's representatives for Phase 2A.

JDS Energy and Mining Ltd. (JDS) were retained to provide project management services for Phase 2A. Cody Roberts was JDS's representative on-site for the duration of the project.

Layfield Environmental Containment (Layfield) of Edmonton, Alberta, was retained to provide the geosynthetics for the liner system, as well as install the geosynthetics and provide QC inspection of the deployed liner. The project supervisor was Chad Messervey, and Jason Wheeler was the project manager for the project.

Ewing Transport Ltd. (Ewing) was retained as the construction contractor for Phase 2A. Their activities included installing the lateral and header drains, preparing the subgrade for geosynthetics placement, and assisting with liner deployment activities.

1.2 General

Tetra Tech has prepared this report that details the CQA program completed during the installation of the geosynthetic liner system for Phase 2A of the Heap Leach Facility (HLF). The liner system was installed above the existing Heap Leach Facility Phase 1B (Phase 1B).

The geosynthetics CQA program was implemented to ensure that the liner system installed for Phase 2A satisfied the design requirements and was installed in accordance with the plans and specifications prepared for the project by Forte, as well as any variances that were documented and accepted by the proper authorities.

For this report, the term CQA refers to the activities of Tetra Tech relating to testing and inspections required to assure the client that the various elements met project specifications, which is distinct from quality control (QC). QC refers to the contractor's activities in the construction of various elements to meet the specification requirements.

1.3 Project Description

1.3.1 Project

The HLF at the EGM is constructed in phases as ore is stacked and leached in the facility, exhausting the installed liner system's available space. The EGM will utilize three HLF construction phases to bring the HLF to its final size. Prior to Phase 2A, Phase 1B, Phase 1A, and the In-Heap Pond had been constructed and lined with geosynthetics. The In-Heap Pond is a double liner system, while all subsequent phases are a single liner system.

1.3.2 Project Location

The Eagle Gold Mine is located in Dublin Gulch, approximately 85 km north of Mayo, Yukon Territory, centered at 62°2'N, 135°50'W. The HLF is in the northeast corner of the mine site across the Eagle Valley from the open-pit mining operations.

1.4 Project Documentation

The following documentation is included in various sections of this report and was collected by on-site personnel during CQA inspection as well as by Layfield during QC testing:

- Tetra Tech's weekly Inspection Reports, which include:
  - Daily notes of activities performed, and observations noted;
  - Daily trial seam results;
  - Weekly non-destructive testing results;
  - Weekly destructive testing results; and
  - Site Photographs.
- Supporting documentation of variances from design;
- Testpit logs for the Foundation Improvement Plan;
- Compaction Testing Results;
- Layfield's QC Package, which includes:
  - Certificate of Inspection of Soil Subgrade Surface;
  - Geomembrane Deployment Log;
  - Geomembrane Seam and Test Log;
  - Geomembrane Detail and Test Log;
  - Geomembrane Destruct Log;
  - As-builts of Liner Panels;
  - Certificate of Final Inspection and Acceptance;

  - Geosynthetic Inventory Log;
  - Geomembrane Mill Certificates;
  - GCL Mill Certificates; and
  - Installation Warranty.
- Tetra Tech's Limitations on the Use of this Document.

2.0 CONSTRUCTION QUALITY ASSURANCE PROGRAM

2.1 Objective

The CQA program's objective was to ensure that the geosynthetic liner system was installed in accordance with the construction specifications.

The CQA program was designed to supplement the QC program implemented by Layfield, and fulfilled two purposes:

- To provide documentation of the specific technical requirements of the CQA program to be followed during the installation of the geosynthetic liner systems; and
- To be a source of information for personnel performing and monitoring construction.

2.2 Construction Quality Assurance Program Components

The following activities were performed as components of the CQA program:

- **Supervision of HLF foundation preparation** performed by Ewing. The supervision activities included compaction testing and logging soils in the lateral and header drains as part of Forte's foundation improvement plan. Compaction testing reports are found in Appendix D.
- **Field inspections** were performed by the CQA monitor. These inspections were primarily visual examinations and included measurements of materials, equipment used, and techniques employed. The purpose of these inspections was to demonstrate that the specific guideline, specification, or procedure for the activity was successfully completed.
- **Field laboratory seam testing** was performed on-site by the contractor and visually inspected by the CQA monitor according to specified procedures. Seam tests were performed on samples of the installed geomembrane seams to confirm the contractors QC testing and verify the actual seam performance was meeting the project seam requirements.
- **Receiving inspections** performed by the CQA monitor. These inspections included visual examinations of the supplier's materials and their matching manufacturer certificates. The purpose of these inspections was to verify the materials used met the specification requirements and were free from defects.

3.0 HLF GEOSYNTHETIC SYSTEM

3.1 Geosynthetic Liner Profile

The geosynthetic liner system for the Heap Leach Pad Phase 2A is a single liner system, which is installed directly on the prepared subgrade, consisting of the following layers (starting from the top to the bottom):

- An 80-mil double-sided, textured, LLDPE geomembrane; and
- GCL reinforced with a layer of sodium bentonite.

The 80-mil LLDPE was placed directly on the GCL throughout all areas of Phase 2A.

The GCL was placed directly on the prepared and inspected subgrade, which was smooth and free of all protruding rocks, stones, sticks, roots, sharp objects, or debris. GCL liner was covered the same day, if possible, to limit exposure to moisture.

3.2 Manufacturer's Quality Control Certification

Layfield and SOLMAX provided Manufacturing Quality Control certificates for the GCL and 80-mil LLDPE geomembrane produced and delivered to the site. These certificates show the average and minimum values for each roll of material delivered to the site.

A summary of the manufacturer's certificates for the GCL, geomembrane, and geocomposite materials used for this project are included in Layfield's QC package provided in Appendix F.

Tetra Tech reviewed the test data contained within the manufacturer's certificates for comparison to the product specifications. This comparison demonstrated that the material supplied met or exceeded all the typical project-specific requirements.

3.3 Installation of GCL

The GCL for the project was provided by SOLMAX and was installed directly on all prepared subgrade extending into the anchor trench. The GCL overlapped at least 0.5 m at all horizontal seams and 0.15 m at all vertical seams. Along every seam, loose sodium bentonite powder was placed to act as a seam sealant. All horizontal seams were fused using a propane torch, and vertical seams were only torched as necessary.

During placement, each GCL panel was inspected for signs of manufacturing defects or damage that may have caused by the shipping, handling, or storage of the material. Any damage identified as part of the inspection were marked and removed from the roll prior to installation or repaired once deployed on the slope. All the damages were repaired by placing loose sodium bentonite powder and a fused patch overlapping the hole by at least 0.15 m on all sides.

3.4 Installation of 80-mil Linear Low Density Polyethylene Geomembrance

The geomembrane used for Phase 2A was 80-mil LLDPE Enviroliner manufactured by Layfield. The geomembrane was installed directly on the GCL and extended into the anchor trench to retain the liner on the slope once the trench was backfilled. The liner was deployed immediately after the placement of GCL to limit the exposure of the

GCL to rain. In instances where GCL was left exposed overnight, or longer, it was thoroughly inspected to ensure it was clear of debris, and no swelling had occurred prior to placement of 80-mil geomembrane.

The geomembrane panel layout and tie-in seams are included in Layfield's QC package shown in Appendix F.

During placement, each geomembrane panel was inspected for signs of manufacturing defects or damage that may have been caused by the shipping, handling, or storage of the material. Any damage identified as part of the inspection was marked and removed from the roll prior to installation or repaired once deployed on the slope.

3.5 Trial Seams

Seam quality is one of the most critical aspects of geomembrane installation. The ambient conditions at the time of seaming, setup of the welding equipment, and other variables can all affect the welded seams' quality. The installer ensured that the welding equipment was properly set up and produced a conforming seam before field seaming operations. The welding equipment was requalified at four-hour intervals, per project specifications and as necessary during the working day, per the specifications. For Phase 2A, Layfield had a set speed and temperature for each type of seam, and no major deviations from these specifications were required unless the wedge was not correctly set up.

3.6 Seam Wedge (Fusion Welding)

The CQA monitor intermittently observed the seaming operations to check that there were no isolated problems, such as water puddles or dirt under the liner that could affect seam quality. The geomembrane's temporary leading edges occasionally became dirty due to windblown dust or rain washing debris onto the exposed seam. These edges were scrubbed and wiped clean prior to welding.

3.6.1 Air Pressure Test

All fusion welded seams were non-destructively tested over their full-length using air pressure testing. The air pressure tests were performed by Layfield and observed by the CQA monitor. An air channel located between the dual tracks of the fusion welded seam was pressurized to a minimum of 276 kN/m^2 (40 lbs/in^2 (pounds per square inch [psi])) for a period of at least five minutes; an air pressure loss of more than 28 kN/m^2 or 4 psi required that the air leak be located, repaired, and retested.

3.6.2 Destructive Test

Samples of the fusion welded seams were destructively tested at a minimum interval of one per 150 linear meters of seam throughout the installation of the liner to ensure that seam quality did not change throughout seaming operations. In cases where a failed coupon from a destructive test was identified, the total length of the failed seam was determined by taking additional destructive tests three linear meters before and after the first destructive test. The additional samples are then retested until a passing destructive test result was obtained in both directions of the first failed destructive test. The length of the seam between the passing destructive tests was then replaced, patched, or extrusion welded.

The samples were selected by the CQA monitor to give the best representation of seam quality and were tested by the CQA monitor or the Installer under the observation of the CQA monitor. The locations of the destructive samples varied from seam to seam, but the majority of the samples were obtained from locations in the seam that would not affect the integrity of the liner system or require any extra patches or extrusion welding.

3.7 Extrusion Welding

Each panel and seam were inspected regularly by the CQA monitor during installation. Any defects found in the LLDPE membrane or in the seams were marked so that the installation crew was aware that a defect was found. Once all repairs were completed by the installer, the CQA monitor reviewed each panel and seam from the anchor trench to the panel end to ensure all defects were adequately repaired.

Any repairs to the panels or seams were completed by placing an extrusion welded bead over defects smaller than 6 mm or by extrusion welding a patch of LLDPE over any destructive sample holes, tears, holes larger than 6 mm, or areas with blisters. Scratches, scuffs, or creases were generally repaired by placing an extrusion welded bead over the defect area if required.

3.7.1 Vacuum Test

All extrusion welded repairs were non-destructively tested using the vacuum box test method. The vacuum box assembly consists of rigid housing, a transparent viewing window, and a vacuum gauge. The weld to be tested was wetted with a soapy solution, and the vacuum box assembly was placed over the soapy weld, ensuring a seal over the test area.

A vacuum pressure between 5 psi to 8 psi was induced for at least 15 seconds, and the area within the viewing window was examined for the presence of bubbling, indicating a leak. Suspect areas were marked, repaired, and retested. As with the air pressure tests, the vacuum box tests were performed by Layfield and observed by the CQA monitor.

3.8 Variations from Design

3.8.1 Proposed Panel Layout

As discussed at the project start-up meeting on June 17, 2022, Layfield did not provide a proposed panel layout for the Phase 2A liner deployment due to the project area subgrade being a field fit design. The only significant change in panel layout involved removing a section of Phase 2A from the original lining program due to insufficient materials on site to line the entire prepared Phase 2A subgrade. Approximately 13,000 m^2 was removed from the northwest section of Phase 2A and added to Phase 2B. See the weekly report for June 27, 2022, to July 3, 2022, in Appendix B for details. The final panel layout was field fit based on the slopes/contours encountered on-site, and Layfield developed a panel layout as-built as the liner was deployed.

3.8.2 Horizontal Cross Seams on Steep Slopes

The original design called for no slopes to be steeper than 2:1 (H:V), and any slope steeper than 2.5:1 (H:V) to have cross seams cut at a 45 degree angle to eliminate horizontal cross seams. Layfield checked the slopes prior to liner deployment. Mr. Messervey mentioned at the project start-up meeting on June 17, 2022, that the steeper sections on site are not a concern due to how short the slopes were and that 45-degree angles will not be required. Horizontal seams were used for the entirety of Phase 2A.

3.8.3 Acceptable Subgrade Conditions

The specifications provided by Forte stated that the prepared subgrade shall be smooth and free of rocks greater than 50 mm and all protruding rocks, stones, sticks, roots, or sharp objects, or debris of any kind. As well, no soft or yielding subgrade conditions would be acceptable.

3.8.3.1 Rock Subgrade Conditions

Overall, rocky subgrade was not an issue during the Phase 2A deployment as Ewing placed bedding sand over the entire area prior to liner deployment. Even though rocky subgrade sections were covered with sand, rocks that were plucked out of the subgrade by deployment practices were an issue throughout the deployment. Subgrade that appeared to be acceptable once shaped and compacted had rocks just below the surface that could be removed by rain events and vehicle traffic/side-by-side use. Due to changing conditions, Tetra Tech performed daily inspections on the prepared subgrade in advance of liner deployment. Layfield constantly removed picked rocks before and after GCL placement to remove all rocks greater than 50 mm beneath the GCL. Layfield made vertical slices in the GCL to remove any rocks below, and all cuts made in the GCL were filled with bentonite powder and covered with a GCL patch.

3.8.3.2 Soft and Yielding Subgrade Conditions

Soft and yielding conditions were not a significant issue during the project. Prior to liner deployment, a small area was heavily saturated above and below Lateral #1 E (8V 460010 E 7,101,841 N) near the south perimeter berm. The area was excavated, and Tetra Tech determined that a small spring above Lateral #1 E was supplying the water. The issue was discussed at a meeting with Forte, JDS, Layfield, and Tetra Tech on June 17, 2022. Forte decided that the area would be excavated 1 to 2 m in depth to remove the low permeable material and replaced with rock fill, allowing the water to drain into fractured bedrock. The excavated area was left exposed overnight, and it was confirmed the water was not resurfacing. See the weekly report for June 13 to June 19 in Appendix B for details and pictures of the soft subgrade and repair.

Tetra Tech performed daily inspections of the subgrade due to conditions changing regularly. No major soft spots were encountered during liner deployment. However, various subgrade areas were left to dry following heavier rain events where minor soft spots developed.

3.8.4 Anchor Trench

The anchor trench was dug according to the design specifications and spot filled to retain the liner on the slope. No major changes were required.

3.8.5 Exposed GCL

The project specification stated that GCL could not be left exposed overnight or for long periods of time, and hydrated GCL must not be allowed to hydrate prior to LLDPE liner deployment. Due to the weather experienced, sometimes, GCL was exposed to rain during the day and overnight. As experienced during Phase 1B, the GCL used for the project was highly resistant to hydration. Due to weather or timing, Layfield had to leave GCL exposed overnight to keep the project advancing on schedule. Prior to the liner being deployed over the GCL, Tetra Tech and Layfield would inspect the GCL for hydration and remove any hydrated GCL. Following a rain event, a slice would be made in the GCL to determine whether the fibers had broken between the upper and lower geosynthetic. The surface for the GCL was also checked for “popcorning” where the bentonite would expand through the holes in the geosynthetic. Due to the GCL’s resistance to hydration, GCL was rarely removed from the slope after a rainfall event.

3.8.6 Destructive Testing

The project specifications stated that CQA was to conduct independent destructive testing alongside Layfield's QC destructive testing. Tetra Tech observed Layfield's destructive sampling and tested the samples themselves for simplicity and time management purposes. If Layfield tested the samples, Tetra Tech would observe the destructive testing to verify the results.

4.0 CONSTRUCTION QUALITY ASSURANCE RECORDS AND TESTS

The following tasks were performed during the installation of the geosynthetic liner system:

- Material Inventory Record;
- Panel Installation Record;
- Trial (or Qualification) Seams;
- Geomembrane Fusion Seam Installation;
- Air Pressure Tests (Wedge Welding);
- Vacuum Test and Repairs (Extrusion Welding);
- Panel Diagrams; and
- Destructive Testing of Geomembrane Seam.

The following provides a brief description of the various CQA testing methodologies. Records of these activities are included in Layfieilds QC package shown in Appendix F.

4.1 Material Inventory

An inventory of the 80-mil LLDPE geomembrane liner was completed as the material was placed. The inventory is documented in the material inventory summary data sheets which are attached in the Installers QC records.

A panel installation summary datasheet contains further information on the individual panels of geomembrane installed and can be found in Layfield's QC package shown in Appendix F.

4.2 Subgrade Acceptance

Prior to the deployment of the geosynthetics, the subgrade had to be accepted by both Tetra Tech and Layfield. Large areas were walked off and accepted with a Certificate of Subgrade Acceptance being drafted by Layfield and signed off by Tetra Tech. Due to the changing subgrade conditions from weather and vehicle disturbance, Tetra Tech performed daily walk-offs to ensure the subgrade was still acceptable. The Certificates of Subgrade Acceptance can be found in Layfield's QC package shown in Appendix F.

4.3 Trial (or Qualifying Seams)

Trial seams using both the hot wedge welder and the extrusion welder were produced using LLDPE geomembrane strips prior to welding any seams each day, and every four hours thereafter for each type of seam. The three seam types fused using a wedge welder were smooth to smooth, textured to textured, and textured to smooth. Seaming of installed geomembrane panels did not commence until passing trial seams were completed.

A minimum of five test coupons were cut from the trial seams for both peel and shear strength and tested by Layfield on site with the CQA monitor present to observe that seams met project specifications. In order to receive a passing result, the trial seam sample was required to meet the criteria laid out in Table 1.

Table 1: LLDPE Seam Strength Properties

Material	Fusion (Wedge Weld) Shear Strength (PPI)	Fusion (Wedge Weld) Peel Strength (PPI)	Extrusion Shear Strength (PPI)	Extrusion Peel Strength (PPI)
80-mil LLDPE	120	100	120	88

In addition to meeting the minimum strength requirements, the test coupons were required to meet an adhesion specification of less than 25% incursion into the weld.

These minimum requirements are based on the project specifications from Forte.

All trial seams observed by Tetra Tech were recorded and detailed in Tetra Tech's weekly reports found in Appendix B, and all of the results are presented in Layfield's QC package shown in Appendix F.

4.4 Geomembrane Seaming

The CQA monitor observed and recorded information pertinent to fusion welding (hot wedge seaming) of the 80-mil geomembrane. The details include start times of the seam, the seam's length, ambient temperature, welding equipment identification, and operator and machine settings.

A summary of the seaming completed can be found in Layfield's QC package shown in Appendix B.

4.5 Destructive and Non-Destructive Testing of Geomembrane Seams

All destructive and non-destructive testing was completed as mentioned in sections 3.6 and 3.7, and the destructive and non-destructive testing results are presented in Layfield's QC package shown in Appendix F.

4.6 Final Inspection and Acceptance

Once the liner had been deployed, fused, repaired, and tested, Tetra Tech and Layfield performed a final walk-off to inspect for deficiencies such as holes, missing repairs, and missing testing. The walk-off consisted of inspecting the entire liner area, including seams, the tie into Phase 1B, and the anchor trench. If any deficiencies were noted, the defect would be remedied immediately. Once all deficiencies were fixed, Layfield drafted a Certificate of Final Inspection and Acceptance to be signed by the CQA Monitor, and Layfield's Supervisor or QC representative. Upon sign-off, Tetra Tech provided the Certificate of Final Inspection and Acceptance to Victoria Gold and Forte. The Certificates of Final Inspection and Acceptance can be found in Layfield's QC package shown in Appendix F.

5.0 CLOSURE

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

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APPENDIX A

TETRA TECH'S LIMITATIONS ON THE USE OF THIS DOCUMENT

LIMITATIONS ON USE OF THIS DOCUMENT

GEOTECHNICAL

1.1 USE OF DOCUMENT AND OWNERSHIP

This document pertains to a specific site, a specific development, and a specific scope of work. The document may include plans, drawings, profiles and other supporting documents that collectively constitute the document (the “Professional Document”).

The Professional Document is intended for the sole use of TETRA TECH’s Client (the “Client”) as specifically identified in the TETRA TECH Services Agreement or other Contractual Agreement entered into with the Client (either of which is termed the “Contract” herein). TETRA TECH does not accept any responsibility for the accuracy of any of the data, analyses, recommendations or other contents of the Professional Document when it is used or relied upon by any party other than the Client, unless authorized in writing by TETRA TECH.

Any unauthorized use of the Professional Document is at the sole risk of the user. TETRA TECH accepts no responsibility whatsoever for any loss or damage where such loss or damage is alleged to be or, is in fact, caused by the unauthorized use of the Professional Document.

Where TETRA TECH has expressly authorized the use of the Professional Document by a third party (an “Authorized Party”), consideration for such authorization is the Authorized Party’s acceptance of these Limitations on Use of this Document as well as any limitations on liability contained in the Contract with the Client (all of which is collectively termed the “Limitations on Liability”). The Authorized Party should carefully review both these Limitations on Use of this Document and the Contract prior to making any use of the Professional Document. Any use made of the Professional Document by an Authorized Party constitutes the Authorized Party’s express acceptance of, and agreement to, the Limitations on Liability.

The Professional Document and any other form or type of data or documents generated by TETRA TECH during the performance of the work are TETRA TECH’s professional work product and shall remain the copyright property of TETRA TECH.

The Professional Document is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of TETRA TECH. Additional copies of the Document, if required, may be obtained upon request.

1.2 ALTERNATIVE DOCUMENT FORMAT

Where TETRA TECH submits electronic file and/or hard copy versions of the Professional Document or any drawings or other project-related documents and deliverables (collectively termed TETRA TECH’s “Instruments of Professional Service”), only the signed and/or sealed versions shall be considered final. The original signed and/or sealed electronic file and/or hard copy version archived by TETRA TECH shall be deemed to be the original. TETRA TECH will archive a protected digital copy of the original signed and/or sealed version for a period of 10 years.

Both electronic file and/or hard copy versions of TETRA TECH’s Instruments of Professional Service shall not, under any circumstances, be altered by any party except TETRA TECH. TETRA TECH’s Instruments of Professional Service will be used only and exactly as submitted by TETRA TECH.

Electronic files submitted by TETRA TECH have been prepared and submitted using specific software and hardware systems. TETRA TECH makes no representation about the compatibility of these files with the Client’s current or future software and hardware systems.

1.3 STANDARD OF CARE

Services performed by TETRA TECH for the Professional Document have been conducted in accordance with the Contract, in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions in the jurisdiction in which the services are provided. Professional judgment has been applied in developing the conclusions and/or recommendations provided in this Professional Document. No warranty or guarantee, express or implied, is made concerning the test results, comments, recommendations, or any other portion of the Professional Document.

If any error or omission is detected by the Client or an Authorized Party, the error or omission must be immediately brought to the attention of TETRA TECH.

1.4 DISCLOSURE OF INFORMATION BY CLIENT

The Client acknowledges that it has fully cooperated with TETRA TECH with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The Client further acknowledges that in order for TETRA TECH to properly provide the services contracted for in the Contract, TETRA TECH has relied upon the Client with respect to both the full disclosure and accuracy of any such information.

1.5 INFORMATION PROVIDED TO TETRA TECH BY OTHERS

During the performance of the work and the preparation of this Professional Document, TETRA TECH may have relied on information provided by third parties other than the Client.

While TETRA TECH endeavours to verify the accuracy of such information, TETRA TECH accepts no responsibility for the accuracy or the reliability of such information even where inaccurate or unreliable information impacts any recommendations, design or other deliverables and causes the Client or an Authorized Party loss or damage.

1.6 GENERAL LIMITATIONS OF DOCUMENT

This Professional Document is based solely on the conditions presented and the data available to TETRA TECH at the time the data were collected in the field or gathered from available databases.

The Client, and any Authorized Party, acknowledges that the Professional Document is based on limited data and that the conclusions, opinions, and recommendations contained in the Professional Document are the result of the application of professional judgment to such limited data.

The Professional Document is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site conditions present, or variation in assumed conditions which might form the basis of design or recommendations as outlined in this document, at or on the development proposed as of the date of the Professional Document requires a supplementary exploration, investigation, and assessment.

TETRA TECH is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the Client.

1.7 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, TETRA TECH has not been retained to explore, address or consider and has not explored, addressed or considered any environmental or regulatory issues associated with development on the subject site.

1.8 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems, methods and standards employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. TETRA TECH does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

1.9 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

1.10 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historical environment. TETRA TECH does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional exploration and review may be necessary.

1.11 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

1.12 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

1.13 INFLUENCE OF CONSTRUCTION ACTIVITY

Construction activity can impact structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques, and construction sequence are known.

1.14 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, and the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

1.15 DRAINAGE SYSTEMS

Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function. Where temporary or permanent drainage systems are installed within or around a structure, these systems must protect the structure from loss of ground due to mechanisms such as internal erosion and must be designed so as to assure continued satisfactory performance of the drains. Specific design details regarding the geotechnical aspects of such systems (e.g. bedding material, surrounding soil, soil cover, geotextile type) should be reviewed by the geotechnical engineer to confirm the performance of the system is consistent with the conditions used in the geotechnical design.

1.16 DESIGN PARAMETERS

Bearing capacities for Limit States or Allowable Stress Design, strength/stiffness properties and similar geotechnical design parameters quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition used in this report. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions considered in this report in fact exist at the site.

1.17 SAMPLES

TETRA TECH will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.

1.18 APPLICABLE CODES, STANDARDS, GUIDELINES & BEST PRACTICE

This document has been prepared based on the applicable codes, standards, guidelines or best practice as identified in the report. Some mandated codes, standards and guidelines (such as ASTM, AASHTO Bridge Design/Construction Codes, Canadian Highway Bridge Design Code, National/Provincial Building Codes) are routinely updated and corrections made. TETRA TECH cannot predict nor be held liable for any such future changes, amendments, errors or omissions in these documents that may have a bearing on the assessment, design or analyses included in this report.

APPENDIX B

TETRA TECH'S WEEKLY INSPECTION REPORTS

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 2A	**Date:**	June 19, 2022
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Chad Messervey
Contact:	Cody Roberts	**Contractor's Email:**	Chad.Messervey@layfieldgroup.com
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Jacob Swartz
File:	704-ENG.WARC03235-23	**Status:**	Issued for USE

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 2A expansion (Phase 2A). Mr. Jacob Swartz, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 2A, and Forte's representative is Clint Green.

Cody Roberts, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 2A.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 2A, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of June 16, 2022, to June 19, 2022.

2.0 DAILY REPORTS

2.1 Highlights

- Layfield and Tetra Tech mobilized to the mine on June 15, 2022.
- Layfield has been diligent about removing rocks from subgrade pre- and post-GCL deployment.
- No QC/QA testing has been conducted to date.

2.2 June 16, 2022

Weather: Sunny, 23°C

- Layfield began preparing for liner deployment:

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  - The liner was not properly stored (not on dunnage). Layfield laid down dunnage, inspected, and moved the liner.
  - Filled sandbags with the help of Ewing.
  - Distributed sandbags across HLF for when liner deployment starts.
  - Organized tool shed and checked equipment.
- A QC/lunch trailer was never ordered. JDS is looking into finding one for Layfield.
- Ewing placed bedding sand across the slopes of the HLF.
- Ewing removed a culvert from the north perimeter berm.
  - The excavation was backfilled with colluvium material and density tested by Tetra Tech.
- Tetra Tech noticed a soft spot in the HLF subgrade above the Lateral #1 E (8V 460,010 E, 7,101,841 N) near the south perimeter berm occurring in the late afternoon.
  - Ewing and Tetra Tech stayed on-site late to excavate the soft area.
  - During the excavation, Tetra Tech noticed that there was a spring supplying water to the area.
  - The area was excavated approximately a meter below ground surface to remove the soft material and reach the source of the spring.
  - A trench was made connecting the spring to Lateral #1 E and backfilled with rock fill.

2.3 June 17, 2022

- Weather: Sunny, 23°C
- Ewing excavated the anchor trench in the south perimeter berm and started working north along the 2A/2B access road.
- Two saturated spots appeared below Lateral #1 E (8V 459,981 E, 7,101,843 N). The areas were excavated and water was flowing from above (suspected to be from the same source encountered June 16, 2022)
  - The seepage was discussed with Forte during a meeting at noon. JDS, Layfield, and Tetra Tech were all in attendance.
  - It was decided that the area would be excavated 1 to2 m in depth to remove the low permeable material that is currently allowing the water to run near the surface. Removing this material should allow the water to drain into the fractured bedrock below.
  - Ewing excavated both areas approximately 1.2 m, placed rock fill, and covered it with bedding sand.
- The noon meeting mentioned above was used as a pre-project meeting to discuss the liner installation and general concerns/questions regarding the HLF.
- Ewing continued placing bedding sand along the HLF subgrade where needed.
- Ewing continued building up the north perimeter berm with rock fill to meet the design grade.
- Layfield is ready to deploy the liner and is planning to start on June 18, 2022.

- Underhill marked straight lines on the HLF to help Layfield get around the first bend when liner deployment starts. This will allow them to roll straight lines once the first corner is completed.

2.3.1 June 18, 2022

- Weather: Sunny with lots of wind. 18°C
- Ewing continued prepping subgrade on the northern HLF slopes.
- Additional sand was added in front of Layfield's work area due to side by sides uncovering the rockier subgrade.
- Layfield started deploying GCL and placed three rolls of LLDPE.
  - LLDPE: 1792 m^2, GCL: 5184 m^2
  - Panels P1-P5 were deployed.
  - One round of trial seams were conducted at 12:30. The trial seam passed and Layfield is authorized to fusion weld the liner as it is placed. Additional trial seams will be taken every 4 hours.
  - Liner deployment was stopped due to high winds making it unsafe.
  - All of the panels were fusion welded, but the cross seams will be extrusion welded at a later date.
  - No testing was completed for any of the seams. Layfield was waiting for the cross seams to be extrusion welded.
  - GCL was placed in advance of liner placement and left overnight.
    - Holes near the end of the roll in the GCL were present due to handling. Instead of patching the holes, Layfield overlapped the sections.

2.3.2 June 19, 2022

- Weather: Partly cloudy, 20°C
- GCL placed on June 18 and left overnight was in good condition and ready for liner.
  - Some larger rocks were present under the GCL and removed.
- The morning trial seam had a failed test with the Smooth to Smooth (S-S) weld on machine WW-23.
  - The S-S seam was redone and it passed.
  - All subsequent tests passed and were completed at the appropriate 4 hour intervals.
- Layfield deployed GCL and LLDPE.
  - LLDPE: 5973.2 m^2, GCL: 2804.2 m^2
  - Panels P6 – P21 were deployed
  - All of the seams were fusion welded. Extrusion welding still required at cross seams.
  - Repairs are required in multiple areas.
    - P8/P9 seam damage (10:12).

  - P5/P7 seam damage near anchor trench.
  - P11/P12/P13 T-seam damage.

- P19/P21 has short LLDPE overlap. Air Pressure Test will be required. Chad Messervey with Layfeild has been notified on the short overlap. Confirmatory testing will be completed at a later date.

- No QC/CQA testing has been conducted to date.
- EWING continued to place rock fill on the north perimeter berm.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate and where 45-degree joints are used; panel length is based from the center of the panel. Where unsymmetrical and/or wedge shape panels are used to make corrections, the longest side length is provided.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
June 18, 2022	374576, 373902, 374561, 374568, 373903, 373860, 373928, 373927, 373863, 373861, 373907, 373874, 374562, 373563, 373884, 373883, 373912, 373932, 373865, 373674, 373661, 373837, No Tag #1	156184, 156032, 156185	P1 (129.6 m), P2 (7.0 m) P3 (58.6 m), P4 (57.3), P5 (16.2m)
June 19, 2022	373930, 373878, 373791, 373920, 373774, 373880, 373777, 373789, 373782, 373837, 373878, 373934 373943, No Tag #2	156185, 156143, 156198, 156143, 156113, 156188	P6 (65.4 m), P7 (62.1 m), P8 (41 m), P9 (85 m), P10 (62 m), P11 (62 m), P12 (62 m), P13 (61.4 m), P14 (35.5m), P15 (83 m), P16 (38.5m), P17 (79.7m), P18 (43 m), P19 (74.3 m), P20 (48.1 m), P21 (66.2 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (ºF)	Speed (%) or Barrel Temp (ºF)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Smooth or Textured
June 18, 2022	12:30	Fusion	B.A	WW-57	860	60	143 139 141 139 142	135 132 145 128 139	164 165 161 163 157	Smooth to Smooth (SM-SM)
June 18, 2022	12:30	Fusion	L.A	WW-23	860	50	150 144 143 141 146	130 127 181 133 128	176 176 180 181 178	Textured to Smooth (TEX-SM)
June 18, 2022	12:30	Fusion	L.A	WW-23	860	40	144 137 139 153 146	140 131 141 121 147	173 175 169 169 172	Textured to Textured (TEX-TEX)
June 18, 2022	16:30	Fusion	B.A	WW-57	860	60	135 139 137 139 139	132 132 132 131 133	157 162 153 157 161	SM-SM
June 19, 2022	8:00	Fusion	B.A	WW-57	860	60	125 135 141 138 141	119 137 130 135 136	156 160 170 173 178	SM-SM
June 19, 2022	8:00	Fusion	B.A	WW-57	860	50	130 150 149 134 140	136 131 135 131 141	168 172 166 181 180	TEX-SM
June 19, 2022	8:00	Fusion	B.A	WW-57	860	50	162 153 147 141 137	153 131 144 142 141	177 175 182 177 179	TEX-TEX
June 19, 2022	8:30	Fusion	L.A	WW-29	860	50	133 121 140 129 130	120 159 163 164 132	179 177 183 184 178	TEX-TEX

Date	Time	Fusion or Extrusion	Tech	Apparatus #	Temp or Preheat (°F)	Speed (%) or Barrel Temp (°F)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Smooth or Textured
June 19, 2022	8:30	Fusion	L.A	WW-29	860	50	110 117 122 131 132	135 127 130 132 133	175 177 182 177 180	TEX-SM
June 19, 2022	8:30	Fusion	L.A	WW-29	860	60	129 131 127 130 133	131 127 130 128 125	181 179 183 180 177	SM-SM
June 19, 2022	12:00	Fusion	B.A	WW-57	860	60	139 134 147 141 132	135 142 135 136 137	165 166 169 163 167	SM-SM
June 19, 2022	12:00	Fusion	B.A	WW-57	860	50	138 143 140 144 153	134 132 133 135 134	172 169 168 171 165	TEX-SM
June 19, 2022	12:00	Fusion	B.A	WW-57	860	40	149 156 154 161 152	152 147 155 146 149	171 176 172 170 169	TEX-TEX
June 19, 2022	12:00	Fusion	L.A	WW-57	860	60	145 146 149 149 147	132 136 140 141 147	158 156 12 154 157	SM-SM
June 19, 2022	12:00	Fusion	L.A	WW-29	860	50	143 153 149 146 146	142 151 148 146 142	141 159 161 158 152	TEX-SM
June 19, 2022	12:00	Fusion	L.A	WW-29	860	40	147 147 141 150 143	149 144 142 144 146	169 169 163 168 167	TEX-TEX

5.0 NON-DESTRUCTIVE TESTING

Table 3 summarizes the weekly non-destructive testing results.

Table 3: Non-Destructive Testing Results

Date Fused	Time (Fuse/Test)	Seam #	Fusion or Extrusion	Apparatus #	Tech	Pressure or Vacuum	Pass or Fail	Notes
No testing was conducted this week.								

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

Table 4: Destructive Testing Results

Date Fused	Time Fused	Tech	Apparatus	Location (UTM is +/- 4 m)	Sample ID	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
No testing was conducted this week.									

7.0 PHOTO LOG

Figure 1: Layfield's Laydown/Storage Area For The Liner

Figure 2: Improper Storage Of The Liner.

Figure 3: Liner Was Moved and Properly Stored on Dunnage.

Figure 4: North Berm Trench Where The Culvert Was Removed.

Figure 5: Southeast Section of HLF Subgrade Prepped and Covered in Bending Sand.

Figure 6: Ewing Excavating a Wet Area Found Above Lateral #1 E Near The South Perimeter Berm.

Figure 7: Water Flowing Out of The Uphill Sidewall of The Excavated Wet Area.

Figure 8: The Wet Area Excavation Tied Into Lateral #1 E and Filled With Rock Fill. Left Open Until June 17, 2022

Figure 9: Another Wet Area That Appeared Overnight Below Lateral #1 E (Below June 16, 2022 Wet Area)

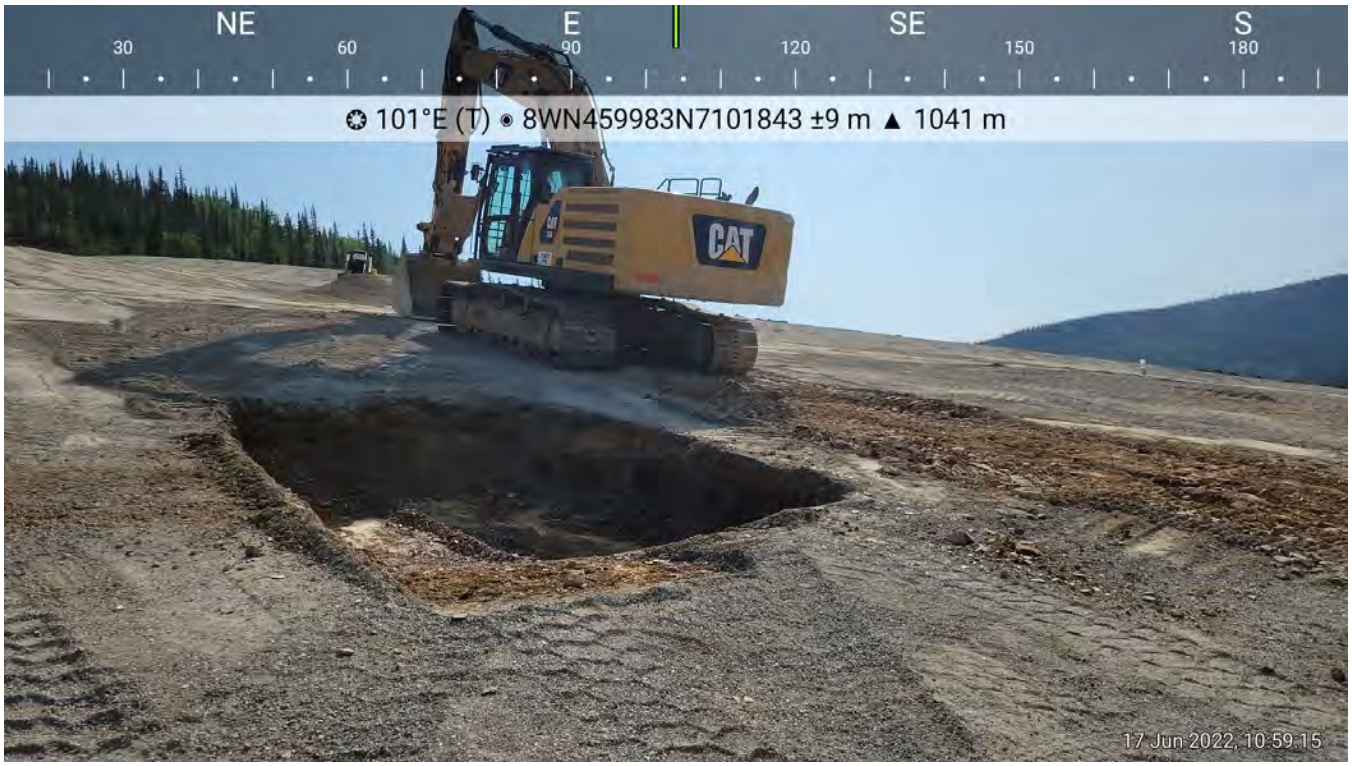

Figure 10: The Excavations Below Lateral #1 E to Remove the Wet Area

Figure 11: Approved HLF Subgrade

Figure 12: Layfield Starting Deployment on South Perimeter Berm.

Figure 13: GCL Placement.

Figure 14: First Panel (P1) of LLDPE Deployed.

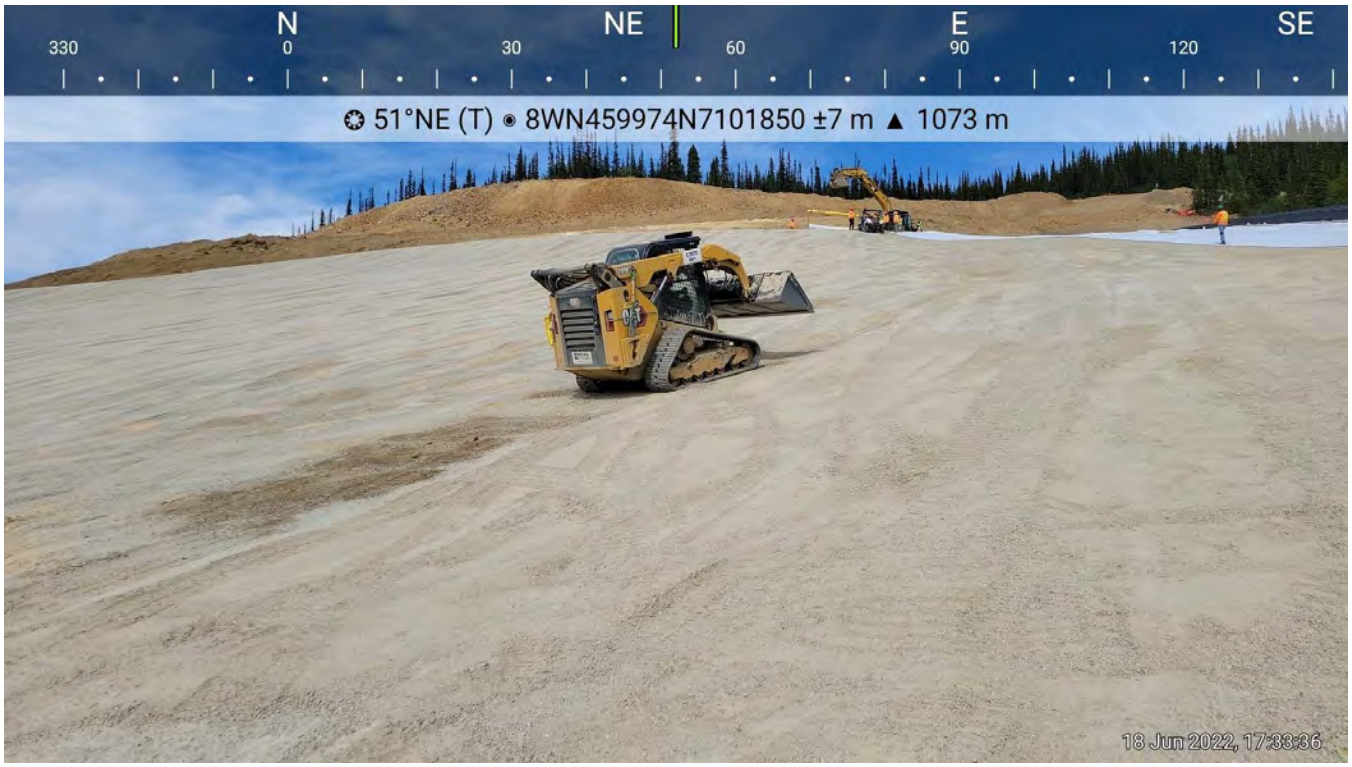

Figure 15: Ewing Adding Extra Bedding Sand Where Larger Rocks Have Been Uncovered by SxS.

Figure 16: P3/P4 Cross Seam Being Fusion Welded.

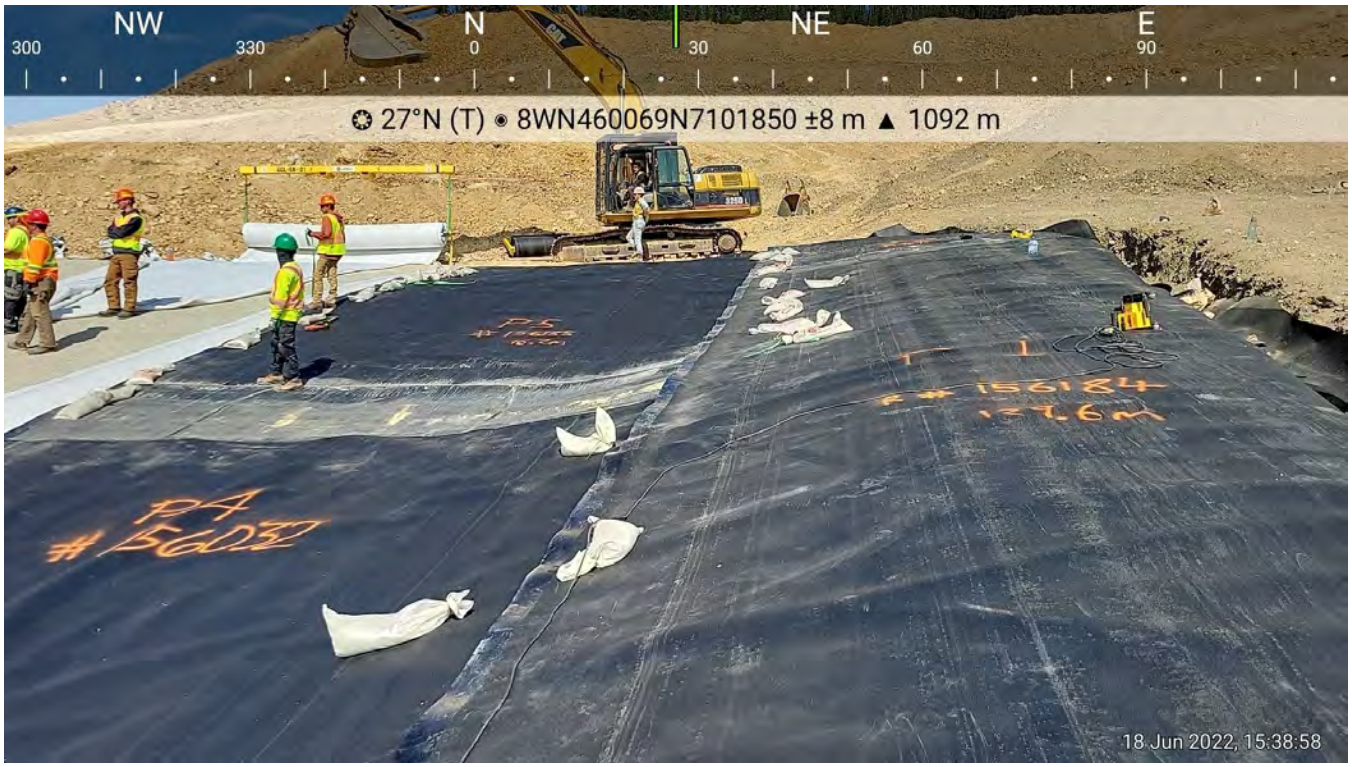

Figure 17: P1, P2, P4, and P5 Welded Together.

Figure 18: Large Area of GCL Deployed at the End of the Day. Left Overnight Uncovered.

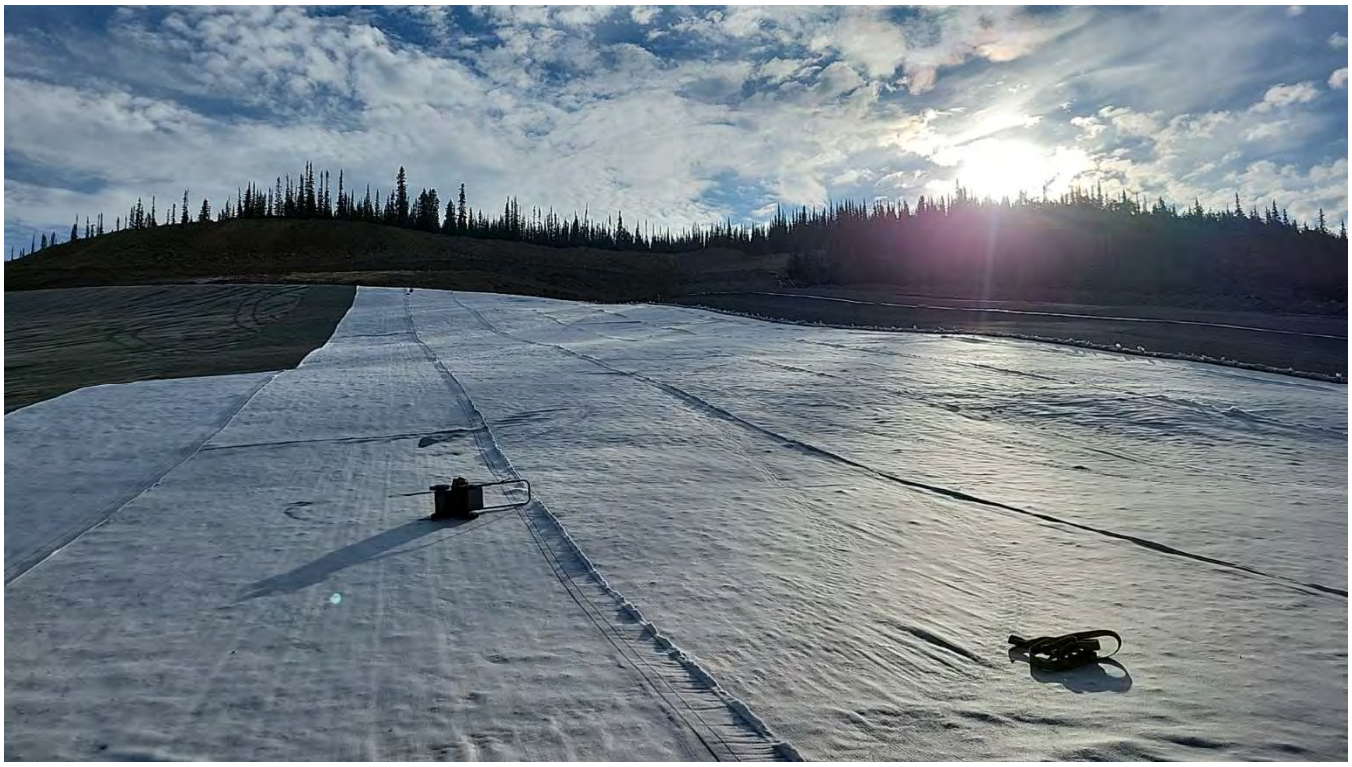

Figure 19: Pre-deployed GCL from June 18, 2022. Inspected and ready for LLDPE.

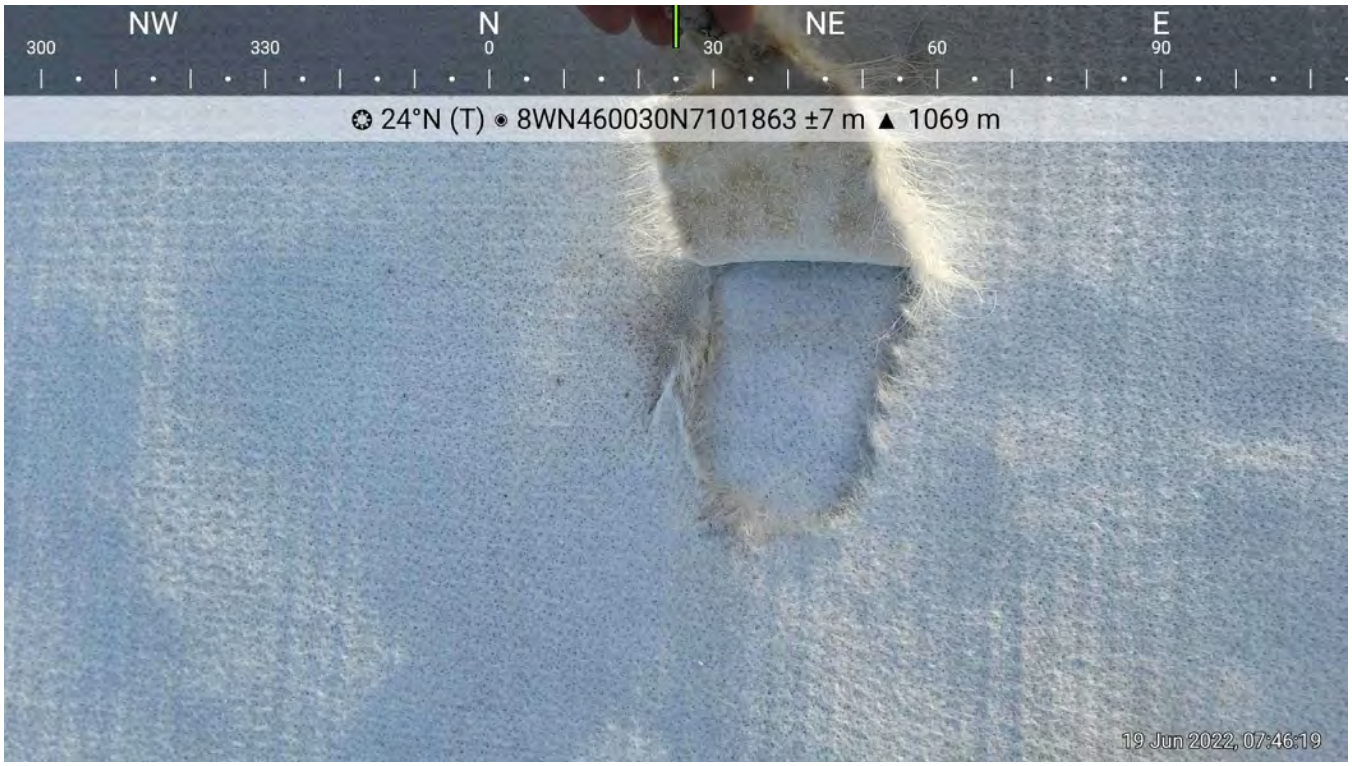

Figure 20: GCL damage due to handling. No patch needed.

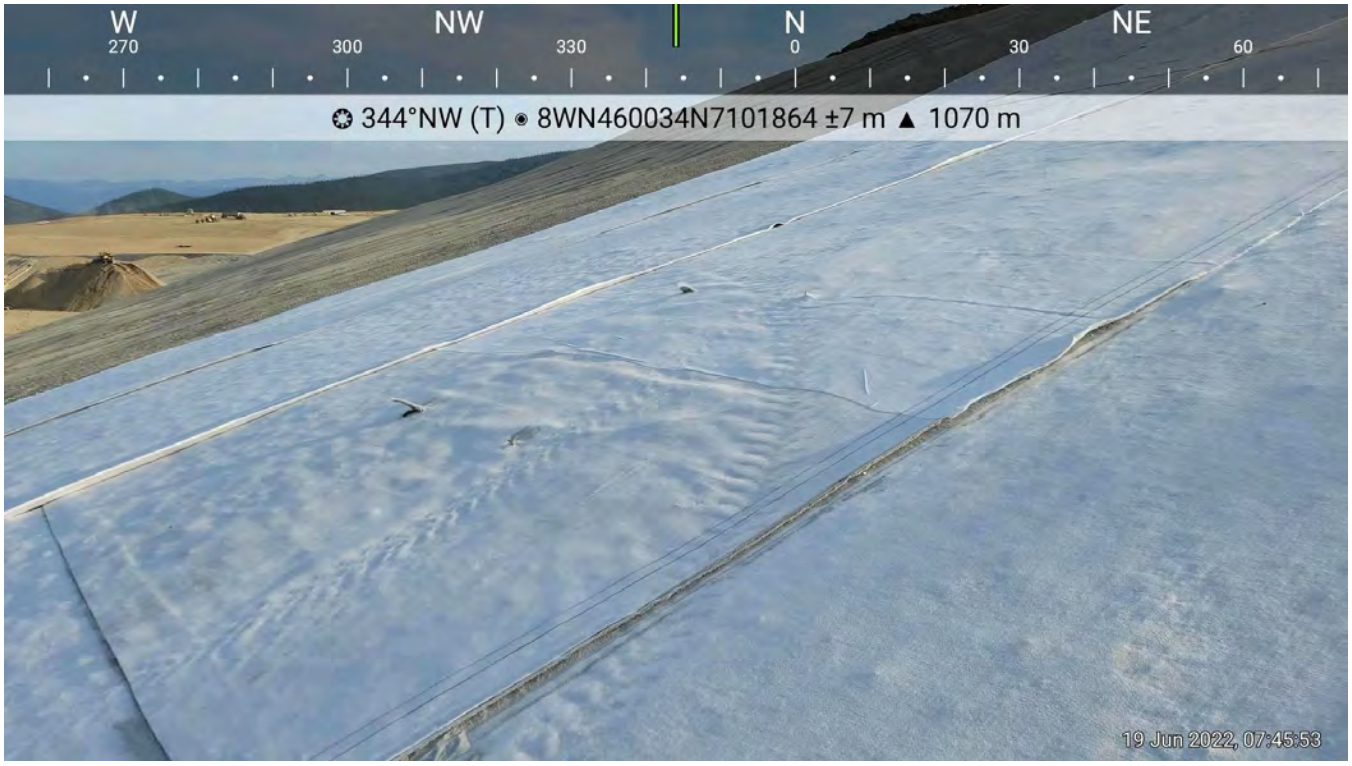

Figure 21: GCL Overlap Used Instead of Patching The Holes Appearing at the End of the Liner Rolls.

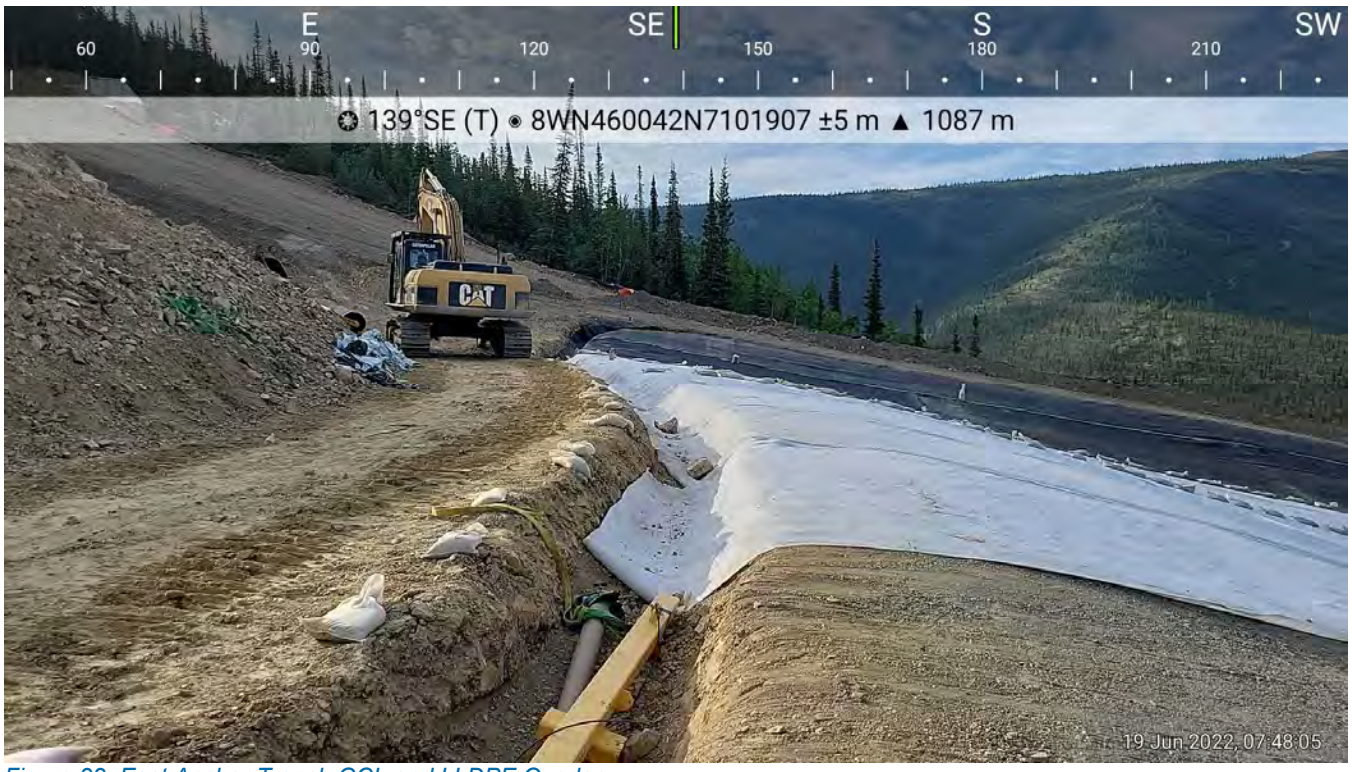

Figure 22: East Anchor Trench GCL and LLDPE Overlap.

Figure 23: Larger 50 mm to 75 mm Rock Requiring Removal.

Figure 24: Rock Removed and Patched.

Figure 25: Panel P6 – P7 Cross Seam.

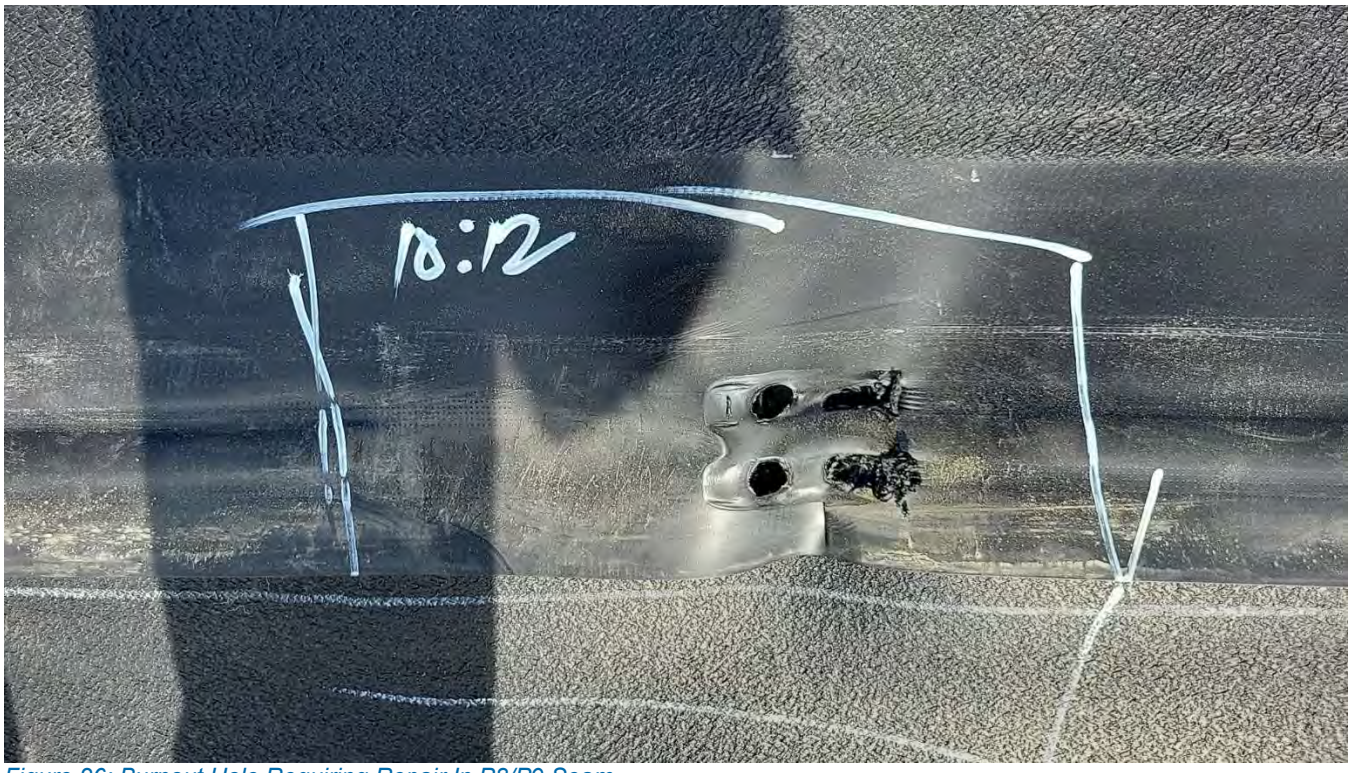

Figure 26: Burnout Hole Requiring Repair In P8/P9 Seam.

Figure 27: Repair Needed at P5/P7 Anchor Trench Seam.

Figure 28: Current Liner Deployed to Date. Panels P1 – P21. No GCL Left Uncovered Overnight.

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR USE

Project:	Eagle Gold Heap Leach Phase 2A	**Date:**	June 26, 2022
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Chad Messervey
Contact:	Cody Roberts	**Contractor's Email:**	Chad.Messervey@layfieldgroup.com
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Jacob Swartz
File:	704-ENG.WARC03235-23	**Status:**	Issued for USE

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 2A expansion (Phase 2A). Mr. Jacob Swartz, EIT, is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 2A, and Forte's representative is Clint Green.

Cody Roberts, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 2A.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 2A, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of June 20, 2022, to June 26, 2022.

2.0 DAILY REPORTS

2.1 Highlights

- Layfield started extrusion welding and QC destructive testing June 20, 2022.
  - All destructive tests to date have passed.
- Due to a backlog in QC results, and newer Layfield staff being trained, non-destructive test results will no longer be provided in the weekly reports. Instead, the extra time will be used to monitor the field work, and QC paperwork. Tetra Tech can provide the test results upon request.
- Panels P1 – P61 have undergone the final inspection and are ready to pass over to Victoria Gold.

Tetra Tech Canada Inc.
61 Wasson Place
Whitehorse, YT Y1A 0H7 CANADA
Tel 867.668.3068 Fax 867.668.4349

2.2 June 20, 2022

Weather: Cloudy with periods of rain, 14°C

- GCL (approximately 300 mm of material) left overnight from June 19 is slightly wet from overnight rain.
  - The GCL was not fully hydrated and deemed acceptable to leave by Tetra Tech.
- P5/P7 anchor seam repaired. The seams were not tested.
- Shutdown for rain 11:20 – 12:00.
- Layfield continued to lay GCL and LLDPE after the rain.
  - The liner was deployed in multiple wedge shape sections to correct for the change in slope direction.
    - Layfield should be able to lay full width panels now until another slope correction is needed.
  - Panels P22 – P31 were deployed.
    - All seams were fusion-welded before the end of the day.
- Layfield stopped work for the day at 16:00 due to heavy rain.
  - Approximately 1.5 m of GCL was left uncovered overnight (no full panels).
- Ewing continued to compact the northern section of the HLF subgrade.

2.3 June 21, 2022

- Weather: Partly cloudy with periods of rain, 14°C
- Chad Messervey, Layfield's project supervisor was not on site today. Raul oversaw today's work.
- Layfield deployed P32 – P39.
  - Stopped at 13:25 for an hour due to hail and rain.
    - After the storm passed, Layfield cleaned up, finished welding, and stopped work for the day at 15:30 due to unsafe wet conditions and a second storm cell heading towards the site.
  - All of the seams were fusion welded prior to leaving.
- The subgrade adjacent to the liner was washed out from the heavy rain.
  - Layfield raked it out, and Tetra Tech approved the repaired subgrade for liner placement.
- Layfield started non-destructive testing.
  - P17/P16, and P15/P17 did not pass as it would not hold any air. Layfield will check the ends of the liner and repair it as needed.
  - All other tests observed by Tetra Tech passed. Test results will be provided by Layfield at a later date.
- Layfield continued extrusion welding cross seams and repairs from the previous day's liner deployment.
- Ewing did not perform any subgrade work for Phase 2A.

2.3.1 June 22, 2022

- Weather: Sunny, 22°C
- Layfield deployed GCL and LLDPE all day.
  - Panels P40 – P52 were deployed.
    - All seams were fusion welded prior to the end of the day.
    - Panel P52 has some minor damage due to wind grabbing the panel and folding it.
- Two panels of GCL were left exposed overnight.
- Ewing placed material on the north perimeter berm in the morning.
  - Two lifts were placed, and both were compaction tested and passed by Tetra Tech.
  - The material had less rock content then previously used colluvium material. A control strip was conducted and the field proctor is 2,150 kg/m^3
  - Results will be shown and sent on a separate document.
- Minor tenting occurred at P46/P47 cross seam due to the liner shrinking.

2.3.2 June 23, 2022

- Weather: Sunny, cloudy, and windy after noon. 18°C
- GCL left overnight from June 22 was dry and in good shape for LLDPE.
- The next section of subgrade was marked off by Layfield.
  - The area was inspected by Tetra Tech and approved for liner deployment.
  - The area was good, but Layfield was informed that they will need to rake the areas where wheel ruts develop from the side by side.
- Layfield deployed P54 to P61
  - Due to injuries, new employees are being trained on fusion welders.
    - There are multiple spots that need repair on P52/P53 seam. (Figure 25 to 26)
    - Layfield was notified and extra training/supervision will be provided on areas that are more difficult to weld (creases, cross seams, and steeper sections).
- Layfield was shutdown at 14:15 for a safety meeting in regard to multiple incidents occurring over the past few days.
- Work did not continue after the safety meeting due to high winds.
  - Layfield and Ewing cleaned up the liner and moved sandbags the rest of the day.
  - Ewing continued digging east anchor trench.
- Ewing hauled away rip rap stockpiles that were located in the northeast bowl.

- Ewing placed material on the north perimeter berm in the morning.
  - One lift was placed, tested, and passed by Tetra Tech.
- QC paperwork is delayed due to the QC personnel having to fix the field level data recording.
  - The majority of the testing has been overseen by Tetra Tech.
    - All the procedures and results are good, but the data recording needs to be adjusted and updated.

2.3.3 June 24, 2022

- Weather: partly cloudy, 19°C
- No liner was deployed today.
- Layfield spent the day repairing and finishing the detail work for all liner that has been deployed to date.
  - Panels P1 to P61 have had all repairs and required welds completed.
    - All seams have undergone the non-destructive air testing.
      - P56/P57 entire vertical seam extrusion welded due to the seam failing the air test. (Figure 29)
      - P35/P36 entire cross seam extrusion welded due to the seam failing the air test. (Figure 30)
      - P16/P17 entire cross seam extrusion welded due to the seam failing the air test. (Figure 31)
    - There have been no failed destructive tests to date.
    - Vacuum testing has started, and Layfield will continue to test all repairs and welds.
  - All the west panels have been fusion welded to the Phase 1B Liner.
    - Layfield extended panel P52 by extrusion welding a patch to the end of the panel in order to get proper coverage on Phase 1B.
- The anchor trench has been filled in to secure the liner up to panel P52.
  - The south perimeter berm was fully backfilled.
- Panel P52/P53 seam from June 22 was repaired and it passed both destructive and non-destructive testing.
- Tetra Tech notified Layfield that there are some areas at the west end of the panels where there are minor bumps extending up to 1.5 m in length.
  - Layfield was not concerned and said sometimes the GCL bunches as the liner moves. No further action was taken. Pictures were not taken as it was not visible.
- Ewing continued hauling and placing sand on the north section of the HLF.

2.3.4 June 25, 2022

- Weather: partly cloudy morning, sunny in the afternoon, 20°C
- All vacuum testing has been completed on panels P1 – P61.

  - All of the failing test areas were repaired.
- Layfield deployed approximately 11,500 m^2 of LLDPE and GCL combined.
  - Panels P62 – P78 were deployed.
  - All panels were fusion welded.
- Ewing continued to place bedding sand on the north section of the HLF subgrade.
- Ewing continued various work on Phase 2B of the HLF.

2.3.5 June 26, 2022

- Layfield deployed approximately 12,700m^2 of LLDPE and GCL combined.
  - Panels P79-P93 were deployed.
- Layfield and Tetra Tech conducted a final inspection walk off on Panels P1-P61.
  - All seams have been welded and all deficiencies have been repaired.
  - The P1-P61 section was handed over to Victoria Gold.
- Ewing placed bedding sand on the next area of the subgrade to cover up the areas that got washed out from rain.
  - Ewing continued to place bedding sand on the north section of the HLF subgrade.
- Ewing continued various work on Phase 2B of the HLF.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate and where 45-degree joints are used; panel length is based from the center of the panel. Where unsymmetrical and/or wedge shape panels are used to make corrections, the longest side length is provided.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
June 20, 2022	373918 373836 373885 373778 373913 373913 373569 373843 373926 373921	156115 156173 156147	P22 (17 m) P23 (32 m) P24 (16 m) P26 (46.4 m) P27 (19 m) P28 (40 m) P29 (41.6 m) P30 (78 m) P31 (17 m)
June 21, 2022	373783 373572 373652 373649 373787 373792 373636 373613 373867 373786 373906 373651 373631	156038 156148 156199 156025	P32 (95 m) P33 (23.5m) P34 (71.5 m) P35 (48.4m) P36 (43 m) P37 (77.9 m) P38 (12 m) P39 (90.2 m)
June 22, 2022	373886 373889 373637 373875 373841 373627 373611 373898 373810 373619 373648 373644 373818 373890 373839	156123 156033 156015 156025 156037 156029 156034	P40 (90.5 m) P41 (32.4 m) P42 (57.6 m) P43 (43.5 m) P44 (24 m) P45 (88.8 m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
	373819 373868 373846 373628 373617 373626 373817 373888 373910 373642		P46 (9.3 m) P47 (16.6 m) P48 (59.1 m) P49 (61.9 m) P50 (20.5 m) P51 (84.7 m) P52 (72.8 m)
June 23, 2022	373781 374571 373893 373911 373914 373891 374874 374564 373879 373815 373887	156171 156036 156023 156170	P54 (51.3 m) P55 (79.4 m) P56 (5 m) P57 (80 m) P58 (42.6 m) P59 (5.6 m) P60 (5.6 m) P61 (81 m)
June 24, 2022	No Material Deployed.		
June 25, 2022	373667 374575 373605 374570 369305 369569 373607 373659 373599 373838 373901 373675 373793 373671 373773 373595 373594 373873 373597 369397 373664 373630 373844 373816 373602 373650 373772	156710 156031 156134 156183 156135 156193 156161 156133	P62 (81.7 m) P63 (32 m) P64 (49 m) P65 (79 m) P66 (12.4 m) P67 (76 m) P68 (26.3 m) P69 (57 m) P70 (62.5 m) P71 (22 m) P72 (85 m) P73 (14 m) P74 (72.7 m) P75 (50 m) P76 (37 m) P77 (85 m) P78 (2.0 m)
June 26, 2022	373666 373625 373656 373610 373614 373931 373669 373632 368563 373919 373864 373643 373866 373935 373670 373609 373862 373925 373623 373641 373639 373596 373924 373871 373645 373673 373923 373917 373657	156133 156186 156024 156169 156142 156187 156167 156196	P79 (90 m) P80 (31 m) P81 (60 m) P82 (63 m) P83 (28.3 m) P84 (94 m) P85 (94 m) P86 (27.6 m) P87 (69.7 m) P88 (52.5 m) P89 (44 m) P90 (77 m) P91 (20.4 m) P92 (98 m) P93 (100 m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results that Tetra Tech observed. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
June 21, 2022	8:30	Extrusion	E.D	44	260	260	N/A	148 157 149 142 140	180 186 189 171 178	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
June 21, 2022	10:00	Fusion	R.M	23	460	55	134 135 142 138 141	153 140 150 145 143	168 169 171 167 170	SM-SM
June 22, 2022	11:30	Fusion	RM	22	460	40	148 142 134 141 143	139 133 134 150 142	156 162 144 151 148	TEX-TEX
June 23, 2022	11:00	Fusion	RM	57	460	40	143 141 132 140 144	136 140 132 141 142	161 161 160 159 162	TEX-TEX
June 24, 2022	8:00	Extrusion	EA	40	260	260	N/A	106 111 113 120 117	138 179 151 152 140	N/A
June 24, 2022	8:00	Extrusion	EB	41	260	260	N/A	144 154 156 128	156 175 169 149 167	N/A
June 24, 2022	12:00	Extrusion	EB	41	260	260	N/A	125 124 133 136 127	155 155 157 161 162	N/A
June 25, 2022	17:40	Extrusion	EB	44	260	260	N/A	127 131 123 130 128	150 155 160 153 153	N/A
June 26, 2022	8:30	Extrusion	EB	41	260	260	N/A	139 140 142 145 143	180 180 182 178 169	N/A
June 26, 2022	12:30	Fusion	BF	23	460	50	121 130 127 140 121	129 141 132 129 122	162 174 166 138 155	TEX-TEX

Date	Time	Fusion or Extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
June 26, 2022	16:30	Fusion	BA	57	460	60	132 129 126 141 133	132 133 128 133 129	137 162 162 170 161	SM-SM

5.0 NON-DESTRUCTIVE TESTING

Non-destructive tests are not presented in this weekly report due to QC being backlogged.

Future reports will not present non-destructive testing either. Instead, Tetra Tech will spend the extra time to supervise more of the fieldwork, non-destructive testing, and review QC paperwork. The non-destructive test results can be provided upon request.

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

EEOS: East End of Seam

WEOS: West End of Seam

Table 3: Destructive Testing Results

Date Tested	Location (UTM is +/- 4 m)	Sample ID	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
June 20, 2022	P7-P5 VERTICAL EEOS	D1	BA	57	125 153 154 136 162	144 142 142 145 151	179 175 188 179 179	PASS
June 20, 2022	P2-P5 VERTICAL EEOS	D2	BA	57	138 144 153 140 156	153 152 144 148 132	176 169 180 169 183	PASS
June 20, 2022	P7-P9 VERTICAL EEOS	D3	LA	29	160 157 141 150 159	134 152 136 129 125	187 175 189 186 187	PASS

Date Tested	Location (UTM is +/- 4 m)	Sample ID	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
June 20, 2022	P11-P13 VERTICAL EEOS	D4	LA	29	133 166 154 147 143	106 104 107 107 109	183 187 176 186 188	PASS
June 20, 2022	P13-P15 VERTICAL EEOS	D5	BA	57	166 142 126 142 156	151 151 154 170 161	206 203 200 205 204	PASS
June 20, 2022	P9-P11 VERTICAL EEOS	D6	BA	57	164 161 138 154 147	135 137 137 143 144	180 182 184 171 182	PASS
June 20, 2022	P17-P15 VERTICAL EEOS	D7	L.A	29	141 172 165 161 165	145 131 153 143 151	181 174 169 171 172	PASS
June 22, 2022	P30-P28 VERTICAL WEOS	D8	L.A	29	152 148 111 138 119	110 106 103 109 107	127 159 167 155 158	PASS
June 22, 2022	P18-P19 VERTICAL WEOS	D9	L.A	29	149 156 110 148 157	149 136 122 150 144	148 172 136 166 172	PASS
June 22, 2022	P23-P22 VERTICAL WEOS	D10	L.A	29	155 120 161 148 123	148 136 128 118 127	163 169 158 139 174	PASS
June 22, 2022	P32-P30 VERTICAL WEOS	D11	B.F	29	134 134 123 135 131	129 105 107 119 140	150 155 155 147 138	PASS
June 22, 2022	P33-P32 VERTICAL WEOS	D12	R.M	58	124 142 123 170 140	138 137 144 140 142	160 123 150 146 142	PASS

Date Tested	Location (UTM is +/- 4 m)	Sample ID	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
June 22, 2022	P20-P18 VERTICAL WEOS	D13	B.A	57	136 139 117 139 132	143 147 107 144 141	163 175 161 177 175	PASS
June 22, 2022	P22-P20 VERTICAL WEOS	D14	B.A	57	116 145 154 137 130	112 139 125 136 127	175 138 158 150 127	PASS
June 22, 2022	P26-P24 VERTICAL WEOS	D15	L.A	29	135 158 116 122 127	131 134 133 141 127	127 150 139 159 144	PASS
June 22, 2022	P33-P35 VERTICAL WEOS	D16	RM	23	124 133 118 136 128	131 140 123 144 139	149 162 155 123 139	PASS
June 23, 2022	P51-P49 VERTICAL WEOS	D17	RM	22	131 138 148 138 124	131 133 112 147 141	146 156 127 154 132	PASS
June 23, 2022	P49-P46 VERTICAL WEOS	D18	BF	23	146 141 123 146 120	144 138 127 158 114	160 166 165 133 150	PASS
June 23, 2022	P45-P46 VERTICAL WEOS	D19	RM	22	140 143 123 145 137	130 134 101 151 137	165 162 165 168 166	PASS
June 23, 2022	P43-P45 VERTICAL WEOS	D20	BF	23	111 135 115 138 122	114 117 116 120 126	130 156 159 166 153	PASS
June 23, 2022	P41-P43 VERTICAL WEOS	D21	RM	22	113 123 113 103 110	136 121 104 101 153	160 190 155 153 157	PASS

Date Tested	Location (UTM is +/- 4 m)	Sample ID	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
June 23, 2022	P37-P39 VERTICAL WEOS	D22	RM	23	115 133 136 138 120	102 132 111 135 107	152 151 155 162 157	PASS
June 23, 2022	P39-P40 VERTICAL WEOS	D23	RM	22	107 128 105 136 102	137 121 125 125 126	160 138 161 168 168	PASS
June 23, 2022	P40-P41 VERTICAL WEOS	D24	BF	23	155 137 140 158 148	125 132 127 130 141	142 164 110 150 161	PASS
June 23, 2022	P37-P35 VERTICAL WEOS	D25	BF	29	105 125 114 118 130	127 108 131 122 116	126 154 129 165 162	PASS
June 23, 2022	P52-P51 VERTICAL WEOS	D26	RM	22	126 144 141 153 149	128 129 161 152 140	172 168 159 141 149	PASS
June 24, 2022	P53-P55 VERTICAL WEOS	D27	BA	57	119 146 127 137 115	102 141 144 121 145	177 180 171 175 129	PASS
June 24, 2022	P53-P52 VERTICAL WEOS	D28	RM	22	126 143 127 144 137	141 129 166 154 150	130 178 148 135 179	PASS
June 24, 2022	P57-P58 VERTICAL WEOS	D29	BA	57	126 150 134 157 106	151 140 111 148 153	182 128 155 137 166	PASS
June 24, 2022	P58-P60 VERTICAL WEOS	D30	RM	22	129 113 118 145 113	109 142 126 132 136	172 177 163 129 134	PASS

Date Tested	Location (UTM is +/- 4 m)	Sample ID	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
June 26, 2022	P62-P63 VERTICAL WEOS	D31	BA	57	103 119 105 101 106	115 109 135 122 134	137 125 149 167 165	PASS
June 26, 2022	P65-P67 VERTICAL WEOS	D32	BF	23	119 128 138 120 137	109 143 147 142 110	144 168 148 151 156	PASS
June 26, 2022	P67-P68 VERTICAL WEOS	D33	BA	57	126 135 140 116 125	120 128 119 134 117	120 161 131 161 134	PASS
June 26, 2022	P68-P70 VERTICAL WEOS	D34	BF	23	144 131 121 150 127	133 140 144 109 140	163 166 129 165 153	PASS
June 26, 2022	P70-P72 VERTICAL WEOS	D35	RM	22	125 132 116 118 127	148 135 158 128 151	123 170 171 173 167	PASS
June 26, 2022	P72-P73 VERTICAL WEOS	D36	RM	22	138 165 124 120 116	145 146 135 140 126	171 179 150 169 154	PASS
June 26, 2022	P73-P75 VERTICAL WEOS	D37	BA	57	125 145 149 148 123	145 143 116 147 119	168 137 166 174 167	PASS
June 26, 2022	P75-P77 VERTICAL WEOS	D38	RM	22	141 130 125 133 136	150 133 111 149 117	156 130 151 146 142	PASS

7.0 PHOTO LOG

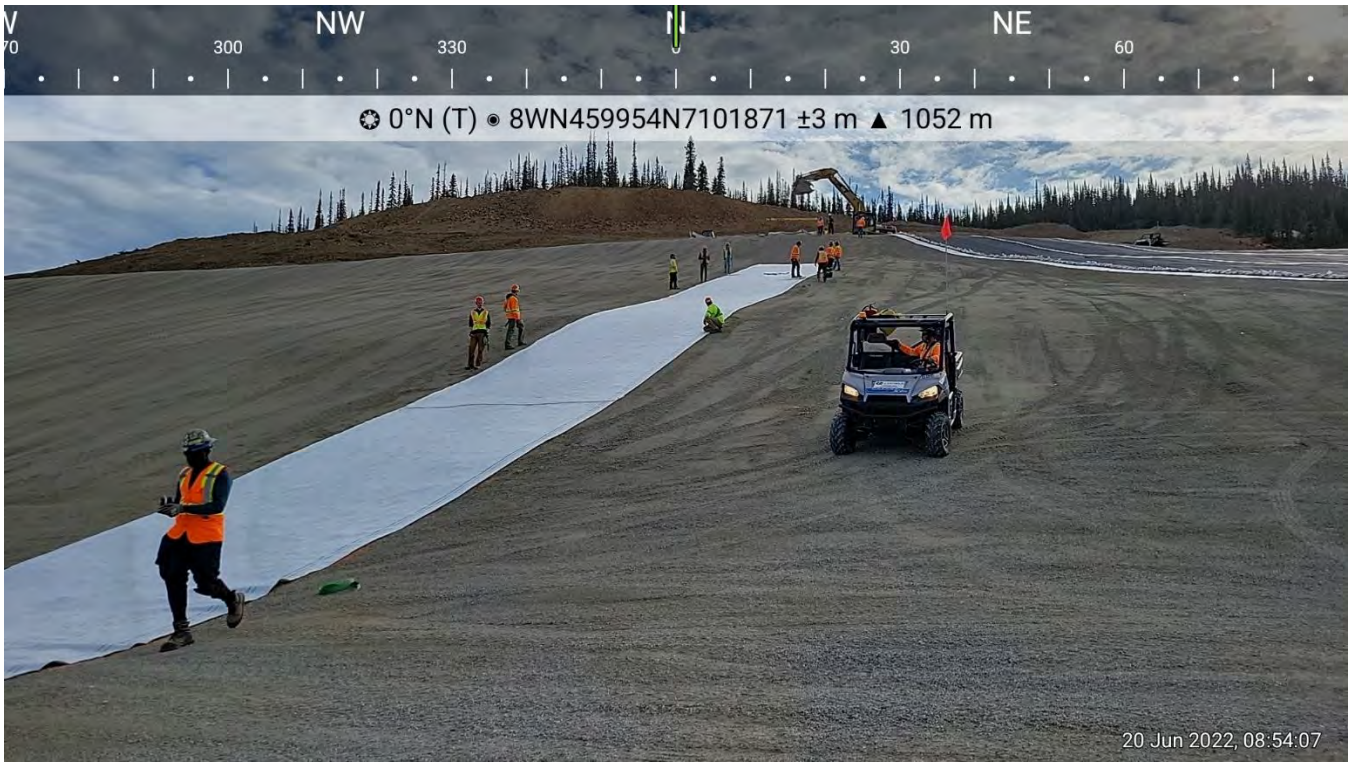

Figure 1: Layfield Laying GCL for the Corner Correction.

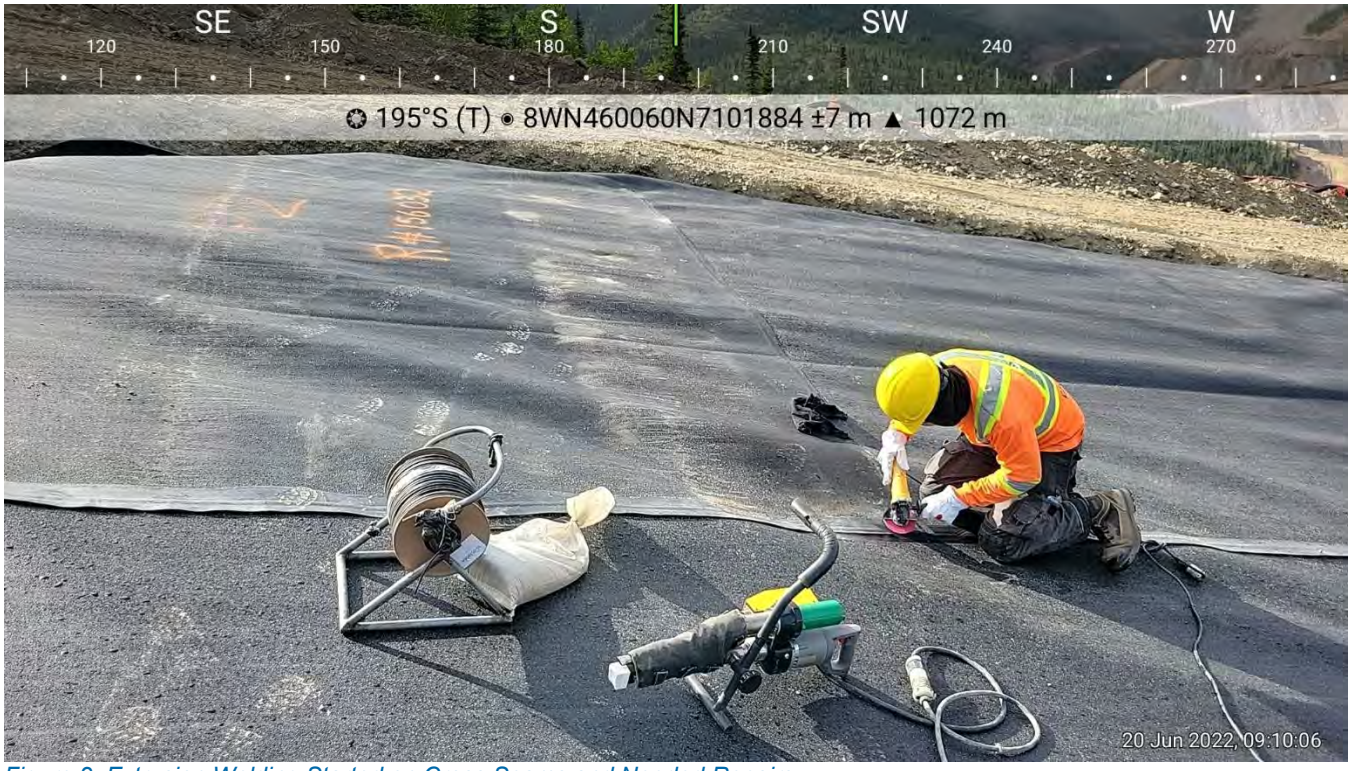

Figure 2: Extrusion Welding Started on Cross Seams and Needed Repairs.

Figure 3: Destructive Testing Samples Taken from P7/P5 and P7/P9.

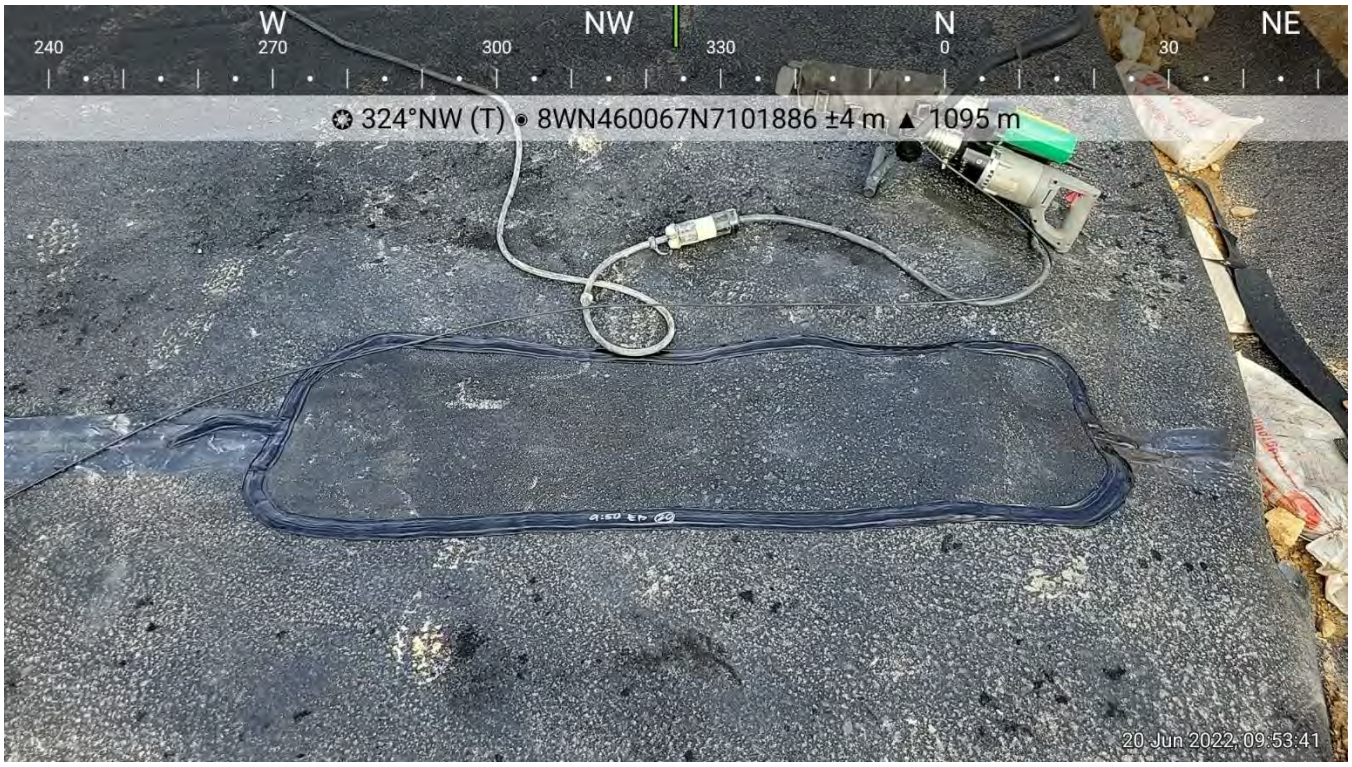

Figure 4: Patch Made for Destructive Sample.

Figure 5: GCL After Shutdown Due to Rain. GCL Was Not Hydrated.

Figure 6: GCL/Liner Placed June 20, 2022, and Left Overnight.

Figure 7: P30/P31 Cross Seam.

Figure 8: Liner Corrections to Account for Change in Slope Direction.

Figure 9: P5/P7 Anchor Trench Damage from June 19, 2022, Repaired. Not Tested.

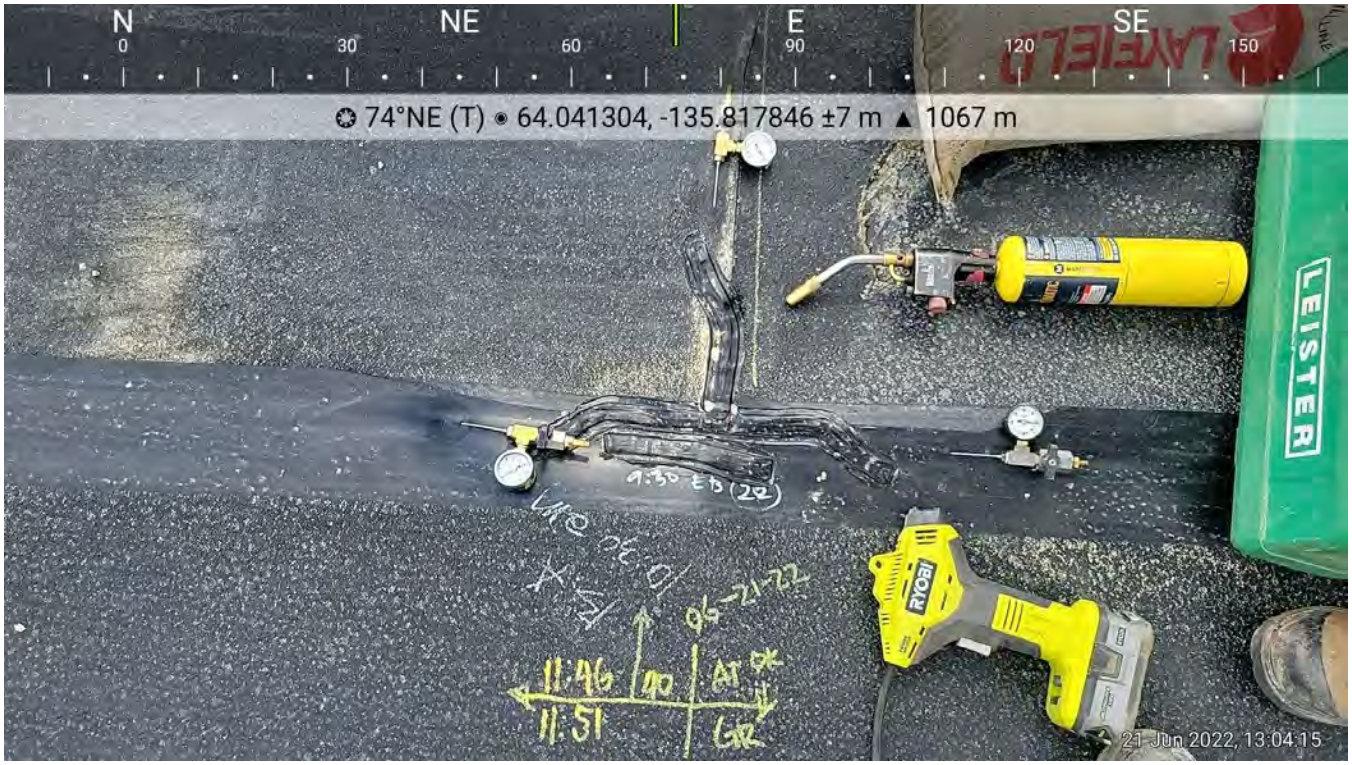

Figure 10: Non-Destructive Testing Observed at 13A. All Seams Passed.

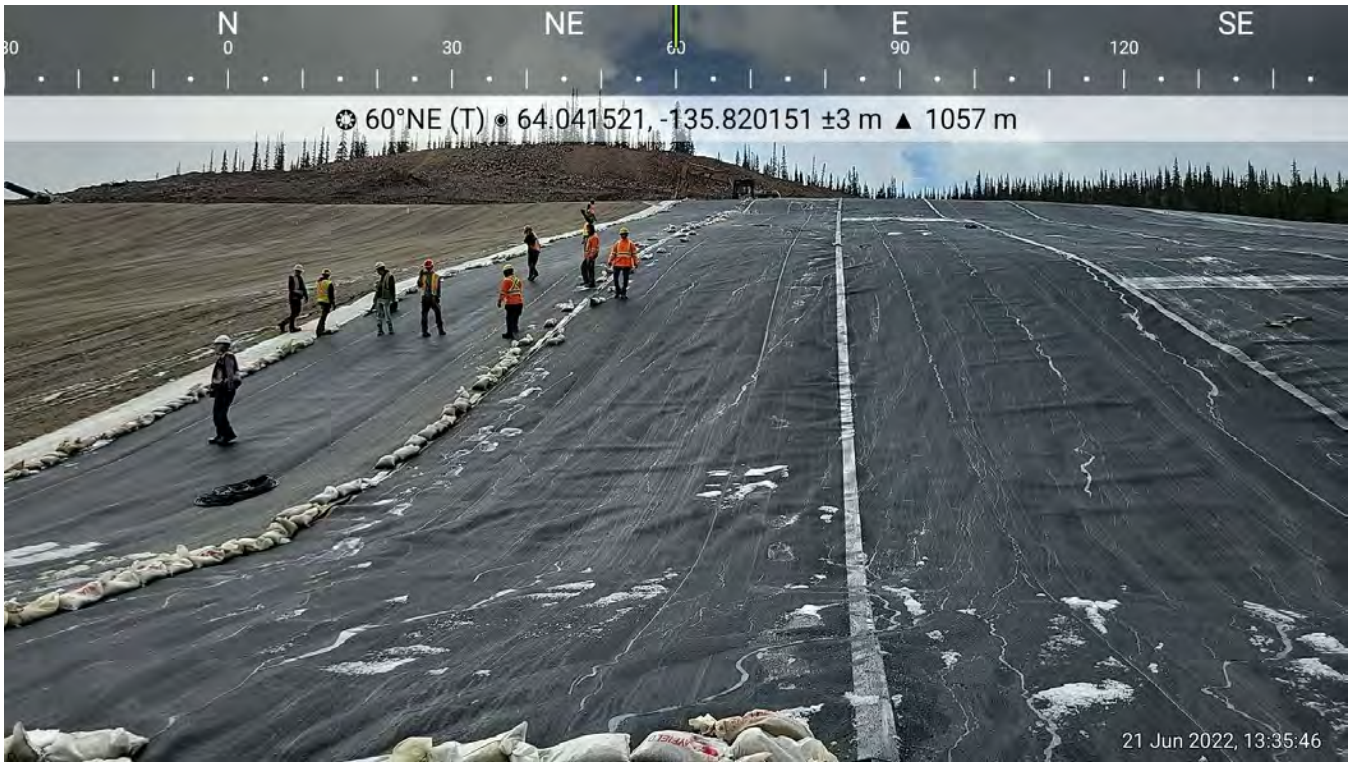

Figure 11: Hail Accumulated on Liner from a Passing Storm.

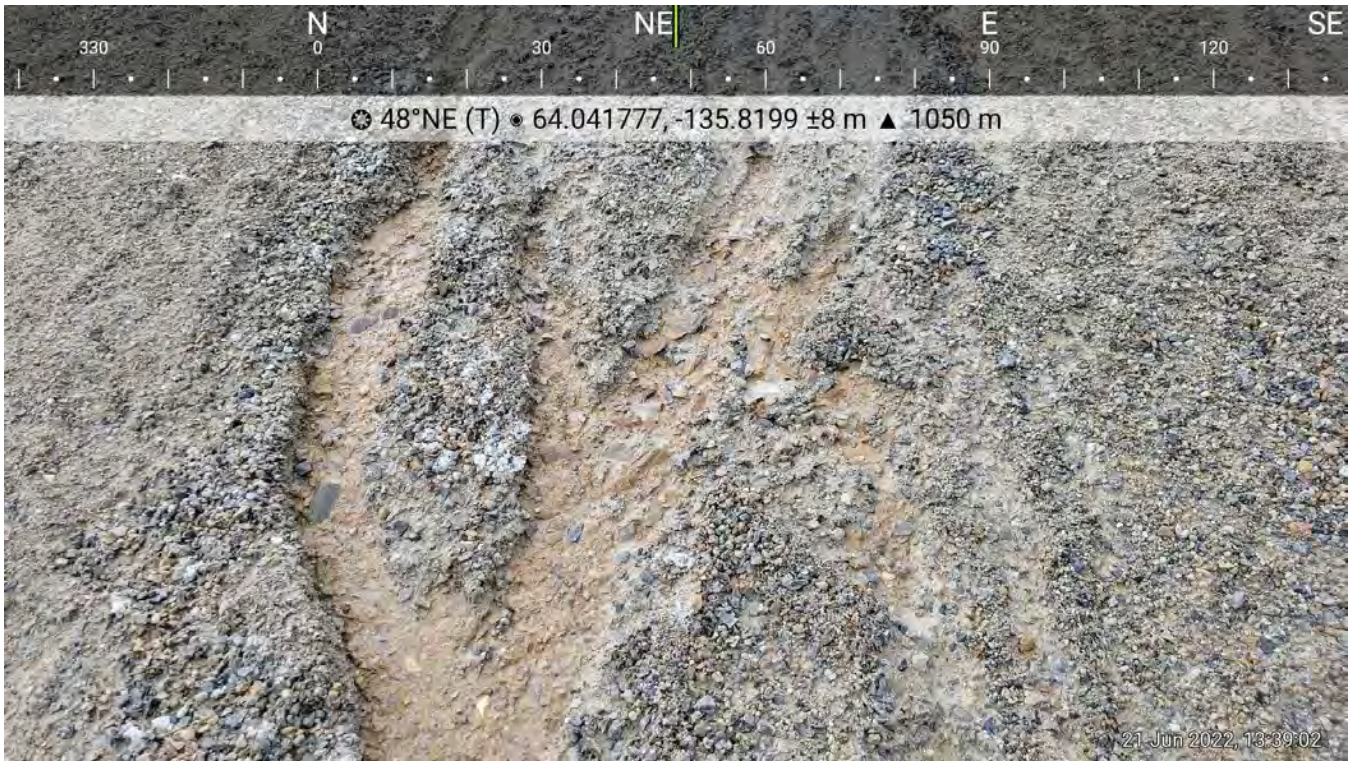

Figure 12: Washed Out Subgrade from Storm.

Figure 13: Washed Out Subgrade from Storm.

Figure 14: The Fixed Subgrade Where the Wash Outs Occurred.

Figure 15: Ewing Adding Material to the North Perimeter Berm.

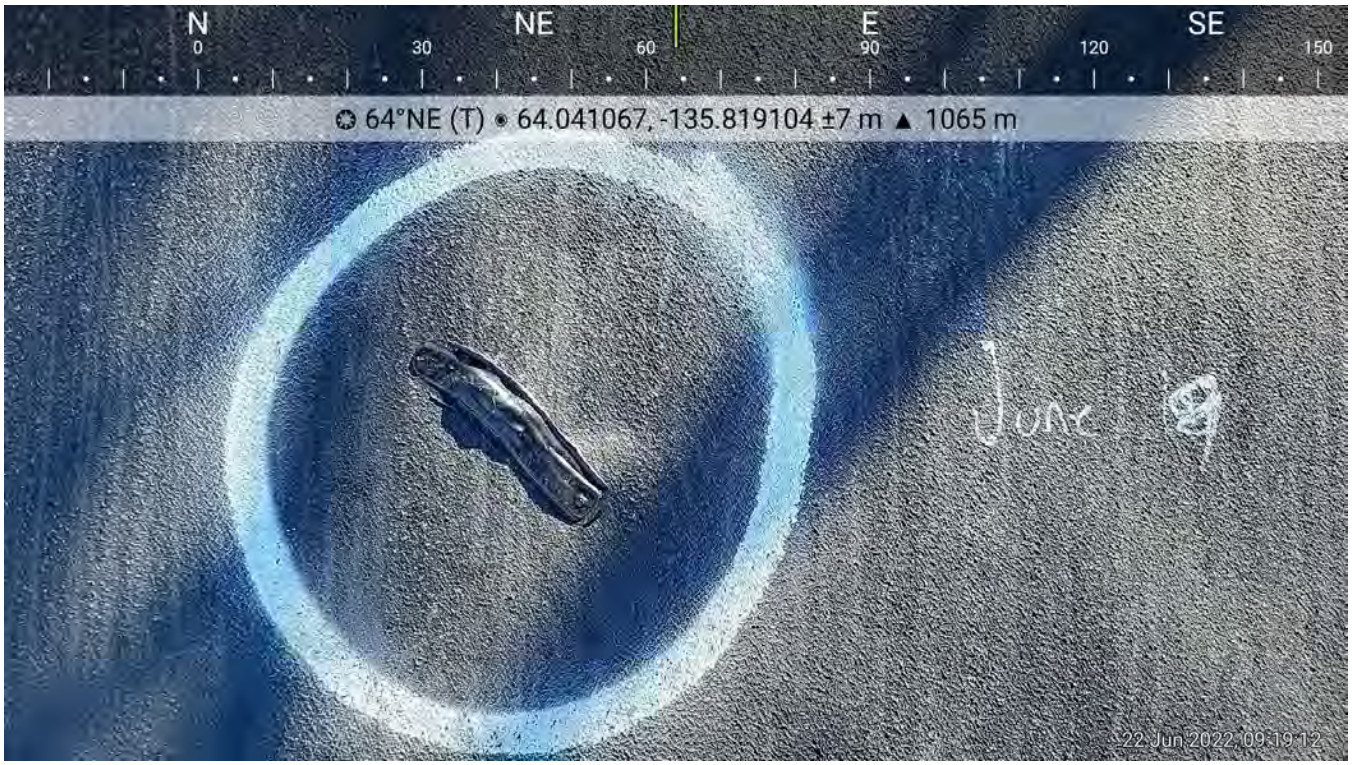

Figure 16: Extrusion Repair from June 19 Damage where Material was Pinched.

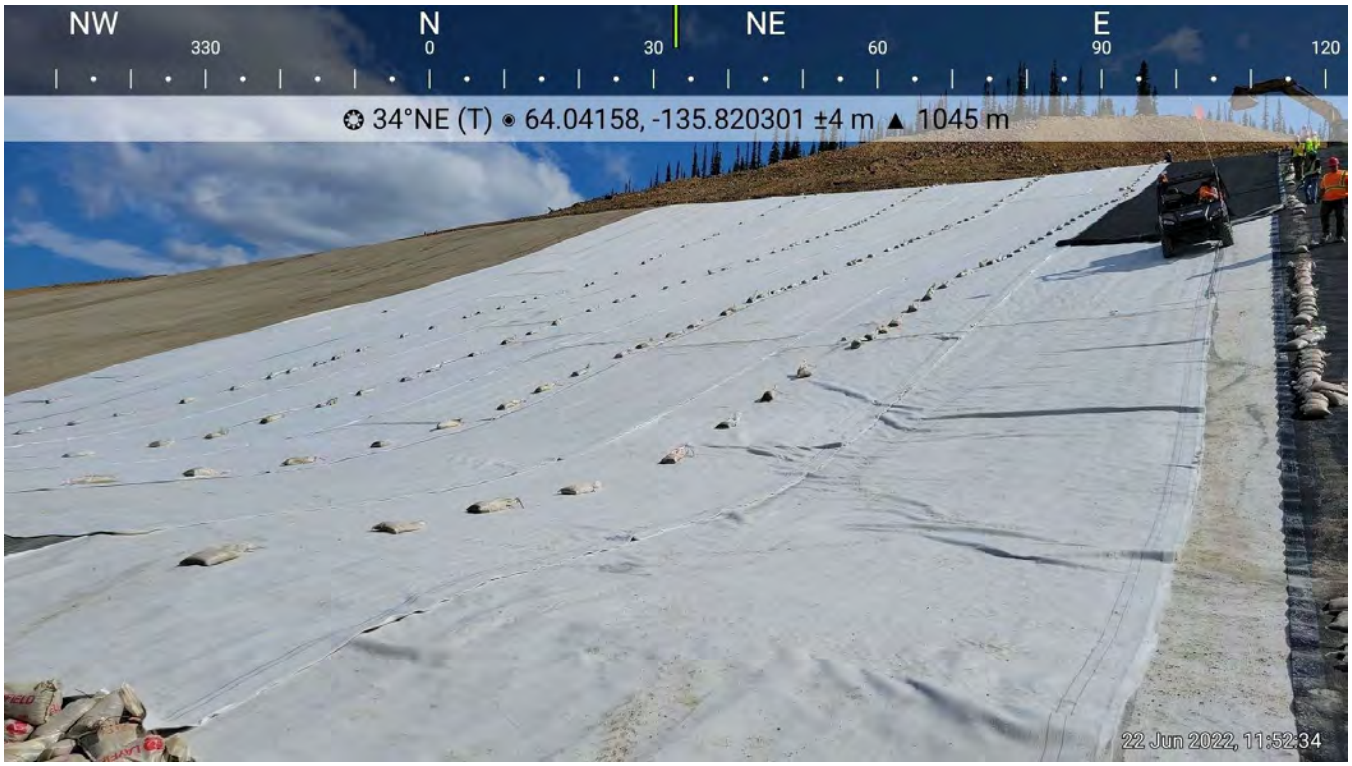

Figure 17: June 22, 2022, GCL Laid Out and Inspected.

Figure 18: June 22, 2022, Section of LLDPE Deployed.

Figure 19: Site Overview of Progress to Date up to June 22, 2022.

Figure 20: New Section of Anchor Trench on East Perimeter Berm. Accepted Subgrade is to the Right.

Figure 21: Next Section of Accepted Subgrade.

Figure 22: Next Section of Accepted Subgrade.

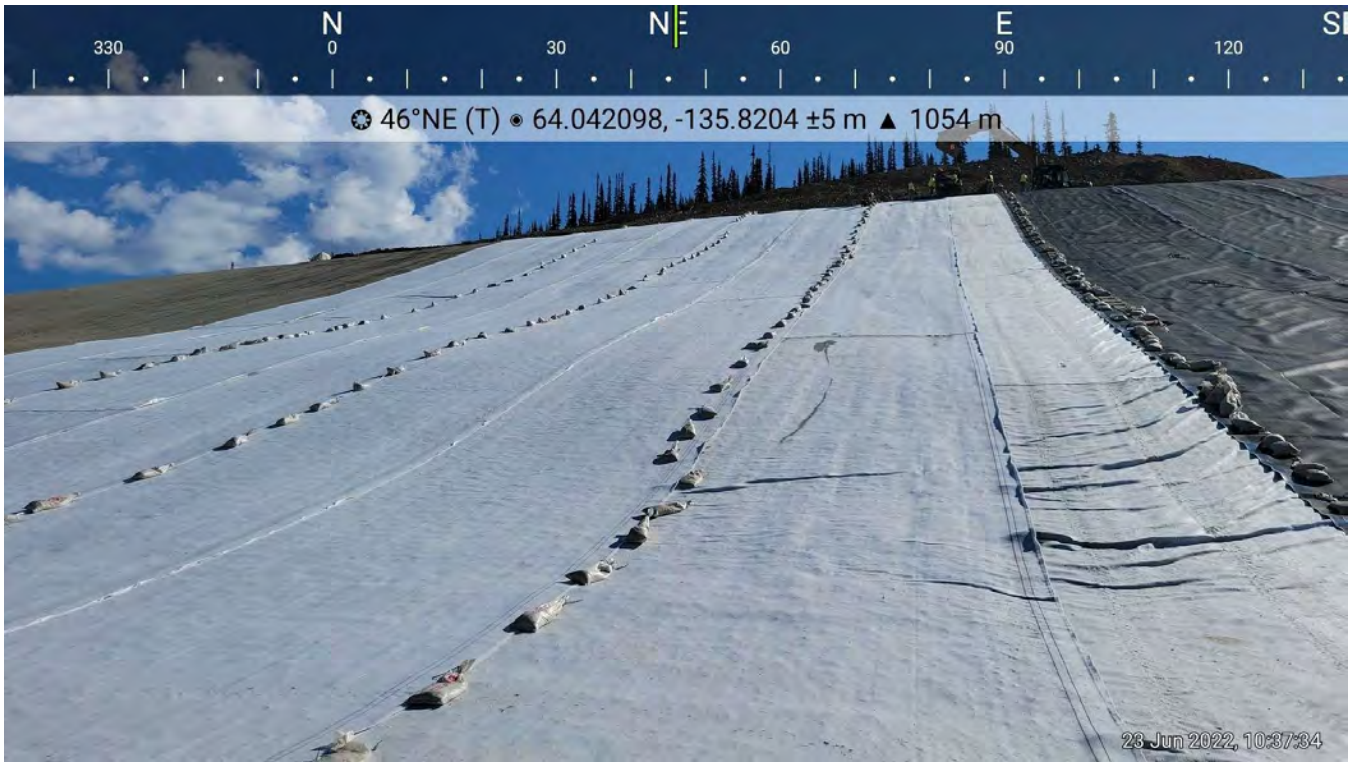

Figure 23: GCL Deployed July 23, 2022.

Figure 24: LLDPE Deployed June 23, 2022.

Figure 25: Panel P52/P53 Fusion Weld Needing Repair.

Figure 26: Panel P52/P53 Fusion Weld Needing Repair.

Figure 27: Panel P52/P53 Fusion Weld Needing Repair.

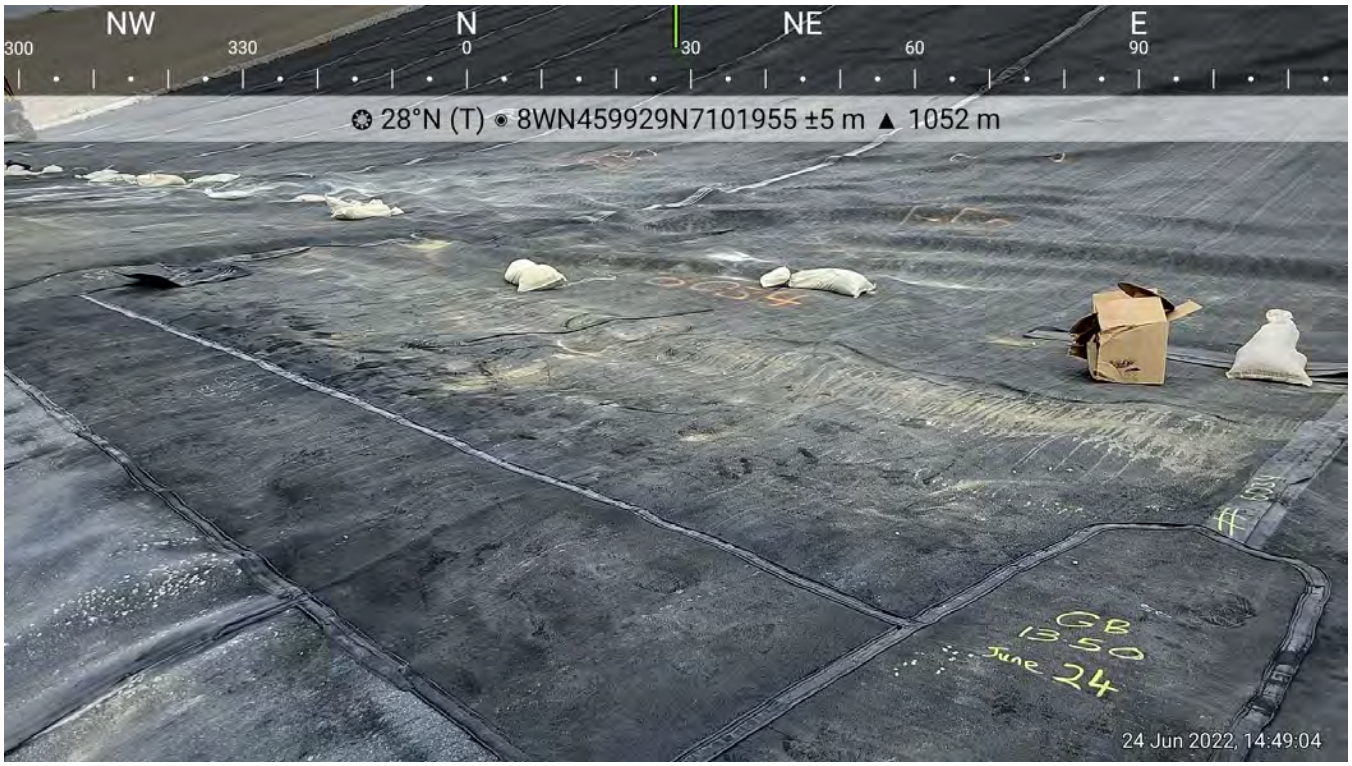

Figure 28: Panel P52 Extension Patch to Ensure Proper Overlap on to Phase 1B.

Figure 29: Panel P56/P57 Entire Vertical Seam Extrusion Welded.

Figure 30: Panel P35/P36 Entire Cross Seam Extrusion Welded.

Figure 31: Panel P16/P17 Entire Cross Seam Extrusion Welded.

Figure 32: East Anchor Trench Backfilled up to P52.

Figure 33: East Anchor Trench Backfilled up to P52.

Figure 34: Entire South Anchor Trench Backfilled.

Figure 35: Layfield Extrusion Welding Phase 2A/1B Connection (WEOS).

Figure 36: Vacuum Box Testing Phase 2A/1B Extrusion Weld.

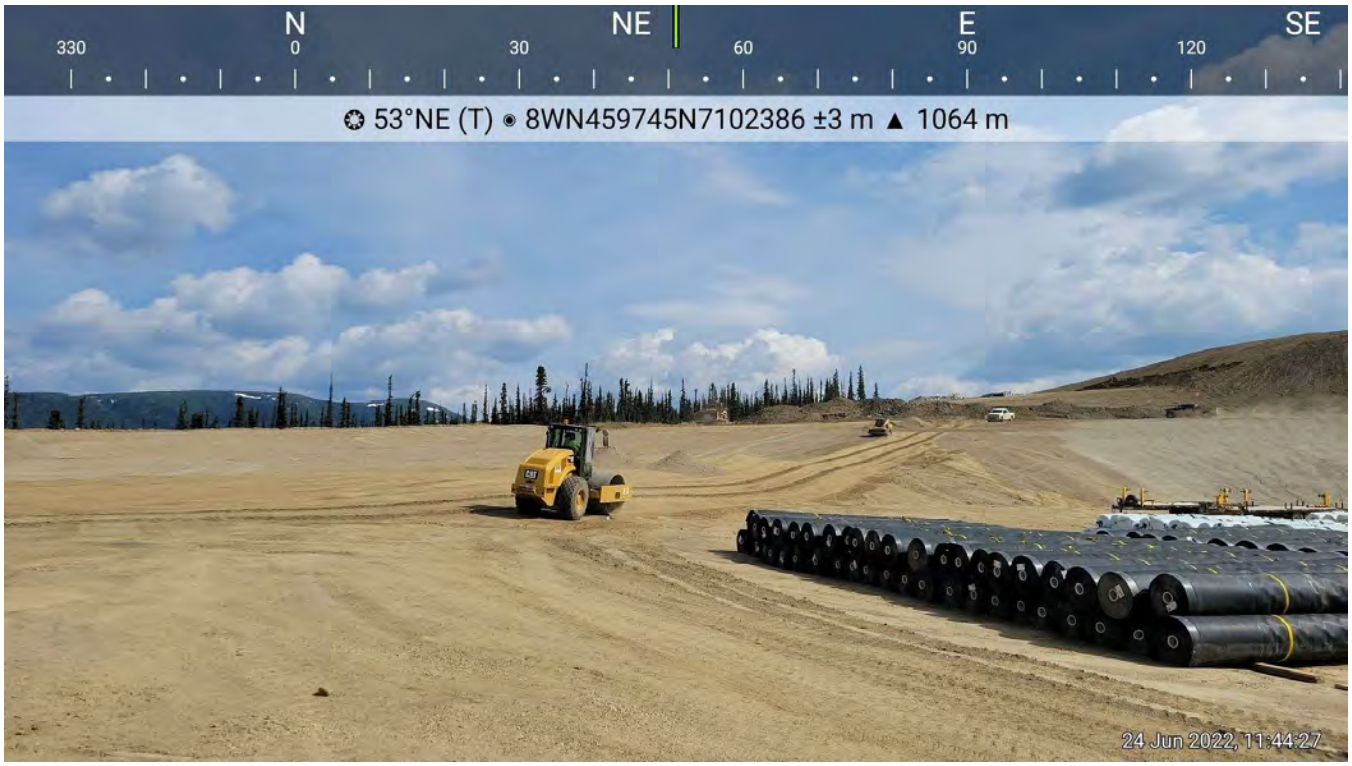

Figure 37: Ewing Continuing Subgrade Prep on the North Bowl Section.

Figure 38: Liner Progress to Date up to June 24, 2022.

Figure 39: Vacuum Testing Extruded T-Seam.

Figure 40: GCL Deployed June 25, 2022

Figure 41: Liner Deployed June 25, 2022

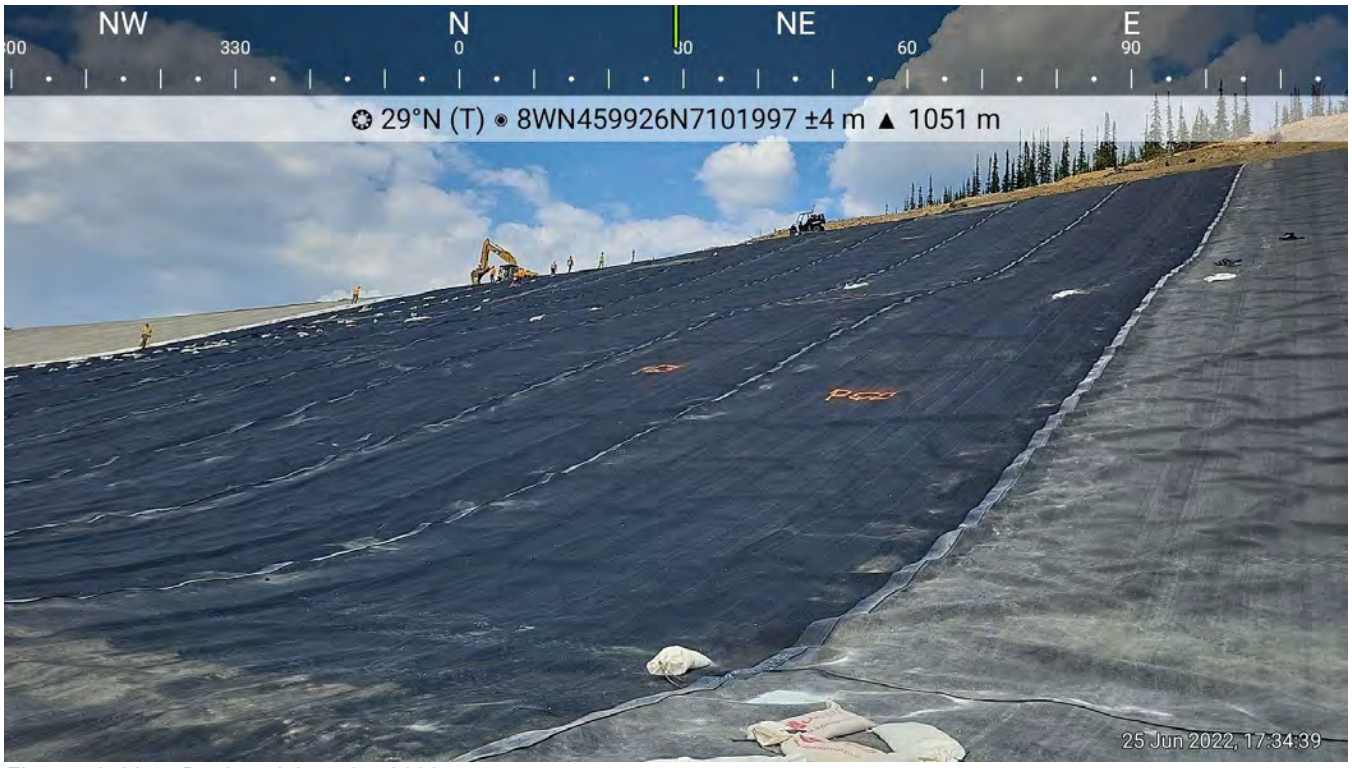

Figure 42: Liner Deployed June 25, 2022

Figure 43: GCL Deployed June 26, 2022.

Figure 44: LLDPE Deployed June 26, 2022.

Figure 45: P85 Damage Needing Repairs.

Figure 46: Ewing Touching Up Subgrade Prior to Liner Deployment.

TETRA TECH

WEEKLY FIELD REPORT

ISSUED FOR REVIEW

Project:	Eagle Gold Heap Leach Phase 2A	**Date:**	July 3, 2022
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Chad Messervey
Contact:	Cody Roberts	**Contractor's Email:**	Chad.Messervey@layfieldgroup.com
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Josh McKenzie
File:	704-ENG.WARC03235-23	**Status:**	Issued for REVIEW

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 2A expansion (Phase 2A). Mr. Josh McKenzie is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 2A, and Forte's representative is Clint Green.

Cody Roberts, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 2A.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 2A, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of June 27, 2022, to July 3, 2022.

2.0 DAILY REPORTS

2.1 June 27, 2022

- Layfield deployed 12,920 m^2 of combined GCL and LLDPE.
  - Panels P94-P109 were deployed.
  - P102/P100 vertical seam has a short overlap.
    - Layfield extruded the section where overlap was short.
  - Multiple repairs are required on panels due to shipping defects and poor handling.
    - P102 required multiple repairs near P101/P100 cross seam.

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        - Panel P95/P96 cross seam was patched, and P95 required multiple small extrusion repairs due to cuts in the liner. (Figure 5).
    - All seams were fusion welded.
    - All cross seams underwent extrusion welding at the T-intersections.
- Ewing touched up the subgrade by placing sand in front of Layfield deploying.

2.2 June 28, 2022

- Layfield did not deploy any material.
- Layfield spent the day performing repairs and detail work.
    - Panels section P62-P109 were all tied into Phase 1B.
        - The entire seam was extrusion welded, and vacuum tested.
        - Long vertical cuts extending approximately 1 to 3 m were made on the west end of Panels P102 and P80 to remove large wrinkles from the liner.
            - Each cut was extrusion welded.
    - Panel P109 had multiple factory defects (pinches in the liner) going down the center of the panel. (Figure 11 and 12).
- Layfield moved the LLDPE to the north Phase 1B access road.
- Ewing backfilled the east anchor trench up to Panel P107.
    - Ewing extended the trench further north up to the Nuway Road.

2.3 June 29, 2022

- Layfield deployed GCL and LLDPE.
    - Panels P110 – P120 were deployed.
    - Multiple panels of GCL required extensions on the west end to ensure coverage on to Phase 1B.
    - Panels P112/P113 and P110/P111 cross seams are less than 5 m apart.
- The defects on Panel P109 were ground down and extruded.
- Layfield stopped work at 15:30 due to a thunderstorm.
- It was brought up by JDS that the Phase 2A area was overbuilt by approximately 13,000 m^2.
    - The liner inventory was checked, and there is not enough material to cover the entire area.
    - JDS got the survey on-site to stake out an area of approximately 13,000 m^2 that will be removed from the Phase 2A deployment and added on to the Phase 2B deployment.
        - The area that is being removed is located in the northwest corner of Phase 2A.

2.4 June 30, 2022

- Panels P122-P135 were deployed.
- 12,538 m^2 of combined GCL and LLDPE liner deployed.
- Tetra Tech performed a subgrade inspection for the Phase 2B north perimeter berm.
  - The organics were stripped to expose the colluvium subgrade, and three shallow testpits were excavated to confirm that all organic material was removed. Testpit three was extended to 2 m to find the extent of the bedrock in the area.
  - 1: 1m depth at 459,893 E 7,102,565 N
  - 2: 1m depth at 459,908 E 7,102,571 N
  - 3: 2m depth at 459,919 E 7,102,577 N
    - Competent rock was observed at 2.0 m (refusal)
    - There was a rock outcrop northeast of the third testpit.
    - All of the test pits were backfilled with rock to the original surface elevation.

2.5 July 1, 2022

- Panels P136-P144 deployed.
- 8,699 m^2 of combined GCL and LLDPE liner deployed.
- Six compaction tests, using a nuclear densometer, performed on the northern berm of Phase 2A liner.
  - After performing a control test strip, determined the maximum dry density to be 2,150 kg/m^3, due to finer berm material being used.
  - All six tests met minimum compaction requirements.

2.6 July 2, 2022

- Panels P145-P160 deployed.
- 11,080 m^2 of combined GCL and LLDPE liner deployed.
- Wildfires in the surrounding area contributing to poor air quality and haze.
- The work area encountered a large dust devil that came within 100 m north of deployed liner. Layfield and Ewing had to move sandbags and work trucks onto liner to prevent wind from getting under the LLDPE. (Figure 20)
- Ewing dug a trench running north to south along the western edge of the Phase 2A liner deployment area, reducing the original liner area due to overestimates of proposed GCL/LLDPE liner. Layfield only brought in enough material to cover a specified area and did not have enough to extend to the northern berm.
- Extensions of GCL were added on the southwest end of Phase 2A to ensure proper overlap onto the liner from Phase 1B.

- Four nuclear densometer tests were completed on the upper northern berm.
  - A control strip was done (test #3 and #4) on the two northern most samples where finer material was being used. Maximum dry density was determined to be 2,100 kg/m^3.

2.7 July 3, 2022

- Panel P161-P173 deployed.
- Layfield installed approximately 10,000 m^2 of combined GCL and LLDPE.
- Tetra Tech identified defects on the northern end of P161 (Figure 27).
- The first cross-seam destruct was completed on P157/P156.
- A fold in P161 caused a burnout during fusion welding; Layfield corrected it by cutting out excess liner and extrusion welding a patch over top.
- Tetra Tech observed non-destructive testing on P145/P146/P143 vertical fusion weld and cross seam fusion weld. The initial vertical seam test failed (>5 PSI lost in 5 minutes) and was determined to leak out of the pressure needle injection site. Layfield sealed the first injection site and tried again further down the vertical seam. The second vacuum test passed.
- Tetra Tech completed one nuclear densometer test on the upper northern berm.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate and where 45-degree joints are used; panel length is based from the center of the panel. Where unsymmetrical and/or wedge shape panels are used to make corrections, the longest side length is provided.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
June 27, 2022	373676 373829 373882 373869 373658 373828 373622 373603 373633 373615 373606 373771 373654 373616 373601 373892 373621 373900 374039 373770 373629 373938 373668 373665 373842 373620 373672 373881 374045	156196 156178 156179 156028 156028 156194 156150 156022 156133 156013	P94 (22.8 m) P95 (77.7 m) P96 (44.1 m) P97 (58.4 m) P98 (61.7 m) P99 (40.4 m) P100 (83 m) P101 (22.5 m) P102 (101 m) P103 (4 m) P104 (105 m) P105 (106 m) P106 (15 m) P107 (94 m) P108 (27 m) P109 (84 m)
June 28, 2022	No Material Deployed.		
June 29, 2022	374043 373876 737870 373872 374081 373835 373899 373635 373640 373663 373598 373840 373604 374065 374120 373600 373655 373612 373647 373653 374075 374038 373638	156013 156197 156119 156120 156200 156132 156139	P110 (38 m) P111 (75.5 m) P112 (37 m) P113 (78.4 m) P114 (44 m) P115 (74.4 m) P116 (46.7 m) P117 (72 m) P118 (48.8 m) P119 (74 m) P120 (42 m) P121 (81.5 m)
June 30, 2022	374068 373966 374070	156139 156122 156137	P122 (34.5m) P123 (90m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
	373696 374066 374063 374119 374041 373679 373752 373833 374046 374062 374044 373908 374069 374112 373080(?) 374040 374067 374087 374042 373618 374088 374076 374064 374078 373834 374047	156110 156130 156210 156125 156176 156131	P124 (121m) P125(5m) P126 (22.7m) P127 (106m) P128 (12m) P129 (120m) P130 (122m) P132 (108m) P133 (27m) P134 (94m) P135 (47.5m)
July 01, 2022	374126 373992 374021 374094 374034 374089 374037 374016 374123 374036 374080 374125 374114 374015 374031 374102 374035 374029 374008 374028	156131 156124 156017 156109 156016	P136(74m) P137(74m) P138(46.2m) P139(109m) P140(11.2m) P141(121m) P142(33.5m) P143(89m) P144(86m)
July 02, 2022	374104 373993 373751 373722 373733 374025 373758 374019 373753 37372? 374096 373728 373677 373800 373979 374014 374108 373980 373824 373827 373826 373858 374072 373973 373769 373727	156041 156046 156167 156136 156053 156043	P145(32.4m) P146(94.5m) P147(28.8m) P148(99.8m) P149(10m) P150(21.7m) P151(82.2m) P152(37m) P153(71.5m) P154(43.3m) P155(58.7) P156(5.4m) P157(62.7m) P158(36.8m) P159(81.8m) P160(21.8m)
July 03, 2022	373801 373849 374005 373994 374566 374573 373803 373847 374004 373795 373721 373990 373896 374057 373845 373798 373811 373852 373832 373846 373859 373796 373690 373851 374009	156053 156026 156154 156044 156165 156152 156156	P161(100m) P162(4.7m) P163(103m) P164(15.6m) P165(90.3m) P166 (32.6) P167(74m) P168(49.5m) P169(56.5m) P170(67.6m) P171(37.4m) P172(84.2) P173(19.3m)

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results that Tetra Tech observed. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
June 27, 2022	10:30	Extrusion	EB	41	260	260	N/A	117 121 114 135 116	168 155 162 169 171	N/A
June 27, 2022	12:00	Fusion	BA	57	460	450	132 132 129 143 128	136 133 129 149 139	155 150 162 162 153	TEX-TEX
June 27, 2022	14:00	Fusion	BA	57	460	450	138 128 132 144 136	150 147 124 125 130	146 146 143 147 127	TEX-TEX
June 29, 2022	8:30	Extrusion	EB	41	490	490	N/A	131 129 142 147 147	179 182 160 190 185	N/A
June 29, 2022	11:30	Fusion	RM	23	460	600	126 127 124 120 125	121 120 125 122 124	146 157 143 153 155	SM-SM
June 29, 2022	14:00	Extrusion	BH	41	260	260	N/A	148 155 151 144 159	174 176 173 180 171	N/A
June 30., 2022	11:30	Fusion	BA	57	460	600	129 128 133 133 129	123 125 132 132 137	147 146 144 154 146	SM-SM
June 30 ,2022	11:30	Fusion	RM	23	460	450	147 145 137 149 142	139 142 137 149 142	152 162 165 169 163	TEX-TEX

Date	Time	Fusion or extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
June 30, 2022	13:00	Extrusion	E.A	41	260	260	N/A	118 121 122 123 116	143 136 137 140 153	N/A
June 30, 2022	15:30	Fusion	LA	22	460	600	118 139 132 160 141	116 125 130 133 134	134 163 154 157 154	SM-SM
June 30, 2022	15:30	Fusion	BA	57	460	450	157 154 144 149 150	153 154 134 151 147	163 179 175 167 170	TEX-TEX
June 30, 2022	15:30	Fusion	RM	23	460	600	129 153 143 129 142	117 127 124 129 127	150 157 149 154 155	SM-SM
July 01, 2022	08:30	Extrusion	EP	41	260	260	N/A	149 145 145 158 133	173 181 172 181 174	N/A
July 01, 2022	12:00	Fusion	BA	57	460	450	121 127 130 145 133	149 154 134 147 134	160 159 127 171 160	TEX-TEX
July 01, 2022	12:00	Fusion	LA	22	460	600	122 123 127 135 132	125 129 131 128 122	141 159 148 151 136	SM-SM
July 01, 2022	12:00	Fusion	BA	57	460	600	120 124 117 133 137	117 133 135 137 132	128 148 135 154 145	SM-SM
July 01, 2022	12:00	Fusion	LA	22	460	450	135 143 136 142 132	137 140 112 127 118	160 173 163 189 170	TEX-TEX

Date	Time	Fusion or extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
July 01 2022	12:00	Fusion	RM	23	460	600	124 128 142 145 142	117 126 125 136 127	167 170 174 164 172	SM-SM
July 01 2022	12:00	Fusion	RM	23	460	450	135 150 153 154 154	142 140 145 142 157	160 173 170 175 165	TEX-TEX
July 01, 2022	14:30	Extrusion	EB	41	260	480	N/A	135 138 130 134 125	160 159 162 155 156	N/A
July 01, 2022	16:40	Extrusion	GB	40	260	480	N/A	123 135 135 140 127	145 149 154 164 159	N/A
July 01, 2022	16:45	Extrusion	EA	31	260	480	N/A	136 132 127 141 126	145 149 154 164 159	N/A
July 02, 2022	12:00	Fusion	LA	22	460	600	123 126 122 127 114	115 117 122 119 121	150 139 169 154 144	SM-SM
July 02, 2022	12:00	Fusion	LA	22	460	600	148 132 147 157 127	130 153 137 149 148	164 157 163 172 163	TEX-TEX
July 02, 2022	12:00	Fusion	BA	57	460	600	139 140 129 138 124	139 144 132 143 124	143 143 139 151 143	SM-SM
July 02, 2022	12:00	Fusion	BA	57	460	450	139 142 142 153 143	146 142 135 150 143	162 159 153 169 172	TEX-TEX

Date	Time	Fusion or extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
July 02, 2022	12:00	Fusion	RM	23	460	600	120 147 130 122 123	120 133 126 130 119	152 154 151 162 136	SM-SM
July 02, 2022	12:00	Fusion	RM	23	460	450	167 158 168 155 159	154 175 154 157 139	181 193 172 212 179 196	TEX-TEX
July 02, 2022	12:00	Fusion	RM	14	460	600	119 122 102 109 120	126 121 126 112 109	140 151 144 140 141	SM-SM
July 02, 2022	12:00	Fusion	RM	14	460	600	127 129 116 133 135	135 145 137 119 122	156 163 169 166 170	SM-SM
July 02, 2022	16:00	Fusion	BA	57	460	450	135 136 123 141 126	132 145 121 129 126	135 142 142 146 154	TEX-TEX
July 02, 2022	16:00	Fusion	BA	57	460	450	140 130 125 127 131	124 141 125 136 134	153 156 147 151 152	TEX-TEX
July 02, 2022	16:00	Fusion	LA	22	460	600	122 139 132 131 132	126 126 130 129 127	146 148 153 150 155	SM-SM
July 02, 2022	16:00	Fusion	RM	74	460	600	132 133 122 136 129	130 129 123 124 122	150 160 144 147 139	SM-SM
July 03, 2022	09:30	Fusion	RM	24	460	450	168 170 174 168 149	160 173 163 154 151	199 228 210 189 211	TEX-TEX

Date	Time	Fusion or extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
July 03, 2022	09:30	Fusion	RM	74	460	600	124 150 150 153 141	149 148 134 155 137	172 188 177 191 177	SM-SM
July 03, 2022	10:30	Extrusion	EB	41	246	475	N/A	160 135 160 166 167	180 188 181 188 182	N/A
July 03, 2022	13:30	Fusion	BF	22	460	600	125 130 121 123 127	120 129 119 132 113	131 139 136 143 149	SM-SM
July 03, 2022	13:30	Fusion	BA	57	460	450	145 148 145 146 152	125 155 138 145 144	157 154 166 156 166	TEX-TEX
July 03, 2022	13:30	Fusion	BA	57	460	450	160 135 141 144 130	145 139 131 145 133	165 163 155 169 163	TEX-TEX
July 03, 2022	13:30	Fusion	BA	57	460	600	125 137 129 128 131	121 133 126 119 124	156 157 150 155 155	SM-SM
July 03, 2022	13:30	Fusion	RM	74	460	600	136 135 137 130 134	130 128 123 125 131	145 146 149 156 155	SM-SM
July 03, 2022	13:30	Fusion	RM	74	460	450	133 134 130 137 144	127 134 136 136 148	152 179 169 166 161	TEX-TEX
July 03, 2022	17:30	Fusion	BA	57	460	450	132 133 132 138 137	127 130 134 136 132	158 156 156 150 149	TEX-TEX

Date	Time	Fusion or extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
July 03, 2022	17:30	Fusion	BF	22	460	600	128 130 117 117 115	118 114 115 126 130	153 146 139 149 151	SM-SM
July 03, 2022	17:30	Fusion	RM	74	460	600	116 113 127 127 119	119 122 120 125 116	145 151 163 143 147	SM-SM/

5.0 NON-DESTRUCTIVE TESTING

Layfield has been ensuring all seams pass both the air and vacuum tests. If a seam/repair patch fails, Layfield has been immediately following the appropriate troubleshooting measures (repairing, checking seam ends, etc.) to ensure the test area passes.

The non-destructive test results can be provided upon request.

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

EEOS: East End of Seam

WEOS: West End of Seam

Table 3: Destructive Testing Results

Sample ID	Date Tested	Location (UTM is +/- 4 m)	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
D39	June 27, 2022	P77-P79 VERTICAL WEOS	BF	22	125 145 157 145 141	132 125 123 133 130	152 13 154 152 150	PASS
D40	June 27, 2022	P79-P80 VERTICAL WEOS	RM	23	135 135 139 134 135	129 128 129 129 127	154 167 159 140 142	PASS

Sample ID	Date Tested	Location (UTM is +/- 4 m)	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
D41	June 27, 2022	P82-P84 VERTICAL WEOS	RM	22	140 140 140 142 148	113 137 108 143 154	170 150 170 126 169	PASS
D42	June 27, 2022	P84-P85 VERTICAL WEOS	BF	23	118 137 133 150 147	137 141 143 144 139	138 145 168 128 139	PASS
D43	June 27, 2022	P85-P86 VERTICAL WEOS	RM	22	128 138 124 129 130	128 133 116 121 123	151 128 155 141 144	PASS
D44	June 27, 2022	P86-P88 VERTICAL WEOS	BA	57	135 146 117 146 126	136 132 143 150 150	123 169 143 127 132	PASS
D45	June 27, 2022	P88-P90 VERTICAL WEOS	RM	22	143 124 131 151 130	136 141 121 124 120	155 134 157 149 147	PASS
D46	June 27, 2022	P90-P92 VERTICAL WEOS	BF	23	126 129 135 144 150	130 145 137 114 142	125 154 132 167 148	PASS
D47	June 28, 2022	P93-P94 VERTICAL WEOS	BF	23	126 102 102 136 135	118 145 103 134 118	125 163 143 143 156	PASS
D48	June 28, 2022	P94-P96 VERTICAL WEOS	RM	22	123 140 116 137 127	142 144 134 134 132	164 176 168 157 150	PASS
D49	June 28, 2022	P96-P98 VERTICAL WEOS	BA	57	143 137 145 142 147	132 135 117 137 134	152 175 155 160 138	PASS

Sample ID	Date Tested	Location (UTM is +/- 4 m)	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
D50	June 28, 2022	P98-P100 VERTICAL WEOS	BF	23	118 134 130 136 146	115 136 117 129 121	133 159 163 169 143	PASS
D51	June 28, 2022	P100-P102 VERTICAL WEOS	RM	22	128 158 114 132 133	128 118 135 133 130	166 152 162 167 163	PASS
D52	June 28, 2022	P102-P104 VERTICAL WEOS	BA	57	127 123 136 114 130	127 145 143 152 142	532 167 153 155 152	PASS
D53	June 28, 2022	P104-P105 VERTICAL WEOS	BF	23	118 123 128 135 130	125 122 138 132 130	125 122 138 137 136	PASS
D54	June 28, 2022	P105-P106 VERTICAL WEOS	RM	22	134 149 146 133 114	117 135 115 119 135	133 143 148 171 160	PASS
D55	June 28, 2022	P106-P108 VERTICAL WEOS	BF	23	125 119 127 123 123	135 131 113 120 122	138 168 146 170 123	PASS
D56	June 30, 2022	P110-P108 VERTICAL WEOS	RM	22	134 118 140 129 120	128 130 130 130 131	149 159 127 154 145	PASS
D57	June 30, 2022	P112-P110 VERTICAL WEOS	LA	22	143 155 147 123 132	142 138 132 144 130	133 154 138 159 161	PASS
D58	June 30, 2022	P114-P112 VERTICAL WEOS	BA	57	137 139 163 138 129	123 150 131 147 163	177 175 137 157 170	PASS

Sample ID	Date Tested	Location (UTM is +/- 4 m)	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
D59	June 30, 2022	P116-P114 VERTICAL WEOS	LA	22	127 155 147 161 118	137 146 133 148 155	171 147 122 140 174	PASS
D60	June 30, 2022	P118-P116 VERTICAL WEOS	BA	57	128 136 134 145 142	115 126 128 130 130	128 160 160 136 145	PASS
D61	June 30, 2022	P118-P120 VERTICAL WEOS	LA	22	122 153 136 136 153	153 148 127 148 133	136 145 147 153 168	PASS
D62	July 01, 2022	P122-120 VERTICAL WEOS	RM	23	123 131 122 141 123	115 118 120 135 107	130 153 153 168 144	PASS
D63	July 01 2022	P124-P122 VERTICAL WEOS	LA	22	132 149 118 146 124	113 138 101 136 122	165 166 164 170 168	PASS
D64	July 01, 2022	P126-P124 VERTICAL WEOS	RM	23	126 124 129 140 143	129 117 152 119 145	126 126 158 147 153	PASS
D65	July 01, 2022	P128-126 VERTICAL WEOS	LA	22	124 108 130 130 139	122 139 127 138 129	161 148 157 133 152	PASS
D66	July 01, 2022	P130-P128 VERTICAL WEOS	BA	57	122 120 112 109 135	106 145 145 152 126	162 142 157 157 159	PASS
D67	July 01.2022	P132-P130 VERTICAL WEOS	RM	23	125 132 120 136 130	127 137 112 125 120	158 127 163 164 163	PASS

Sample ID	Date Tested	Location (UTM is +/- 4 m)	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
D68	July 01, 2022	P134-P132 VERTICAL WEOS	LA	22	120 122 130 142 146	113 116 108 117 126	159 159 174 157 141	PASS
D69	July 02, 2022	P136-134 VERTICAL-WEOS	RM	23	127 123 127 120 140	138 134 128 130 125	149 152 153 158 163	PASS
D70	July 02, 2022	P138/P136 VERTICAL-WEOS	LA	23	128 142 129 138 150	146 147 134 159 126	167 176 158 175 166	PASS
D71	July 02, 2022	P141/P138 VERTICAL-WEOS	RM	23	138 135 154 148 148	149 150 151 145 143	167 130 136 170 153	PASS
D72	July 02, 222	P143/P140 VERTICAL-WEOS	LA	22	112 118 103 139 141	110 134 135 141 145	155 141 153 137 164	PASS
D73	July 03, 2022	P148/P145 VERTICAL-WEOS	RM	74	147 144 138 142 150	141 144 140 129 135	146 161 158 154 164	PASS
D74	July 03, 2022	P151/P148 VERTICAL-WEOS	LA	22	147 150 140 146 149	131 125 127 138 132	156 168 163 164 129	PASS
D75	July 03, 2022	P153/P152 VERTICAL-WEOS	BA	57	170 157 146 143 126	126 120 126 119 136	155 157 162 151 163	PASS
D76	July 03, 2022	P157/P154 VERTICAL-WEOS	LA	22	122 140 142 150 146	148 126 124 131 140	162 133 166 152 132	PASS

Sample ID	Date Tested	Location (UTM is +/- 4 m)	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
D77	July 03, 2022	P159/P157 VERTICAL-WEOS	BA	57	141 166 158 132 151	122 101 143 133 112	162 125 163 138 136	PASS
D78	July 03, 2022	P157/P156 HORIZONTAL-CENTER OF CROSS-SEAM	BA	57	161 154 143 156 158	153 154 139 156 163	137 160 167 177 169	PASS

7.0 PHOTO LOG

Figure 1: First Section of GCL Deployed June 27, 2022.

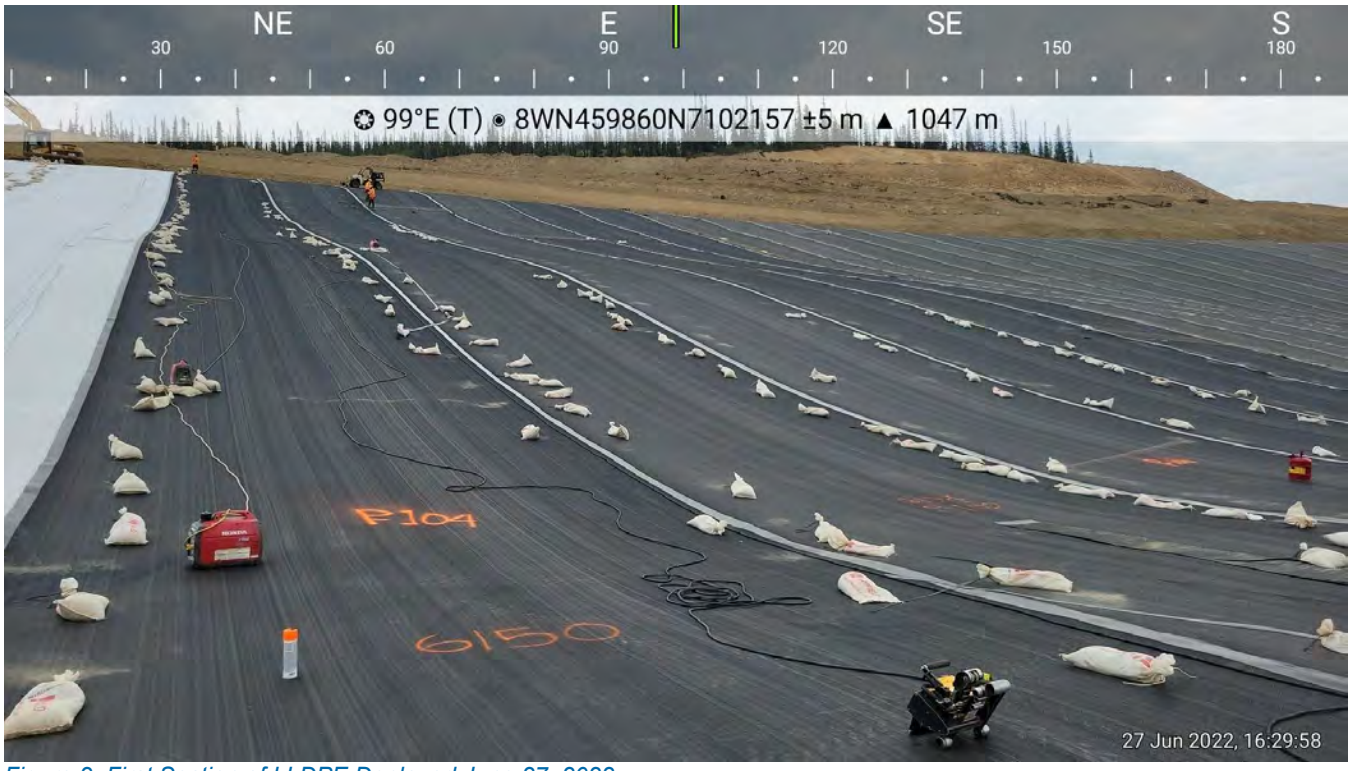

Figure 2: First Section of LLDPE Deployed June 27, 2022.

Figure 3: Second Section of GCL Deployed June 27, 2022.

Figure 4: Total LLDPE Deployed June 27, 2022.

Figure 5: Repairs Completed on Panel P95.

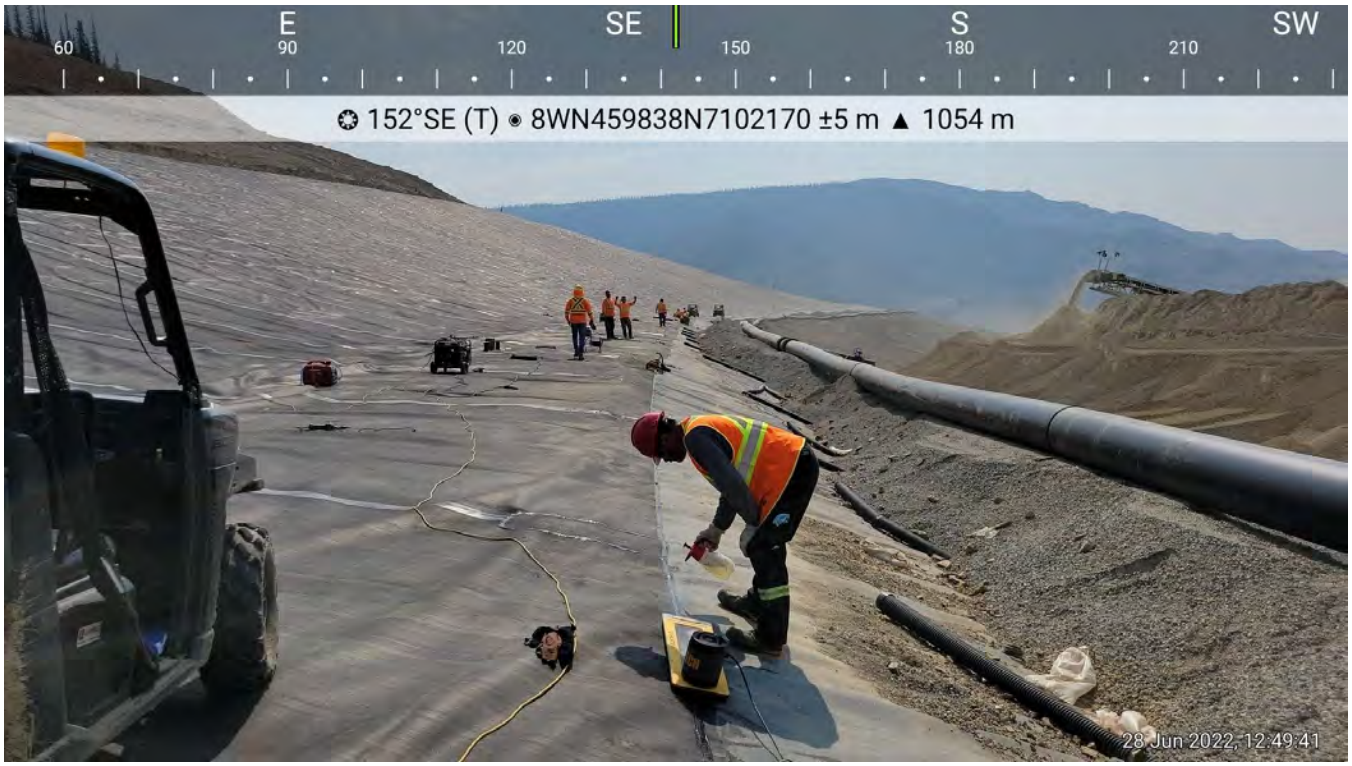

Figure 6: Layfield Vacuum Testing Panel Section P62-P109 Welded to Phase 1B.

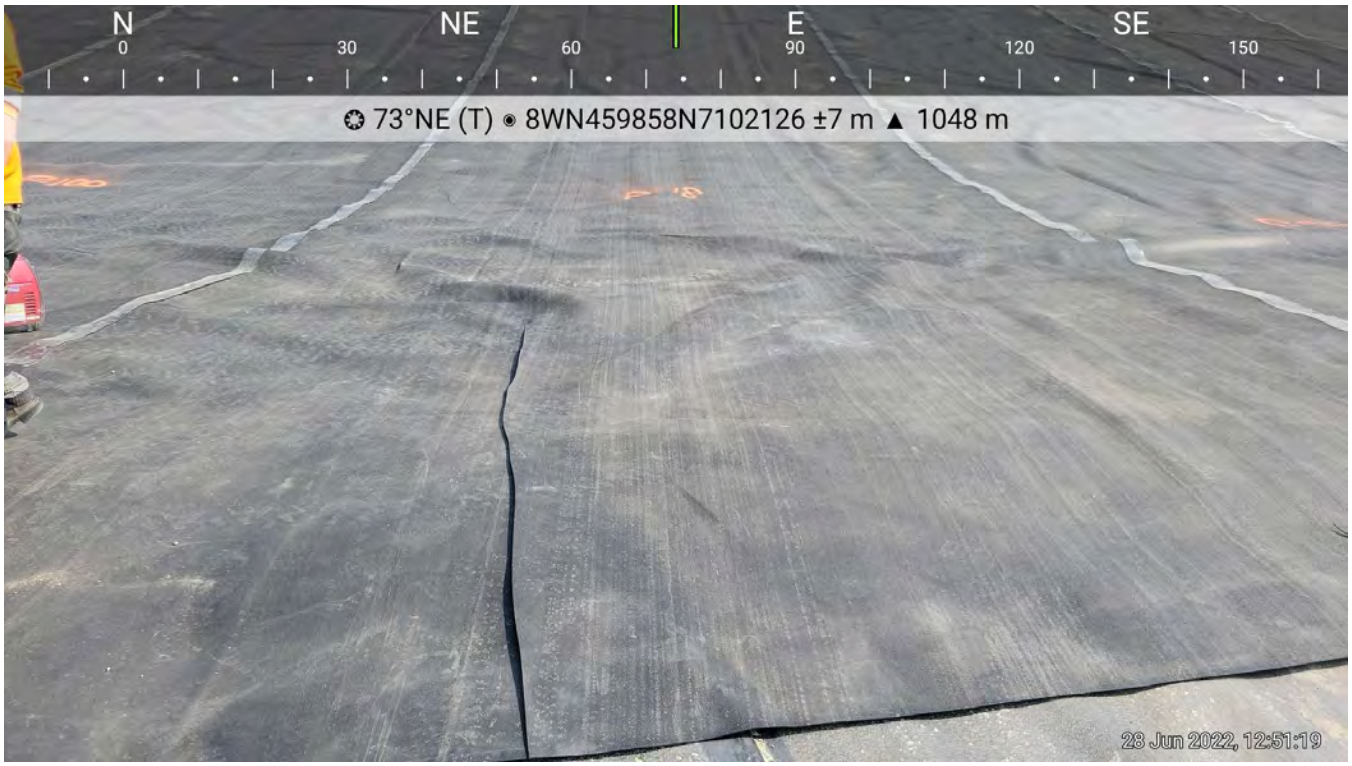

Figure 7: Vertical Cut Made in Panel P102 in Order to Remove Large Wrinkle in the LLDPE..

Figure 8: Vertical Cut Made in Panel P80 in Order to Remove Large Wrinkle in the LLDPE.

Figure 9: East Anchor Trench Filled in up to Panel P107.

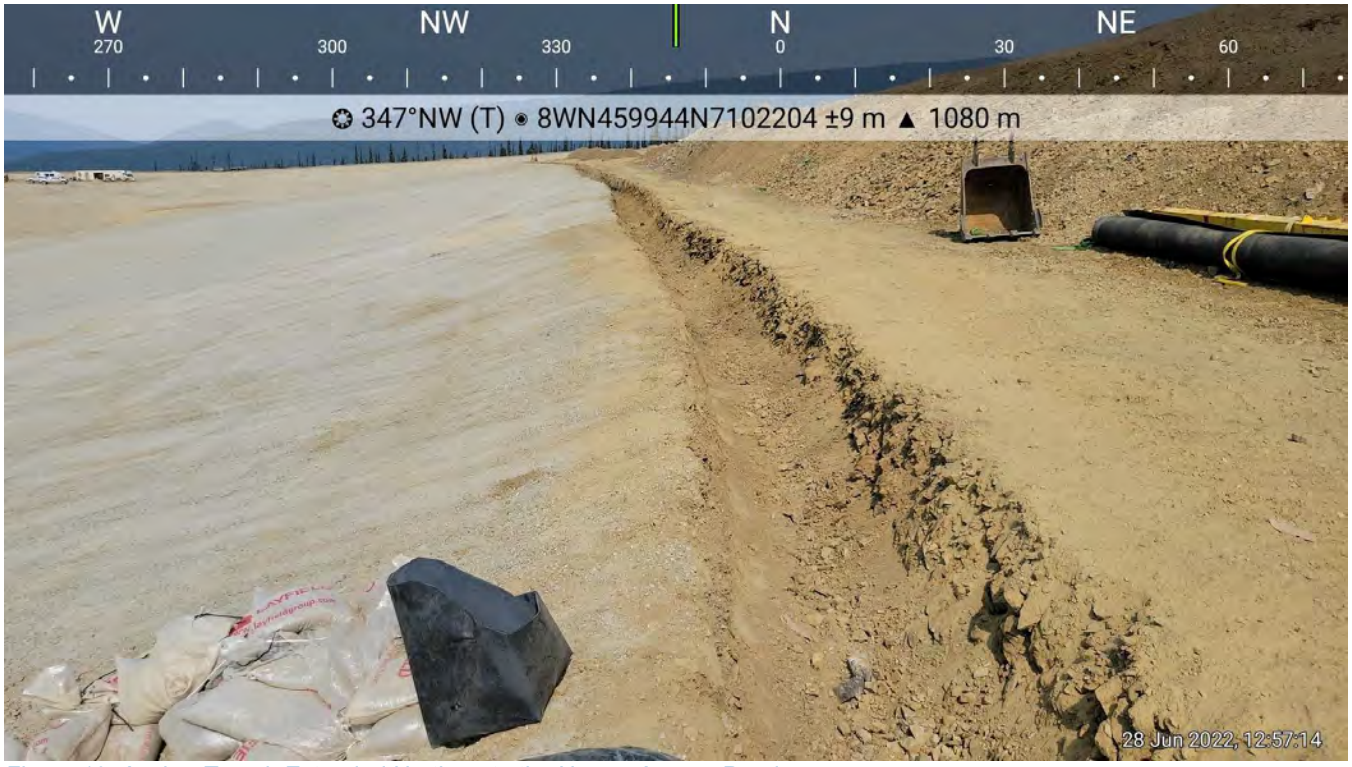

Figure 10: Anchor Trench Extended North up to the Nuway Access Road.

Figure 11: Factory Defects in LLDPE on Panel P109.

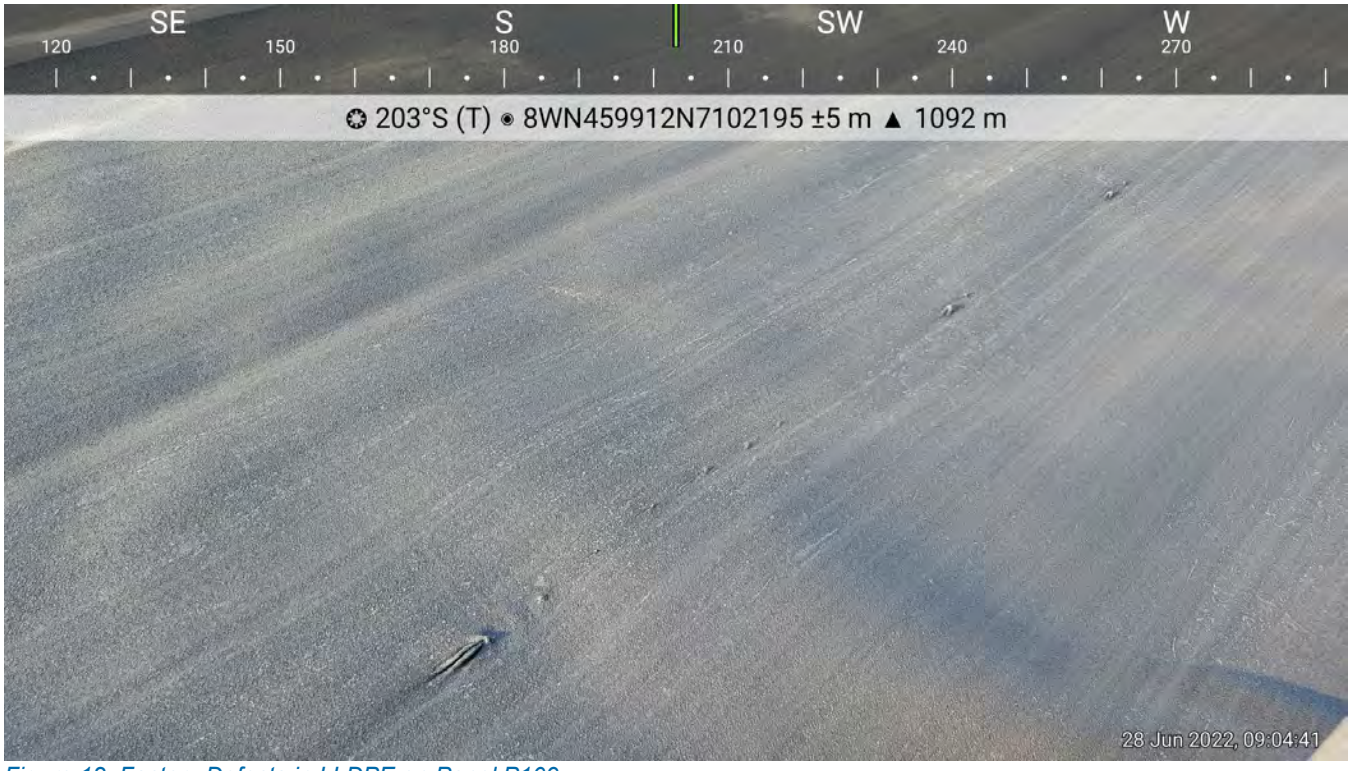

Figure 12: Factory Defects in LLDPE on Panel P109.

Figure 13: First Section of GCL Deployed June 29, 2022.

Figure 14: First Section of LLDPE Deployed June 29, 2022.

Figure 15: Second Section of GCL Deployed June 29 ,2022.

Figure 16: Second Section of LLDPE Deployed June 29, 2022.

Figure 17: Panel P109 Defects Repaired on June 29,2022.

Figure 18: Prepped Subgrade for Phase 2A West Expansion on July 04, 2022.

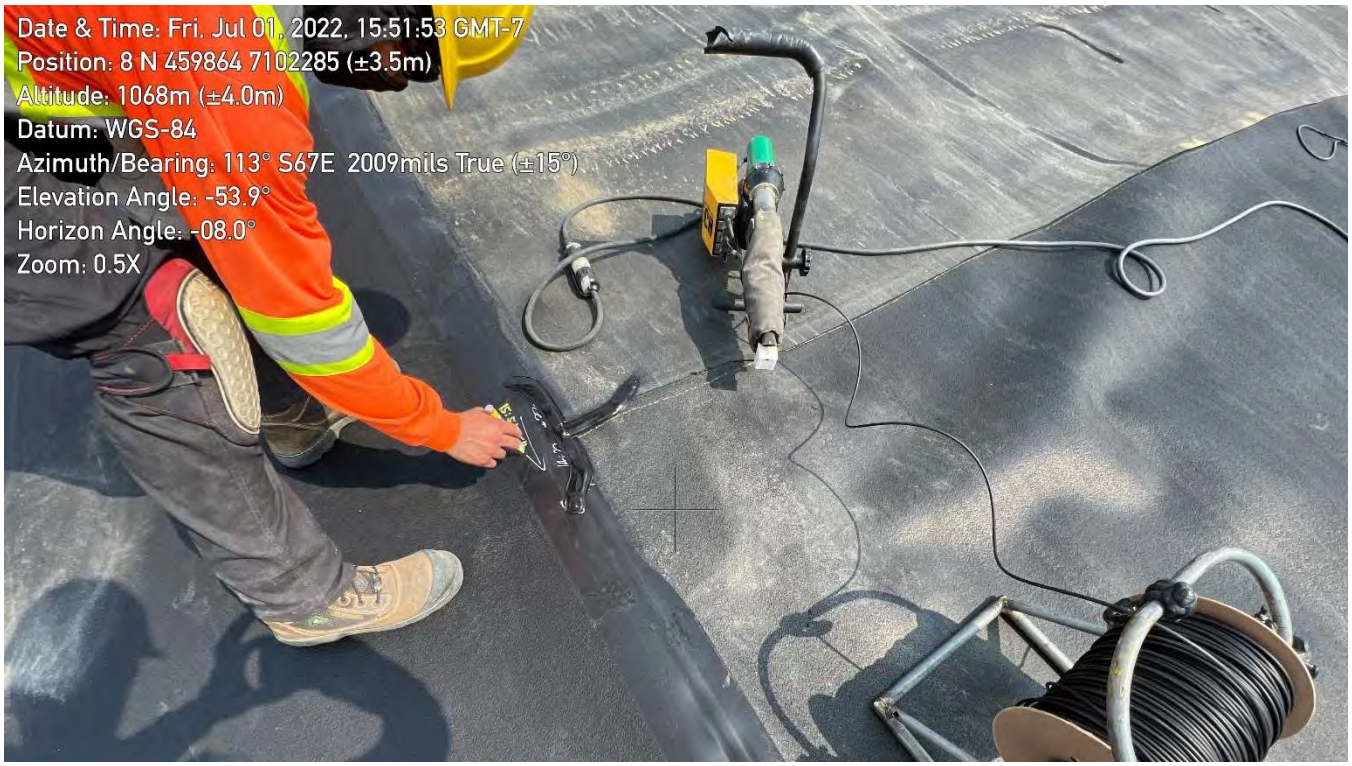

Figure 19: Extrusion Weld on T-seam, Between P142/P141/P144, Between a Cross Seam and Vertical Seam on July 1, 2022

Figure 20: Large Dust Devil That Formed North of P160. Came Within 100m of Deployed Liner on July 2, 2022.

Figure 21: Updated Northwest Anchor Trench on July 02,2022.

Figure 22: GCL Deployed July 02, 2022.

Figure 23: Drone Photo of LLDPE Being Deployed on July 02, 2022

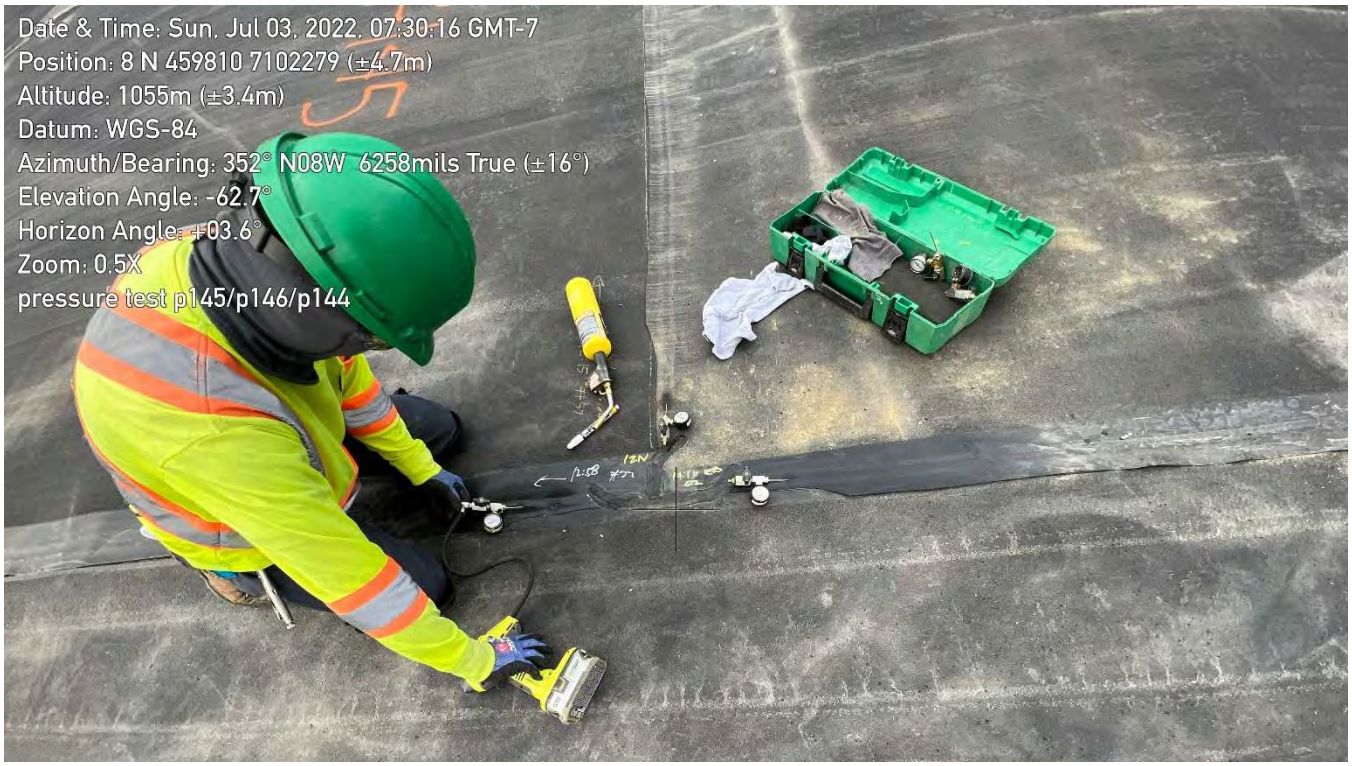

Figure 24: Non-destructive (Vacuum pressure) Test on a "T-intersection" of P145/P146/P144 on July 03, 2022.

Figure 25: Updated Northern Anchor Trench on July 3, 2022.

Figure 26: Drone View of Updated Northern Anchor Trench on July 3, 2022.

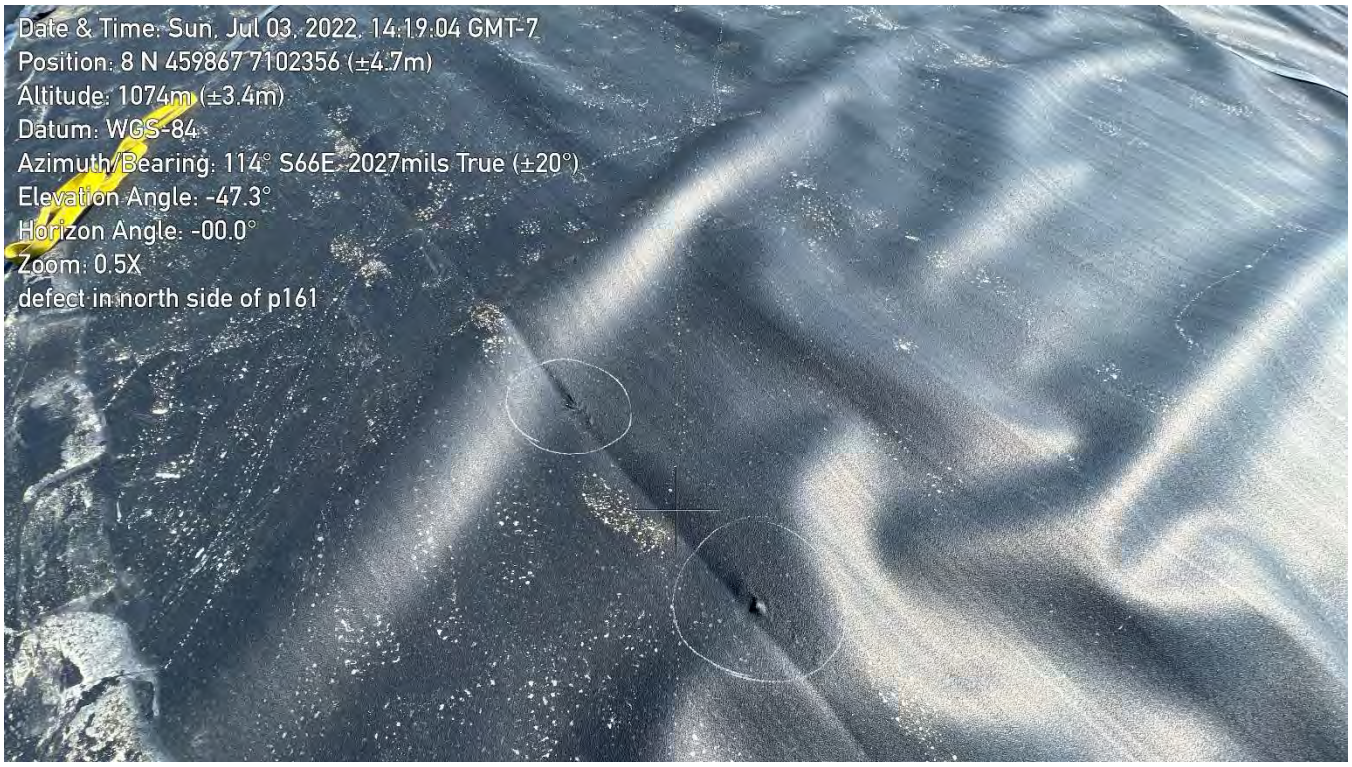

Figure 27: Panel P161 Defects on July 3,2022.

Figure 28: Panel P161 Defects After Extrusion Weld Repairs on July 3, 2022

Figure 29: Panel P157/P154 Destruct Patch Repair with Extrusion Welder on July 3, 2022.

Figure 30: Deploying GCL Liner on July 3, 2022.

Figure 31: Layfield Deploying LLDPE Liner on July 3, 2022.

Figure 32: Drone Shot of Liner Progress on July 3, 2022.

TETRA TECH

WEEKLY FIELD REPORT

IN FOR REVIEW

Project:	Eagle Gold Heap Leach Phase 2A	**Date:**	July 4, 2022
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Chad Messervey
Contact:	Cody Roberts	**Contractor's Email:**	CMesservey@layfieldgroup.com
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Josh McKenzie
File:	704-ENG.WARC03235-23	**Status:**	In for Review

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 2A expansion (Phase 2A). Mr. Josh McKenzie is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 2A, and Forte's representative is Clint Green.

Cody Roberts, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 2A.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 2A, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of July 4, 2022 to July 10, 2022.

2.0 DAILY REPORTS

2.1 July 4, 2022

Weather: Sunny, hazy due to wildfire smoke, 15°C

- Panels P174 – P186 were deployed.
- Layfield deployed approximately 8,628 m^2 of combined GCL and LLDPE liner.
- While unpacking, the Ewing crew accidentally cut holes in the LLDPE liner, which required extrusion weld repairs (Figure 4). Layfield used a vacuum box to ensure extrusion welds were not leaking after repair.
- The northwest vertical seam fusion weld of P161/P163 failed the non-destructive testing performed by Layfield; an extrusion weld patched the leak (Figure 5).
- A burnout on the vertical seam between P174/P175 was repaired by Layfield (Figure 6).

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- A burnout on the vertical seam between P182/184 was repaired by Layfield (Figure 7).

2.2 July 05, 2022

- Layfield took the day off. No liner installed.

2.3 July 06, 2022

- Weather: Sunny, hazy due to wildfire smoke, 15°C.
- Panels P187 – P197 were deployed.
- Layfield deployed approximately 8,000 m^2 of combined GCL and LLDPE liner.
- Eight tears were observed in LLDPE liner on P188; Layfield patched them with an extrusion weld (Figure 14).
- Layfield shut down at 13:30 due to heavy wildfire smoke causing breathing difficulties.

2.4 July 07, 2022

- Weather: Sunny, less smoke due to rain the previous day, 13°C.
- Panel P198-P213 deployed.
- Layfield deployed approximately 12,030 m^2 combined GCL and LLDPE liner.
- Ewing dug a trench along 2A/1B southwest overlap to prevent water from getting below the liner.
- Layfield ended the day at 15:30 due to heavy showers and lightning strikes close to the work area.

2.5 July 08, 2022

- Weather: Overcast, cool, 10°C.
- Layfield folded back southern sections of P143-P138 in the southwestern area of 2A connecting to 1B, revealing a fully saturated section of GCL under the LLDPE. Layfield left the LLDPE folded back to allow saturated GCL and sub-grade to dry. Tetra Tech and Layfield determined that approximately 239.4 m^2 of GCL will need to be cut out and replaced once the subgrade is dry (Figure 19).
- Panels P214 – P223 were deployed.
- Layfield deployed approximately 10,000 m^2 of combined GCL and LLDPE liner.
- Layfield repaired a tear in LLDPE requiring extrusion repair on cross-seam P210 – P211, cross-seam P217 – P216, and cross-seam P220 – P219.

2.6 July 09,2022

- Weather: Overcast, moderate to heavy showers, 10°C.
- Layfield called a weather day due to showers that lasted all day. Sub-grade was fully saturated and not suitable for the placement of GCL and liner.
- Six nuclear densometer readings were completed on three test sites on northern berm lifts.

2.7 July 10, 2022

- Weather: Overcast – scattered, 10°C
- Panels P224 – P239 deployed
- Layfield deployed 16,550 m2 of combine GCL and LLDPE
- Ewing discovered pockets of ice-rich material while excavating along the northern berm for Phase 2B. Contour relief in this area, along with it being a north-facing slope has created an approximately 30-metre section of frozen ground. The ground consists of 2-3 cm inclusions of ice and 1-2 cm ice seams running through the slope. The ice appears to be discontinuous and only found in this narrow section of significant drainage along the proposed perimeter berm location. Ewing has installed a sump and has been pumping water out of the north side, downslope of the proposed berm location. Water accumulation has been observed to decrease since test pits were excavated yesterday July 9, 2022 (Figure 29 and Figure 30).

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate, and where 45-degree joints are used; panel length is based from the center of the panel. Where unsymmetrical and/or wedge shape panels are used to make corrections, the longest side length is provided.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
July 4, 2022	373740 373848 373726 374001 374567 373894 373799 373991 373797 374010 374129 373814 373775 373850 373987 374017 373723 374109 374006	156156 156172 156160 156162 156146 156180	P174(99.8m) P175(20m) P176(20m) P177(77.5m) P179(50.8m) P180(72.3m) P181(18.4m) P182(88.2m) P183(14.1m) P184(6.8m) P185(10.4m) P186(23.4m)
July 5, 2022	No liner deployed- Layfield day off.		
July 6, 2022	373732 373743 373730 373731 373729 373734	156180 156159 156114	P187(40.7m) P188(22.8m) P189(46.4m) P190(7.1m) P191(43.5m) P192 (6.2m) P193(26.8m) P194(11.1m) P195(11.9m) P196(11m) P197(4m)
July 7, 2022	374053 373790 374058 373853 373805 373854 374850 373784 373820 373812 373725 373804 373999 373825 373776 373995 373821 374055 374000 373785 374061 374059 373813 373802 373857 373965 373822 373856 373977	156114 156144 156157 156126 156177 156155 156112 156168	P198(74.3m) P199(8.4m) P200(7.6m) P201(43.3m) P202(50.4m) P203(7.6m) P204(69m) P205(28m) P206(91.4m) P207(24.8m) P208(100.7m) P209(27.6m) P210(98.2m) P211(43m) P212(83.4m) P213(71m)
July 8, 2022	373940 373905 373929 373969 373942 373944 373937 374002 374003 373996 373985 ?????	156168 156192 156166 156020 156190 156051 156182	P214(54.8m) P215(112m) P216(13.3m) P217(121.2m) P218(44.8m) P219(80.3m) P220(112.7m) P221(9.5m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
	373989 373936 373964 373968 373982 373971 373976 373981 373970		P222(122m) P223(67.7m)
July 9, 2022	No liner deployed due to weather day.		
July 10, 2022	374048 374054 374131 374093 373933 374132 374049 373915 374130 373939 373808 374051 373997 373067 373780 373779 373788 374107 373809 373807 374133 373909 374135 374134 373904 374056 373806 373975 373855 373895 374098 373916 37411 374105 374577 374099 374110 374128	156182 156052 156104 156058 156105 156054 156195 156011 156102 156030 156035	

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results that Tetra Tech observed. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
July 4, 2022	12:00	Fusion	BA	57	460	450	119 126 117 130 139	125 125 127 139 134	145 139 145 146 153	TEX-TEX
July 4, 2022	12:00	Fusion	BA	57	460	600	113 123 128 123 129	118 124 133 117 131	134 140 124 145 130	SM-SM
July 4, 2022	12:00	Fusion	BF	22	460	600	124 133 118 117 119	119 128 120 124 123	131 142 116 142 147	SM-SM

Date	Time	Fusion or Extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
July 4, 2022	12:00	Fusion	BF	22	460	450	143 140 156 151 161	149 145 152 146 151	169 170 178 168 172	TEX-TEX
July 4, 2022	12:00	Fusion	BF	22	460	450	143 140 156 151 161	149 145 152 146 151	169 170 178 168 172	TEX-TEX
July 4, 2022	12:00	Fusion	RM	74	460	600	136 137 134 129 130	127 129 124 129 129	146 142 157 161 152	SM-SM
July 4, 2022	12:00	Fusion	RM	74	460	450	131 140 133 127 131	125 143 118 136 145	167 157 153 162 158	TEX-TEX
July 4, 2022	08:30	Extrusion	EB	41	260	470	N/A	127 115 136 125 120	197 192 199 194 197	N/A
July 4, 2022	14:30	Extrusion	EB	41	260	470	N/A	130 118 124 110 116	140 141 149 143 147	N/A
July 6, 2022	09:00	Extrusion	EB	41	260	470	N/A	133 141 150 141 114	167 185 180 180 176	N/A
July 6, 2022	11:00	Fusion	BA	57	460	450	128 130 133 130 134	143 137 129 135 127	161 155 158 162 155	TEX-TEX
July 6, 2022	11:00	Fusion	BA	57	460	600	130 143 133 127 141	131 129 128 129 140	158 160 160 159 157	SM-SM

Date	Time	Fusion or Extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
July 6, 2022	11:00	Fusion	RM	07	460	600	156 150 139 143 165	167 147 164 144 142	172 166 143 150 133	SM-SM
July 6, 2022	11:00	Fusion	BF	22	460	600	136 122 125 140 125	129 133 126 130 137	159 159 155 164 165	SM-SM
July 7, 2022	09:30	Fusion	BA	57	460	450	127 147 141 163 143	131 140 137 143 139	167 157 160 148 140	TEX-TEX
July 7, 2022	09:30	Fusion	BA	57	460	600	133 141 126 133 128	143 147 122 137 134	144 161 144 164 159	SM-SM
July 7, 2022	09:30	Fusion	BF	22	460	600	137 148 127 142 133	132 135 129 133 130	153 166 144 169 155	SM-SM
July 7, 2022	09:30	Fusion	BF	22	460	450	155 152 143 154 149	138 154 145 137 143	165 175 168 184 181	SM-SM
July 7, 2022	09:30	Fusion	RM	74	460	600	142 159 142 150 147	141 142 139 151 145	162 178 155 177 184	SM-SM
July 7, 2022	10:00	Extrusion	BH	41	260	470	N/A	124 142 143 144 151	178 180 177 185 181	N/A
July 8, 2022	08:00	Extrusion	BH	45	260	475	N/A	179 161 167 183 173	193 207 198 193 199	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
July 8, 2022	10:00	Fusion	BF	57	460	450	163 136 136 172 167	130 158 147 146 171	175 183 190 196 191	TEX-TEX
July 8, 2022	10:00	Fusion	BF	57	460	600	125 121 132 146 141	142 148 143 148 133	176 182 169 179 179	SM-SM
July 8, 2022	10:00	Fusion	KK	22	460	600	149 136 134 149 141	148 141 140 134 145	179 185 172 183 180	SM-SM
July 8, 2022	10:00	Fusion	KK	22	460	450	133 153 135 144 164	123 153 146 162 174	173 180 174 166 175	TEX-TEX
July 8, 2022	13:00	Extrusion	EB	41	460	470	N/A	138 160 152 158 138	177 174 171 183 174	N/A
July 8, 2022	14:00	Fusion	KK	22	460	450	147 141 143 145 138	132 140 135 143 129	155 163 153 176 167	TEX-TEX
July 8, 2022	14:00	Fusion	KK	22	460	600	132 139 147 142 145	131 130 136 138 ??	159 172 152 167 168	SM-SM
July 8, 2022	14:00	Fusion	BF	57	460	600	124 141 129 137 142	131 147 130 140 137	158 163 155 168 163	SM-SM
July 8, 2022	14:00	Fusion	BF	57	460	450	145 153 152 133 143	157 142 155 147 154	172 179 166 175 179	TEX-TEX

Date	Time	Fusion or Extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
July 10, 2022	16:00	Extrusion	EB	41	260	470	N/A	161 164 161 162 145	175 181 172 174 171	N/A
July 10, 2022	09:00	Fusion	BA	57	460	600	135 136 131 127 142	149 157 164 161 151	174 179 177 179 174	SM-SM
July 10, 2022	09:00	Fusion	BA	57	460	450	157 171 152 168 164	151 152 143 151 155	178 204 197 204 188	TEX-TEX
July 10, 2022	09:00	Fusion	KK	22	460	600	160 166 162 149 153	157 160 157 156 162	171 196 162 163 172	SM-SM
July 10, 2022	09:00	Fusion	KK	22	460	450	149 149 144 152 166	166 164 137 157 162	203 209 192 197 201	TEX-TEX
July 10, 2022	12:00	Extrusion	EB	41	260	470	N/A	138 152 126 147 150	175 180 173 183 180	N/A
July 10, 2022	13:00	Fusion	BA	57	460	450	140 142 135 148 137	131 145 130 146 147	154 157 162 165 167	TEX-TEX
July 10, 2022	13:00	Fusion	BA	57	460	600	136 140 134 120 125	125 131 130 124 132	158 153 152 163 155	SM-SM
July 10, 2022	13:00	Fusion	KK	22	460	600	125 131 132 141 136	135 142 144 149 129	184 171 167 165 172	SM-SM

Date	Time	Fusion or Extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
July 10, 2022	13:00	Fusion	BF	74	460	600	132 135 146 135 139	134 135 146 135 139	168 170 165 163 157	SM-SM
July 10, 2022	16:50	Fusion	KK	22	460	600	123 127 127 124 126	127 121 137 131 128	144 146 147 142 143	SM-SM
July 10, 2022	17:00	Fusion	BA	57	460	450	126 122 124 136 128	133 132 145 129 127	151 154 149 151 147	TEX-TEX

5.0 NON-DESTRUCTIVE TESTING

The non-destructive test results can be provided upon request.

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

NEOS: North end of seam.

WEOS: West end of seam.

Table 3: Destructive Testing Results

Sample ID	Date Tested	Location (UTM is +/- 4 m)	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
D79	July 4, 2022	P163-P161 VERTICAL WEOS	RM	74	141 138 129 138 134	107 127 135 115 139	147 133 150 157 151	PASS
D80	July 4, 2022	P162-P164 VERTICAL WEOS	BM	22	133 141 124 142 106	104 139 122 140 131	147 139 123 143 141	PASS

Sample ID	Date Tested	Location (UTM is +/- 4 m)	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
D81	July 4, 2022	P166-P164 VERTICAL WEOS	BA	57	137 145 147 136 143	120 117 145 152 144	138 121 150 154 151	PASS
D82	July 4, 2022	P166-P168 VERTICAL WEOS	BF	22	121 131 108 117 152	119 128 101 126 130	136 141 143 158 143	PASS
D83	July 4, 2022	P168-P170 VERTICAL WEOS	BF	22	131 120 118 136 141	117 125 115 130 134	141 164 158 150 161	PASS
D84	July 4, 2022	P170-P172 VERTICAL WEOS	RM	14	120 153 130 135 126	131 140 129 124 104	143 151 162 158 142	PASS
D85	July 6, 2022	P175-P174 VERTICAL WEOS	BF	22	114 133 118 123 118	109 121 108 105 128	165 167 165 164 130	PASS
D86	July 6, 2022	P175-P176 VERTICAL WEOS	RM	74	119 133 124 140 150	149 121 121 157 150	154 166 129 168 159	PASS
D87	July 6, 2022	P178-P176 VERTICAL WEOS	BF	22	105 114 104 145 134	122 121 115 122 123	155 149 141 162 143	PASS
D88	July 6, 2022	P180-P182 VERTICAL WEOS	RM	74	122 146 133 145 148	148 139 140 138 116	125 130 134 126 157	PASS
D89	July 6, 2022	P183-P182 VERTICAL WEOS	RM	74	109 145 107 113 143	137 126 126 128 144	150 142 122 158 140	PASS

Sample ID	Date Tested	Location (UTM is +/- 4 m)	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
D90	July 7, 2022	P193-P195 VERTICAL 2 m S of NEOS	RM	74	140 150 155 140 147	132 139 133 149 150	122 128 144 169 153	PASS
D91	July 7, 2022	P188-P189 VERTICAL 2 m S of NEOS	RM	74	125 132 127 126 143	121 143 146 150 165	150 171 125 170 170	PASS
D92	July 7, 2022	P198-P200 VERTICAL SEOS	BF	22	134 123 111 129 111	127 111 121 147 111	171 134 170 166 156	PASS
D93	July 7, 2022	P202-P204 VERTICAL 0.6 m N of SEOS	BF	22	143 135 114 135 107	106 138 143 115 110	124 142 162 168 163	PASS
D94	July 8, 2022	P205-207 VERTICAL SEOS	RM	74	148 137 141 148 151	137 149 134 139 140	154 173 171 148 157	PASS
D95	July 8, 2022	P207-P209 VERTICAL SEOS	BF	22	130 141 143 142 148	142 138 120 118 126	135 171 175 124 170	PASS
D96	July 8, 2022	P209-P211 VERTICAL SEOS	RM	74	149 108 153 143 155	145 139 114 132 140	168 176 160 174 178	PASS
D97	July 8, 2022	P211-P213 VERTICAL SEOS	BF	22	130 139 139 143 129	141 123 146 126 137	147 174 171 173 175	PASS
D98	July 8, 2022	P154-P212 HORIZONTAL 1.5 m SW of NEOS	BA	57	151 157 115 146 128	122 142 123 112 156	178 175 122 167 177	PASS

7.0 PHOTO LOG

Figure 1: Layfield deploying out GCL. (July 4, 2022)

Figure 2: Layfield deploying LLDPE. (July 4, 2022)

Figure 3: Drone photo of liner completed. (July 4, 2022)

Figure 4: LLDPE extrusion welds to fix gouges in the liner. (July 4, 2022)

Figure 5: Extrusion weld on a vertical fusion weld, after a leak was discovered during a vacuum test. (July 4, 2022)

Figure 6: Burnout extrusion repair on P175/P174. (July 4, 2022)

Figure 7: Burnout extrusion repair patch on P182/P184. (July 4, 2022)

Figure 8: Updated north anchor trench. (July 4, 2022)

Figure 9: GCL being deployed. (July 6, 2022)

Figure 10: LLDPE liner deployed. (July 6, 2022)

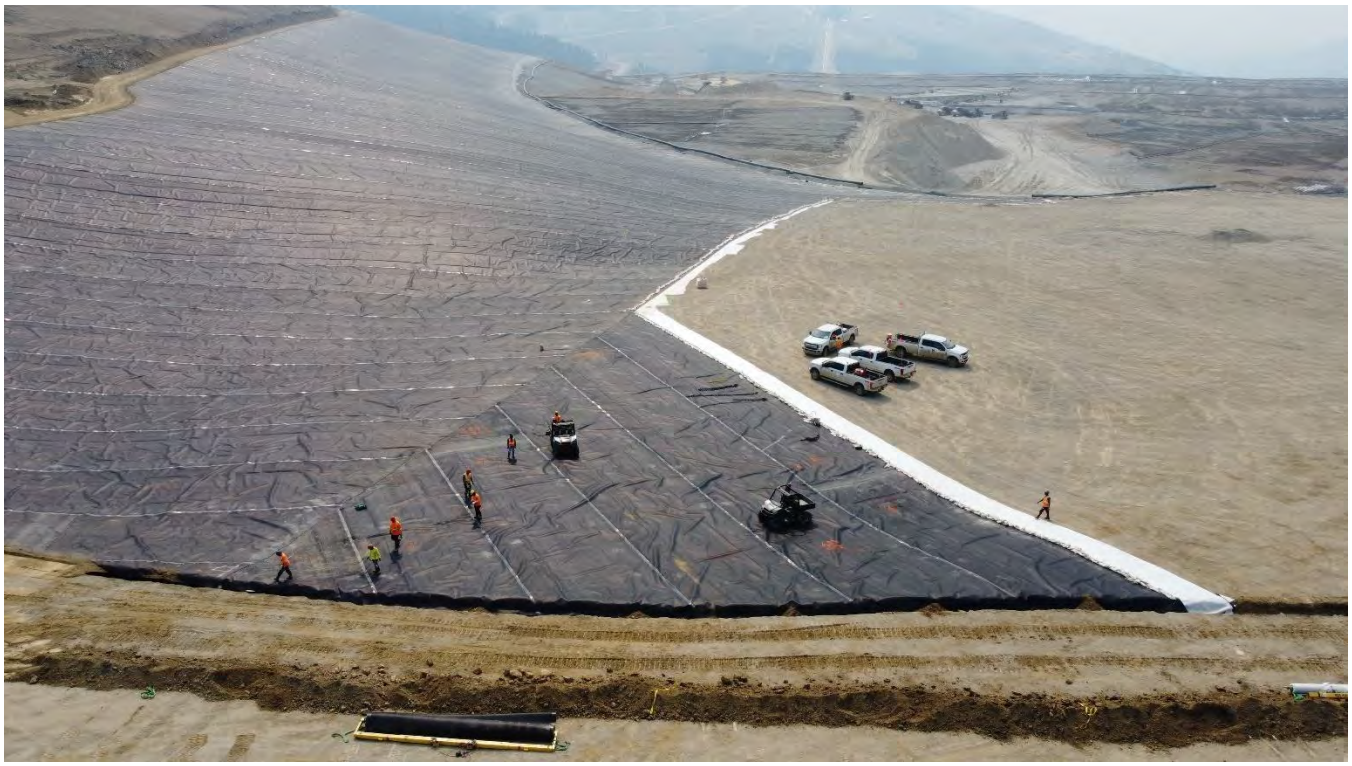

Figure 11: LLDPE deployed for the day. (July 6, 2022)

Figure 12: Updated drone shot of installed liner. (July 6, 2022)

Figure 13: Filled and compacted north anchor trench. (July 6, 2022)

Figure 14: Tear in LLDPE P188 cross seam. Required extrusion welds to repair. (July 6, 2022)

Figure 15: GCL deployment. (July 7, 2022)

Figure 16: LLDPE deployment. (July 7, 2022)

Figure 17: Lateral #2 West installed. (July 7, 2022)

Figure 18: Lateral #2 West filled and compacted. (July 7, 2022)

Figure 19: Saturated GCL exposed after heavy rainfall. It was removed, and LLDPE was left flipped up to allow sub-grade to dry. (July 8, 2022)

Figure 20: Drone shot of liner installation progress. (July 8, 2022)

Figure 21: Drone shot showing the construction of the northern perimeter berm. (July 9, 2022)

Figure 22: Drone shot showing the construction of the northern perimeter berm. (July 9, 2022)

Figure 23: Removed saturated GCL and left LLDPE folded back to allow subgrade to dry. (July 10, 2022)

Figure 24: Removed saturated GCL and left LLDPE folded back to allow subgrade to dry. (July 10, 2022)

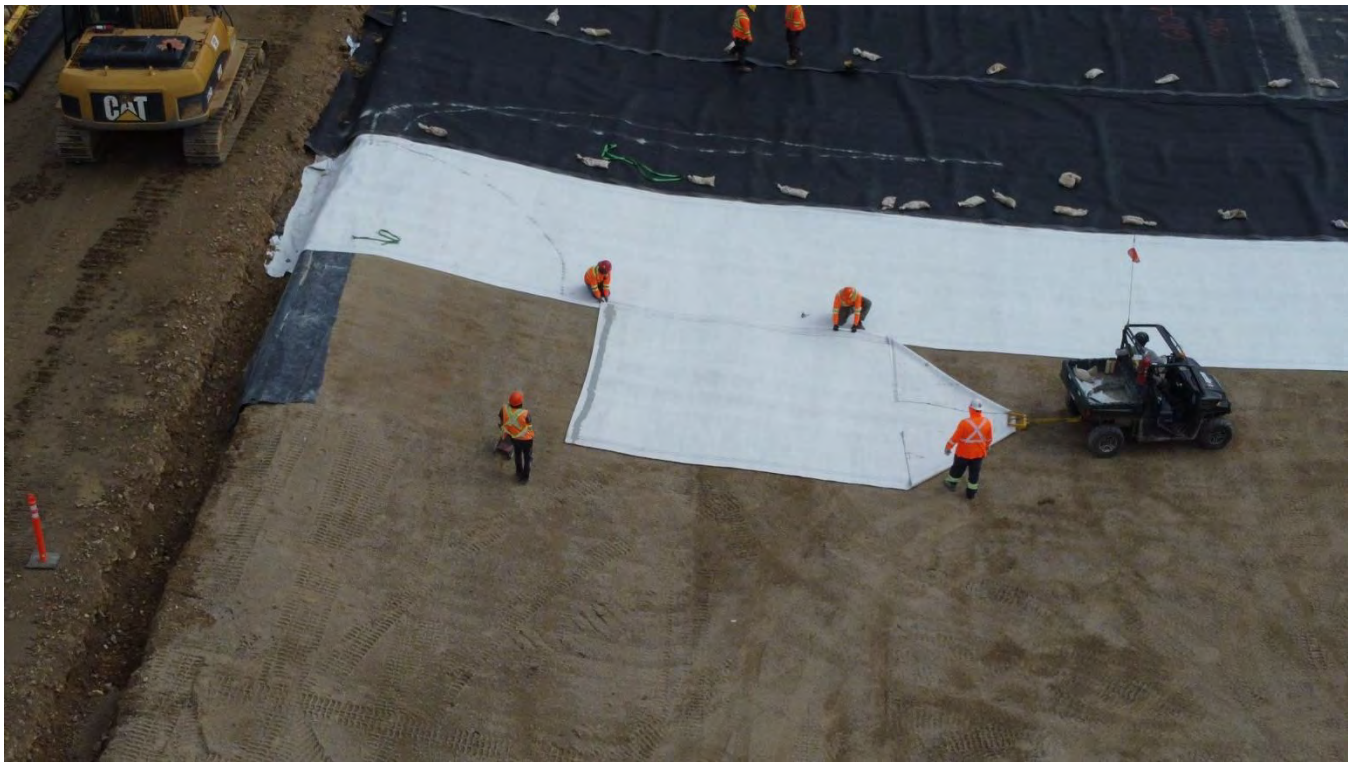

Figure 25: Layfield deploying GCL. (July 10, 2022)

Figure 26: Layfield deploying LLDPE. (July 10, 2022)

Figure 27: Layfield deploying GCL. (July 10, 2022)

Figure 28: Layfield deploying GCL. (July 10, 2022)

Figure 29: Ice seams found in colluvium in northern perimeter berm. (July 10, 2022)

Figure 30: Ice seams found in colluvium located in the northern perimeter berm subgrade. (July 10, 2022)

TETRA TECH

FIELD REPORT

ISSUED FOR REVIEW

Project:	Eagle Gold Heap Leach Phase 2A	**Date:**	July 11, 2022
Location:	Eagle Gold Mine	**Contractor:**	Ewing Transport / Layfield
Client:	Victoria Gold Corp.	**Contractor's Rep:**	Chad Messervey
Contact:	Cody Roberts	**Contractor's Email:**	CMesservey@layfieldgroup.com
Weather:	Variable (see daily entries)	**Tetra Tech Representative:**	Josh Mckenzie
File:	704-ENG.WARC03235-23	**Status:**	Issued for Review

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Victoria Gold Corp. (Victoria Gold) to provide CQA services at the Eagle Gold mine located north of Mayo, Yukon, at Dublin Gulch for the Eagle Gold Heap Leach Phase 2A expansion (Phase 2A). Mr. Josh McKenzie is Tetra Tech's representative on site.

Forte Dynamics (Forte) out of Fort Collins, Colorado provided the design and specification for Phase 2A, and Forte's representative is Clint Green.

Cody Roberts, of JDS Energy & Mining, is Victoria Gold's project manager on site at the Eagle Gold mine.

Ewing Transport (Ewing), based out of Mayo, Yukon, is the construction contractor for Phase 2A.

Layfield Environmental Containment (Layfield) has been retained to provide and install the liner for Phase 2A, and their supervisor on site is Chad Messervey.

The following Field Report outlines Tetra Tech's CQA for the period of July 11, 2022 to July 17, 2022.

2.0 DAILY REPORTS

2.1 July 11, 2022

- Weather: Overcast, light rain throughout day ,15°C
- Panels P240 – P241 were deployed.
- Layfield deployed approximately 12,500 m^2 of combined GCL and LLDPE liner.
- Layfield temporarily stopped work due to moderate rain from 13:00 and ceased all work at 15:30 due to poor weather.
- The subgrade was damaged the previous night when a Victoria Gold skid steer drove over the prepared subgrade; Ewing had to repack the subgrade with a packer (Figure 1, Figure 2, and Figure 3).
- Insufficient overlap of vertical seam P226-P223 requiring extrusion patch (Figure 5).

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2.2 July 12, 2022

- Weather: Overcast, cool, 15°C
- Layfield deployed approximately 11,903 m2 of combined GCL and LLDPE liner
- Panels P252 – P265 were deployed.
- A rock was found under panel P225, which required LLDPE to be cut and an extrusion patch welded (Figure 10).
- Ewing began filling and compacting lifts on the north perimeter berm area where ice was encountered (Figure 9).
- Ice inclusions and small ice lenses (5 mm) were found in the toe of the northern perimeter berm (Figure 11).
- Five compaction tests were performed for Ewing while building 50 cm lifts along the north perimeter berm.

2.3 July 13, 2022

- Weather: Scattered, cool,13°C.
- Panels P266 – P283 deployed.
- Layfield deployed approximately 13,000 m2 of combined GCL and LLDPE liner.
- Ewing continued to build up the north perimeter berm. Approximately 4 m of lifts were completed in the area where ice-rich material was excavated.
- Seven compaction tests were performed for Ewing while building 50 cm lifts along the north perimeter berm.

2.4 July 14, 2022

- Weather: Overcast, light rain,10°C.
- Panel P284 – P304 were deployed.
- Layfield deployed approximately 10,000 m2 combined GCL and LLDPE liner.
- Ewing continued with 50 cm lifts along the northern perimeter berm.
- Four compaction tests were done at the perimeter berm.

2.5 July 15, 2022

- Weather: Overcast, cool, 10°C.
- Panels P305 – P309 deployed.
- Seven compaction tests were done at the perimeter berm.
- Ewing excavated a test pit to determine the extent of the ground ice. The test pit was located upslope of the northern perimeter berm seepage. The ground conditions encountered were:
  - Surface to 10 cm: Colluvium

  - 10 cm to 25 cm: Interbedding of Schist-shale and limestone.
  - 25 cm to 60 cm: Frozen clay/silt layer. Sample taken and heated up to determine water content. Minimal water content observed (<2%).
  - 60 cm to 70 cm (refusal): Encountered bedrock consisting of weathered and fractured sandstone (Figure 20 and Figure 21).
- Ewing continued to follow the seepage within the trench upslope until they found an approximately 1 m by 3 m, 0.5 m thick piece of solid ice. This appears to be the source of the seepage in this area, as when it was removed, the seepage slowed significantly (Figure 22).

2.6 July 16, 2022

- Weather: Overcast, moderate to heavy showers, 10°C.
- Layfield came close to finishing the tie-in extrusion welding between Phase 2A and 1B but stopped at 13:00 due to rain (Figure 23 and Figure 24).
- Ewing continued to build 50 cm lifts along the northern perimeter berm until 13:00 and stopped due to rain (Figure 29).
- Layfield and Tetra Tech walked all of the LLDPE panels for a final inspection, looking for: liner damage, missed extrusion welds, T-welds, cross-seam welds, and vertical fusion welds. A few items of note were observed:
  - A small tear in the LLDPE liner on the south end of P261 (Figure 26).
  - Damage found on LLDPE (possibly a factory defect in the liner) on the south end of P261 (Figure 27).
  - An unwelded extrusion patch was found on P272 (Figure 28).

2.7 July 17, 2022

- Weather: Overcast to scattered, 10°C.
- Layfield completed the liner tie-ins with Phase 1B and 2A.
- Layfield completed non-destructive testing on all T-welds that were not finished due to bad weather (Figure 32).
- Ewing continued to place 500 mm lifts along the northern perimeter berm.
- Ewing filled in the two trenches that were excavated out beneath the interceptor ditch after all of the ice was removed. Puddles were observed at the bottom of each trench, most likely due to heavy rainfall the previous day.
- Three compaction tests were done at the perimeter berm.

3.0 GEOSYNTHETIC ROLL NUMBERS PLACED

Table 1 summarizes the daily geosynthetic roll numbers placed on the slope during liner installation. All panel lengths are approximate and where 45-degree joints are used; panel length is based from the center of the panel. Where unsymmetrical and/or wedge shape panels are used to make corrections, the longest side length is provided.

Table 1: Geosynthetic Roll Numbers Placed on Slope

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
July 11, 2022	374060 374565 374117 373707 373831 374013 374101 374091 374090 373993 374011 373760 374086 374127 374122 374092 374007 374106 373685 374079 374097 374095 373820 374115 374121 374018 373963 374103 374124 374100	156035 156129 156163 156107 156191 156018 156153	P240(101m) P241(91m) P242(32.1m) P243(122.3m) P244(35.5m) P245(86.5m) P246(101.4m) P247(20.6m) P248(122.3m) P249(44.8m) P250(77.3m) P251(110m)
July 12, 2022	373718 373714 373704 373703 373709 373715 373702 373698 373712 373711 373369 373705 373678 373708 373706 373689 373719 373759 373700 373688 373695 373717 373701 373762 373699	156153 156158 156047 156121 156059 156060 156121 156062 156103 156050	P252(12m) P253(121.9m) P254(51.3m) P255(70.8m) P256(113.1m) P257(6.6m) P258(122m) P259(52m) P260(6.8m) P261(69.4m) P262(100.2m) P263(21.4m) P264(120.7m) P265(27.4m)
July 13, 2022	373077 373687 373686 373724 373761 373756 373764 374074 373710 373768 374082 373697 373984 374052 373767 373766 373684 373757 373681 373682 373765 373692 373693 373660 373683 374113 373763 374083 374073 373680 373691 373986 374012 373988	156050 156101 156202 156042 156202 156145 156021 156174 157064 156049	P266(92.8m) P267(65.5m) P269(8.8m) P270(83.6m) P271(36m) P272(103.6m) P273(5.3m) P274(17.8m) P275(111.8m) P276(8.2m) P277(120.5m) P278(2m) P279(2.3m) P280(118.4m) P281(6.7m) P282(112.8m) P283(11.3m)
July 14, 2022	373737 374023 373745 374032 374026 374027 374020 373754 373749 373742 373750 374033 373983 373736 373748 374738 373747 373978 373744 373735 373755 374022 374030 374024 373741	156049 156151 156048 156175 156056 156039 156045 156012	P284(107.8m) P285(12.7m) P286(4.8m) P287(108m) P288(5.7m) P289(112m) P290(2m) P291(6.5m) P292(104.5m) P293(13.5m) P294(93m) P295(6.7m) P296(27.4m) P297(66m) P298(53m) P299(37m) P300(62.2m) P301(62.2m) P302(20.8m) P303(43.3m) P304(14.4m)

Date	GCL Roll Number	LLDPE Liner Roll Number	Panel Number (Length)
July 15, 2022	All GCL deployed	156012	P305(35.4m) P306(36m) P307(18.8m) P308(3m) P309(3m)
July 16, 2022	All GCL and LLDPE liner deployed		
July 17, 2022	All GCL and LLDPE liner deployed		

4.0 TRIAL SEAM

Table 2 summarizes the weekly trial seam results that Tetra Tech observed. For fusion, the apparatus settings are temperature and speed, and for extrusion, the apparatus settings are preheat and barrel temperature. Five tests are performed for each criterion.

Table 2: Trial Seam Results

Date	Time	Fusion or Extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
July 11, 2022	10:00	Fusion	KK	22	460	450	150 160 162 175 171	129 163 173 161 164	193 177 198 176 169	TEX-TEX
July 11, 2022	10:00	Fusion	KK	22	460	600	140 133 136 149 132	127 141 137 127 141	142 182 175 162 170	SM-SM
July 11, 2022	10:00	Fusion	LA	57	460	600	140 136 133 155 135	139 133 124 134 141	172 167 164 171 169	SM-SM
July 11, 2022	10:00	Fusion	LA	57	460	450	153 149 141 138 164	155 165 154 134 149	192 194 191 211 208	TEX-TEX
July 11, 2022	10:00	Fusion	BF	74	460	600	131 160 149 121 162	140 154 155 142 141	162 178 175 179 175	SM-SM
July 11, 2022	10:00	Fusion	BF	74	460	450	147 132 140 160 132	118 148 126 165 161	191 201 189 197 194	TEX-TEX

Date	Time	Fusion or Extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
July 11, 2022	14:00	Fusion	BF	57	460	450	135 148 140 136 144	136 141 130 122 132	145 162 162 165 179	TEX-TEX
July 11, 2022	13:08	Extrusion	EB	41	260	470	N/A	163 143 167 167 156	180 185 181 189 181	N/A
July 12, 2022	09:30	Fusion	KK	22	460	600	141 160 136 160 158	140 129 141 149 152	188 193 194 188 186	SM-SM
July 12, 2022	09:30	Fusion	KK	22	460	450	166 175 133 181 141	147 161 160 163 166	171 199 207 219 210	TEX-TEX
July 12, 2022	09:30	Fusion	BF	57	460	600	128 161 121 111 147	146 160 159 159 162	157 162 183 176 180	SM-SM
July 12, 2022	09:30	Fusion	RM	54	460	450	130 124 135 151 136	132 137 136 136 134	168 151 167 174 172	TEX-TEX
July 12, 2022	09:30	Fusion	RM	54	460	600	137 136 137 139 129	142 139 144 133 147	162 171 165 175 171	SM-SM
July 12, 2022	12:30	Extrusion	EB	41	260	470	N/A	162 163 169 167 147	182 181 185 197 180	N/A
July 12, 2022	13:30	Fusion	RM	54	460	450	127 134 124 125 131	129 127 121 124 126	157 164 154 162 165	TEX-TEX

Date	Time	Fusion or Extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
July 12, 2022	13:30	Fusion	RM	54	460	600	154 148 137 149 173	141 162 156 132 152	184 174 182 165 163	SM-SM
July 12, 2022	13:30	Fusion	RM	54	460	450	136 152 149 161 151	165 145 142 143 140	185 171 172 185 188	TEX-TEX
July 12, 2022	13:30	Fusion	KK	22	860	600	123 149 156 152 144	137 132 145 140 135	170 171 162 171 180	SM-SM
July 12, 2022	13:30	Fusion	KK	22	860	450	160 162	119 141		TEX-TEX
July 12, 2022	16:30	Extrusion	GB	40	260	480	N/A	104 115 134 109 147	156 136 127 179 142	N/A
July 13, 2022	11:30	Fusion	LA	54	460	450	138 134 127 133 143	126 141 129 146 140	160 173 162 171 163	TEX-TEX
July 13, 2022	11:30	Fusion	KK	22	460	600	149 145 135 136 144	139 142 150 158 149	166 177 174 169 175	SM-SM
July 13, 2022	11:30	Fusion	KK	22	460	450	146 165 149 158 161	146 130 142 158 163	192 184 173 193 192	TEX-TEX
July 13, 2022	11:30	Fusion	RM	23	460	600	138 149 134 150 146	132 153 158 144 145	174 179 169 171 175	SM-SM

Date	Time	Fusion or Extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
July 13, 2022	11:30	Fusion	RM	23	460	450	129 139 139 144 140	137 138 126 122 129	167 165 169 171 168	TEX-TEX
July 13, 2022	11:30	Fusion	BF	57	460	600	138 143 135 143 139	130 137 133 131 133	167 174 167 169 175	SM-SM
July 13, 2022	11:30	Fusion	BF	57	460	450	156 155 144 160 129	148 146 135 140 129	185 180 193 191 187	TEX-TEX
July 13, 2022	12:30	Extrusion	EB	41	260	480	N/A	156 160 145 150 143	180 179 181 178 182	N/A
July 14, 2022	09:00	Extrusion	EB	41	260	470	N/A	158 138 164 149 151	190 190 179 194 189	N/A
July 14, 2022	09:30	Fusion	KK	22	460	450	155 148 151 159 162	152 160 175 156 164	203 192 197 210 200	TEX-TEX
July 14, 2022	09:30	Fusion	LA	54	460	600	138 150 137 150 147	130 145 131 143 148	174 171 179 181 175	SM-SM
July 14, 2022	09:30	Fusion	KK	22	460	600	156 150 125 150 149	142 149 145 154 155	188 175 180 179 159	SM-SM
July 14, 2022	09:30	Fusion	KK	22	460	450	153 162 149 163 149	153 162 149 163 145	199 199 179 204 190	TEX-TEX

Date	Time	Fusion or Extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
July 14, 2022	09:30	Fusion	RM	23	460	600	121 144 120 142 143	127 156 151 156 158	174 187 181 182 185	SM-SM
July 14, 2022	09:30	Fusion	RM	23	460	450	157 158 138 143 137	154 149 157 156 154	186 214 189 192 202	TEX-TEX
July 14, 2022	15:00	Fusion	LA	54	460	600	150 139 153 152 131	142 151 151 142 144	181 174 169 180 177	SM-SM
July 14, 2022	15:00	Fusion	LA	54	460	450	184 177 181 177 181	162 182 178 150 163	193 205 190 200 185	TEX-TEX
July 14, 2022	15:00	Fusion	RM	23	460	600	140 152 126 148 152	127 150 137 141 138	152 173 156 157 172	SM-SM
July 14, 2022	15:00	Fusion	RM	23	460	450	163 169 125 153 159	152 170 148 169 168	178 191 186 175 190	TEX-TEX
July 14, 2022	15:00	Fusion	KK	22	460	600	141 149 150 159 159	134 142 141 169 165	161 174 180 175 166	SM-SM
July 14, 2022	15:00	Fusion	KK	22	460	450	169 180 161 165 138	146 166 165 136 167	199 203 213 202 205	TEX-TEX
July 15, 2022	12:30	Extrusion	BA	40	280	480	N/A	146 149 149 160 147	178 180 181 180 177	N/A

Date	Time	Fusion or Extrusion	Tech	Apparatus # (WW-0##) (EC-EX-0##)	Temp or Preheat (°C)	Speed (%) or Barrel Temp (°C)	$Peel_{inside}$ (100 min)	$Peel_{outside}$ (100 min for Fusion 88 min for extrusion)	Shear (120 min)	Liner to Liner Type
July 15, 2022	12:30	Extrusion	EB	41	275	475	N/A	156 154 131 134 159	184 188 181 178 184	N/A
July 15, 2022	12:30	Extrusion	BA	40	280	480	N/A	110 123 117 138 124	153 160 146 162 157	N/A
July 15, 2022	12:30	Extrusion	EB	41	270	470	N/A	147 135 133 137 139	150 163 164 165 158	N/A
July 15, 2022	12:30	Extrusion	GB	34	280	480	N/A	141 142 135 140 141	166 171 168 171 171	N/A
July 16, 2022	09:00	Extrusion	EB	41	280	480	N/A	130 124 130 131 125	161 183 169 157 178	N/A
July 17, 2022	09:00	Fusion	LA	41	280	480	N/A	117 133 120 117 122	161 156 160 157 162	N/A

5.0 NON-DESTRUCTIVE TESTING

The non-destructive test results can be provided upon request.

6.0 DESTRUCTIVE TESTING

Table 4 summarizes the weekly destructive testing results. Five tests are performed for each criterion.

NEOS: North End Of Seam

SEOS: South End Of Seam

Table 3: Destructive Testing Results

Sample ID	Date Tested	Location (UTM is +/- 4 m)	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
D99	July 11, 2022	P213-P215 VERTICAL 6 m S of NEOS	EB	41	126 123 142 152 143	119 158 126 149 154	165 158 168 166 177	PASS
D100	July 11, 2022	P215-D218 VERTICAL 25 m N of SEOS	EB	41	147 147 152 129 154	150 147 125 154 142	150 182 162 184 178	PASS
D101	July 11, 2022	P218-P220 VERTICAL NEOS	EB	41	143 164 172 160 155	160 143 139 155 149	153 183 170 184 168	PASS
D102	July 11, 2022	P220-P222 VERTICAL 15.6 m S of NEOS	EB	41	116 157 124 114 108	109 124 118 146 163	173 183 165 159 172	PASS
D103	July 11, 2022	P222-P225 VERTICAL 23 m S of NEOS	EB	41	134 128 119 142 134	113 152 117 150 134	161 168 142 166 170	PASS
D104	July 11, 2022	P226-P228 VERTICAL 8 m S of NEOS	EB	41	147 151 150 154 142	148 174 162 171 152	155 171 160 175 159	PASS
D105	July 11, 2022	P224-P227 VERTICAL 6 m S of NEOS	EB	41	144 160 144 161 157	143 143 128 152 161	168 177 169 170 170	PASS

Sample ID	Date Tested	Location (UTM is +/- 4 m)	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
D106	July 11, 2022	P227-P230 VERTICAL 27 m S of NEOS	EB	41	152 121 146 153 144	146 150 118 161 125	167 175 147 173 176	PASS
D107	July 11, 2022	P230-P233 VERTICAL NEOS 36.6 m S of NEOS	EB	41	142 157 117 146 145	134 156 139 150 145	141 172 156 174 140	PASS
D108	July 11, 2022	P233-P236 VERTICAL NEOS 13.6 m N of SEOS	EB	41	106 143 116 121 131	132 159 149 121 161	174 123 174 168 165	PASS
D109	July 11, 2022	P235-P237 VERTICAL NEOS 16 m N of SEOS	EB	41	138 146 123 144 137	126 145 118 149 153	176 172 166 171 171	PASS
D110	July 11, 2022	P236-P238 VERTICAL NEOS 2 m S of NEOS	EB	41	128 160 150 139 148	124 138 149 147 144	157 166 152 165 161	PASS
D111	July 13, 2022	P238-P240 VERTICAL 10 m N of SEOS	KK	41	136 146 137 151 138	134 149 125 156 142	142 138 162 166 153	PASS
D112	July 13, 2022	P248-P243 VERTICAL 8.5 m S of NEOS	BF	41	136 122 137 153 147	135 144 128 128 155	123 161 160 163 161	PASS
D113	July 13, 2022	P243-246 VERTICAL 15.5 m S of NEOS	KK	41	156 147 147 150 158	157 139 161 118 139	159 153 145 161 161	PASS
D114	July 13, 2022	P245-P247 7.8 m S of NEOS	BF	41	132 136 146 148 155	129 150 150 154 143	162 170 174 139 169	PASS

Sample ID	Date Tested	Location (UTM is +/- 4 m)	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
D115	July 13, 2022	P246-P299 19 m N of SEOS	EB	41	139 137 123 138 128	143 142 149 147 119	169 174 172 171 165	PASS
D116	July 13, 2022	P248-P250 16.4 m S of NEOS	EB	41	110 155 144 158 137	137 141 147 145 138	160 168 151 175 160	PASS
D117	July 16, 2022	P251-P253 14.6 m N of SEOS	KK	22	137 147 168 159 156	169 165 144 146 154	189 195 188 193 195	PASS
D118	July 16, 2022	P253-P256 4.4 m S of NEOS	BF	57	160 174 163 157 161	162 161 145 157 157	194 190 191 192 190	PASS
D119	July 16, 2022	P255-P258 12 m N of SEOS	KK	22	164 162 156 156 157	147 143 141 136 143	161 188 188 184 191	PASS
D120	July 16, 2022	P256-P259 13 m S of NEOS	KK	22	170 167 156 152 158	108 156 134 120 115	155 186 185 181 188	PASS
D121	July 16, 2022	P259-P261 33.3 m S of NEOS	BF	57	166 159 139 162 150	128 150 141 141 154	167 167 201 197 198	PASS
D122	July 16, 2022	P262-P264 34 m S of NEOS	BF	57	177 165 149 165 144	131 151 153 152 148	192 196 185 195 186	PASS
D123	July 16, 2022	P64-P266 21.7 m S of NEOS	KK	22	161 167 142 173 164	149 159 146 153 152	183 187 179 189 186	PASS

Sample ID	Date Tested	Location (UTM is +/- 4 m)	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
D124	July 16, 2022	P266-P270 3.4 m S of NEOS	RM	23	122 133 128 120 165	125 146 142 153 152	170 189 191 188 187	PASS
D125	July 16, 2022	P270-P272 13.8 m S of NEOS	BF	57	135 142 159 146 141	154 144 154 156 157	185 191 192 187 202	PASS
D126	July 16, 2022	P272-P275 46.5 m N of SEOS	KK	22	168 183 155 166 171	145 153 149 157 125	182 187 162 189 193	PASS
D127	July 16, 2022	P275-P277 17.5 m N of SEOS	RM	23	143 175 151 158 152	152 157 146 160 153	186 190 168 192 186	PASS
D128	July 16, 2022	P277-P280 12 m S of NEOS	BF	57	156 161 147 166 156	143 153 162 143 152	187 195 193 199 179	PASS
D129	July 16, 2022	P282-P284 6.3 m N of NEOS	RM	23	136 160 161 169 137	139 135 134 139 171	188 192 178 191 191	PASS
D130	July 16, 2022	P284-P287 23.2 m N of SEOS	KK	22	144 148 139 151 139	120 140 148 144 150	184 189 176 191 188	PASS
D131	July 16, 2022	P287-P289 41.2 m S of NEOS	KK	22	153 157 149 158 158	157 151 139 152 153	185 193 183 192 197	PASS
D132	July 16, 2022	P289-P292 8 m N of SEOS	KK	22	160 158 142 163 157	149 151 160 152 149	181 195 190 186 192	PASS

Sample ID	Date Tested	Location (UTM is +/- 4 m)	Tech	Apparatus (WW-0##)	$Peel_{in}$ (100 min)	$Peel_{out}$ (100 min)	Shear (120 min)	Pass or Fail
D133	July 16, 2022	P292-P294 50 m S of NEOS	LA	54	170 176 107 161 166	129 107 139 128 138	186 185 189 177 188	PASS
D134	July 16, 2022	P294-297 8 m S of NEOS	RM	23	147 174 164 175 172	139 158 150 141 127	182 181 175 184 182	PASS
D135	July 16, 2022	P299-P301 5.4 m N of SEOS	LA	54	144 156 163 154 146	149 151 148 159 137	181 189 179 189 185	PASS
D136	July 16, 2022	P303-P304 5 m N of SEOS	KK	22	136 162 158 134 145	141 141 157 140 134	151 194 173 183 146	PASS
D137	July 16, 2022	P307-P309 0.5 m S of NEOS	LA	54	130 148 156 165 133	132 147 135 141 147	182 195 182 193 189	PASS

7.0 PHOTO LOG

Figure 1: Subgrade damage caused by a grasshopper skid steer. (July 11, 2022)

Figure 2: Damaged subgrade was filled in and packed with fine sand. (July 11, 2022)

Figure 3: Packing subgrade before GCL deployment. (July 11, 2022)

Figure 4: Prepping destruct D104 cut-out for patch extrusion weld. (July 11, 2022)

Figure 5: Insufficient overlap of vertical fusion seam P226-P223, requiring extrusion patch weld. (July 11, 2022)

Figure 6: Layfield deploying GCL. (July 12, 2022)

Figure 7: End-of-day liner progress. Approximately 11,903 m^2 of combined GCL and LLDPE liner deployed. (July 12, 2022)

Figure 8: Seepage on the north perimeter berm from buried ice found below interceptor ditch. (July 4, 2022)

Figure 9: North perimeter berm lifts. (July 12, 2022)

Figure 10: Rock under liner panel P225 (July 12, 2022)

Figure 11: Toe wall of drainage area in the northern perimeter berm. Ice inclusions and small .5 cm ice lenses found in colluvium and regolith. (July 6, 2022)

Figure 12: Trench excavated to determine the source of seepage upslope of the northern perimeter berm. (July 14, 2022)

Figure 13: Drone shot of trench excavated to find source of seepage. (July 14, 2022)

Figure 14: Seepage accumulating at the bottom of the trench. (July 14, 2022)

Figure 15: Seepage accumulating at the bottom of the trench. (July 14, 2022)

Figure 16: Colluvium with crossbedding of shale-schist and fractured metasedimentary rock. Bedrock is not visible. (July 14, 2022)

Figure 17: Layfield deploying GCL. (July 14, 2022)

Figure 18: Last panel of LLDPE deployed during hail storm. (July 14, 2022)

Figure 19: Last GCL deployment to connect to Phase 1B. Layfield shingled the GCL overlap by 500mm. The panels were cleared of debris before being tied into existing 1B panels by extrusion welding. (July 14, 2022)

Figure 20: Test pit TT-TP22-09. (July 15, 2022)

Figure 21: Test pit TT-03 bedrock – low grade quartzite-sandstone. (July 15, 2022)

Figure 22: Block of ice found beneath Phase 2B interceptor ditch. (July 15, 2022)

Figure 23: Tie-in extrusion weld between Phase 2A and 1B. (July 15, 2022)

Figure 24: Tie-in extrusion weld between Phase 2A and 1B. (July 15, 2022)

Figure 25: Extrusion weld repairs above P299-P288 cross seam. (July 15, 2022)

Figure 26:Tear in LLDPE liner in the west end of P114. (July 16, 2022)

Figure 27:Damage found on LLDPE liner, south end of P261 upon final inspection. (July 16, 2022)

Figure 28:Unwelded extrusion patch found on P272 upon final inspection. (July 16, 2022)

Figure 29: Rain on the last day of final inspections of Phase 2B. (July 16, 2022)

Figure 30: Trenches were found to have decreased seepage; puddles were due to rain the previous day. (July 17, 2022)

Figure 31: Status of the north perimeter berm lifts. (July 17, 2022)

Figure 32: Cross seam vacuum test. (July 17, 2022)

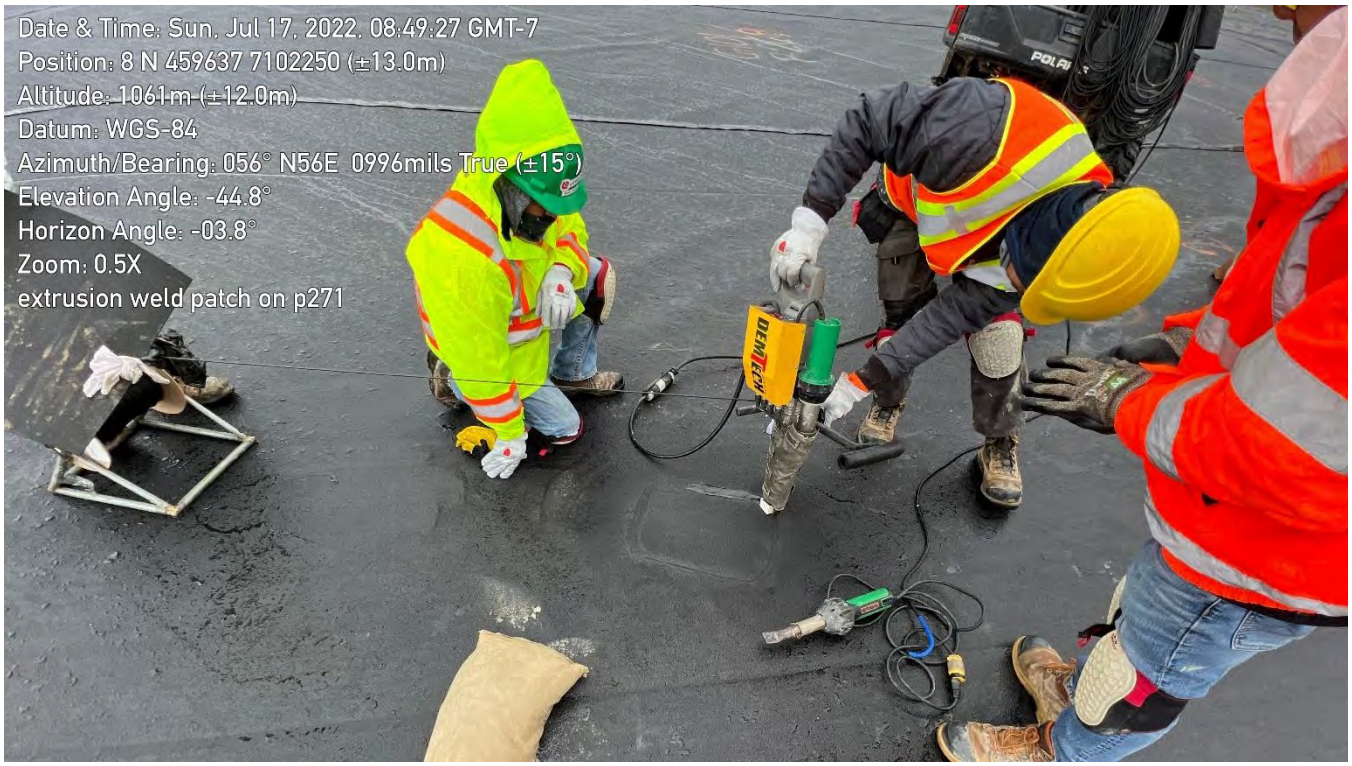

Figure 33: Extrusion weld patch that was missed and observed upon final inspection on P271. (July 17, 2022)

Figure 34: Drone photo of complete Phase 2A liner deployment. (July 17, 2022)

Figure 35: Drone photo of complete Phase 2A liner deployment. (July 17, 2022)

APPENDIX C

SUPPORTING DOCUMENTATION OF VARIANCES FROM DESIGN

There was no supporting documentation for the variances mentioned in the report.

APPENDIX D

TESTPIT LOGS FOR FOUNDATION IMPROVEMENT PLAN

Testpit No: **TP-TT22-01**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	UTM: 459605 E; 7102351 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	SAND (COLLUVIUM) - silty, some gravel, fine to coarse grained sand, angular to subangular gravel to 100 mm diameter, damp, brown, (300 mm thick)	Seasonally frozen			0.2
0.2		BEDROCK - minor fractures, sand and silt between, damp, brown and grey				0.4
						0.6
0.4						0.8
						1.0
						1.2
0.6						1.4
						1.6
						1.8
0.8						2.0
						2.2
						2.4
						2.6
1.0						2.8
						3.0
						3.2
						3.4
1.2						3.6
						3.8
						4.0
						4.2
1.4						4.4
						4.6
						4.8
		END OF TESTPIT (1.5 metres) Note: Target depth reached				5.0
1.6						5.2
						5.4
						5.6
1.8						5.8
						6.0
						6.2
						6.4
2						

TETRA TECH

Contractor: Ewing	Completion Depth: 1.5 m
Equipment Type: Excavator	Start Date: 2022 March 14
Logged By: JS	Completion Date: 2022 March 14
Reviewed By: AM	Page 1 of 1

Testpit No: **TP-TT22-02**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	UTM: 459735 E; 7102321 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	SAND (COLLUVIUM) - gravelly, silty, fine to coarse grained sand, angular gravel to 100 mm diameter, damp, brown	Seasonally frozen			
0.2						0.2
						0.4
0.4						0.6
						0.8
0.6						1.0
						1.2
0.8						1.4
						1.6
						1.8
1.0		BEDROCK - highly fractured, sand and silt between, brown and grey, red hue				2.0
						2.2
						2.4
1.2						2.6
						2.8
						3.0
						3.2
						3.4
						3.6
						3.8
						4.0
						4.2
1.4		END OF TESTPIT (1.3 metres) Note: Target depth reached				4.4
						4.6
						4.8
						5.0
1.6						5.2
						5.4
						5.6
						5.8
1.8						6.0
						6.2
						6.4
2						

TETRA TECH

Contractor: Ewing	Completion Depth: 1.3 m
Equipment Type: Excavator	Start Date: 2022 March 15
Logged By: JS	Completion Date: 2022 March 15
Reviewed By: AM	Page 1 of 1

Testpit No: **TT-TP22-03**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	SAND AND SILT (COLLUVIUM) - some gravel, angular gravel to 50 mm diameter, friable, damp, orangish brown, (200 mm thick)	Unfrozen			
0.2		BEDROCK - highly weathered, highly fractured, grey and reddish brown, silt and sand between fractures				0.2
0.4						0.4
						0.6
0.6						0.8
						1.0
						1.2
0.8						1.4
						1.6
						1.8
1.0		- slightly weathered				2.0
						2.2
						2.4
						2.6
						2.8
						3.0
						3.2
						3.4
		END OF BOREHOLE (1.1 metres) Note: Stopped at trench depth				3.6
1.2						3.8
						4.0
						4.2
1.4						4.4
						4.6
						4.8
						5.0
1.6						5.2
						5.4
						5.6
1.8						5.8
						6.0
						6.2
2						6.4

TETRA TECH

Contractor: Ewing	Completion Depth: 1.1 m
Equipment Type: Excavator	Start Date: 2022 May 29
Logged By: SAM	Completion Date: 2022 May 29
Reviewed By: AMM	Page 1 of 1

Testpit No: **TT-TP22-04**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	BEDROCK - moderately weathered, moderately fractured, moist, light reddish brown, sand and silt in fractures	Unfrozen			
0.2						0.2 / 0.4 / 0.6 / 0.8 / 1.0 / 1.2 / 1.4
0.4						1.6 / 1.8 / 2.0 / 2.2 / 2.4 / 2.6 / 2.8
0.6						3.0 / 3.2 / 3.4 / 3.6 / 3.8 / 4.0 / 4.2
		- slightly weathered				
0.8						4.4 / 4.6 / 4.8 / 5.0 / 5.2 / 5.4 / 5.6
1.0						5.8 / 6.0 / 6.2 / 6.4
		END OF BOREHOLE (1.1 metres) Note: Stopped at trench depth				
1.2						
1.4						
1.6						
1.8						
2						

TETRA TECH

Contractor: Ewing	Completion Depth: 1.1 m
Equipment Type: Excavator	Start Date: 2022 May 29
Logged By: SAM	Completion Date: 2022 May 29
Reviewed By: AMM	Page 1 of 1

Testpit No: **TT-TP22-05**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	SAND (COLLUVIUM) - silty, some gravel, fine to coarse grained sand, angular gravel to 100 mm diameter, damp, brown	Unfrozen			
0.2						0.2
						0.4
0.4		- moist				0.6
						0.8
0.6						1.0
						1.2
						1.4
						1.6
						1.8
						2.0
						2.2
						2.4
0.8		BEDROCK - moderately weathered, moderately fractures, damp, brownish grey, orange oxidized areas, sand and silt in fractures				2.6
						2.8
		- slightly weathered				3.0
1.0						3.2
						3.4
						3.6
						3.8
1.2		END OF BOREHOLE (1.2 metres) Note: Stopped at trench depth				4.0
						4.2
						4.4
1.4						4.6
						4.8
						5.0
1.6						5.2
						5.4
						5.6
						5.8
1.8						6.0
						6.2
						6.4
2						

TETRA TECH

Contractor: Ewing	Completion Depth: 1.2 m
Equipment Type: Excavator	Start Date: 2022 May 29
Logged By: SAM	Completion Date: 2022 May 29
Reviewed By: AMM	Page 1 of 1

Testpit No: **TT-TP22-06**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
	Excavated	SAND (COLLUVIUM) - silty, gravelly, fine to coarse grained sand, angular gravel to 100 mm diameter, damp, brown	Unfrozen			
0.2		BEDROCK - highly weathered, highly fractured, damp, brown and blue grey, sand and silt in fractures				0.2
0.4						0.4
		- moist				0.6
0.6						0.8
						1.0
0.8		- moderately weathered, damp				1.2
						1.4
1.0		END OF BOREHOLE (1.0 metre) Note: Stopped at trench depth				1.6
						1.8
1.2						2.0
						2.2
1.4						2.4
						2.6
1.6						2.8
						3.0
1.8						3.2
						3.4
2						3.6
						3.8
						4.0
						4.2
						4.4
						4.6
						4.8
						5.0
						5.2
						5.4
						5.6
						5.8
						6.0
						6.2
						6.4

TETRA TECH

Contractor: Ewing	Completion Depth: 1 m
Equipment Type: Excavator	Start Date: 2022 May 29
Logged By: SAM	Completion Date: 2022 May 29
Reviewed By: AMM	Page 1 of 1

Testpit No: **TT-TP22-07**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	UTM: E; N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0						0
0.2	Excavated	SILT (COLLUVIUM) - sandy, trace gravel, fine to medium grained sand, angular to subangular gravel to 50 mm diameter, moist, very low plastic, reddish brown	Unfrozen			0.2
0.4						0.4
0.6						0.6
0.8						0.8
1.0						1.0
1.2						1.2
1.4		END OF TESTPIT (1.3 metres)				1.4
1.6						1.6
1.8						1.8
2						2.0
						2.2
						2.4
						2.6
						2.8
						3.0
						3.2
						3.4
						3.6
						3.8
						4.0
						4.2
						4.4
						4.6
						4.8
						5.0
						5.2
						5.4
						5.6
						5.8
						6.0
						6.2
						6.4

TETRA TECH

Contractor: Ewing	Completion Depth: 1.3 m
Equipment Type: Excavator	Start Date: 2022 July 4
Logged By: JM	Completion Date: 2022 July 4
Reviewed By: AMM	Page 1 of 1

Testpit No: **TT-TP22-08**

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	Ground Elev: 1089 m
Dublin Gulch, Yukon	UTM: 460011 E; 7702584 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Elevation (m)
0						
	Excavated	GRAVEL (COLLUVIUM) - sandy, some silt, subangular gravel, fine to coarse grained sand, damp, light grey, (50 mm thick)	Unfrozen			
		SHALE (BEDROCK) - platy, light yellow brown mudstone crossbedding, rusty brown limonite staining, (150 mm thick)				
0.2		SILT - some clay, moist, low plastic, light grey	Possibly frozen			1088.8
		END OF TESTPIT (0.3 metres) Note: Stopped due to refusal on sandstone				
0.4						1088.6
0.6						1088.4
0.8						1088.2
1.0						1088.0
1.2						1087.8
1.4						1087.6
1.6						1087.4
1.8						1087.2
2						

Contractor: Ewing	Completion Depth: 0.3 m
Equipment Type: Excavator	Start Date: 2022 July 8
Logged By: JM	Completion Date: 2022 July 8
Reviewed By: AMM	Page 1 of 1

Testpit No: **TT-TP22-09**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	Ground Elev: 1095 m
Dublin Gulch, Yukon	UTM: 460087 E; 7702589 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Elevation (m)
0						
	Excavated	GRAVEL (COLLUVIUM) - sandy, some silt, subangular gravel to 100 mm diameter, fine to coarse grained sand, damp, light grey, (200 mm thick) - <15% ice	Unfrozen Frozen, ice seams to 10 mm thick, 10 mm diameter ice inclusions			
0.2		SILT - some clay, moist when thawed, low plastic, grey	No visible ice			1094.8
		END OF TESTPIT (0.3 metres) Note: Stopped due to frozen soil				
0.4						1094.6
0.6						1094.4
0.8						1094.2
1.0						1094.0
1.2						1093.8
1.4						1093.6
1.6						1093.4
1.8						1093.2
2						

TETRA TECH

Contractor: Ewing	Completion Depth: 0.3 m
Equipment Type: Excavator	Start Date: 2022 July 8
Logged By: JM	Completion Date: 2022 July 8
Reviewed By: AMM	Page 1 of 1

Testpit No: **TT-TP22-10**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	Ground Elev: 1102 m
Dublin Gulch, Yukon	UTM: 460122 E; 7102567 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Elevation (m)
0						
	Excavated	GRAVEL (COLLUVIUM) - sandy, some silt, angular gravel to 150 mm diameter, fine to coarse grained sand, damp, brown, (100 mm thick)	Unfrozen			
		SHALE (BEDROCK) - cross bedded, weathered, fractured, dark brown to black, rusty brown limonite staining, (150 mm thick)				
0.2						1101.8
		SILT - some clay, moist when thawed, low plastic, grey	Frozen			
0.4						1101.6
0.6		SANDSTONE - very weathered, fractured				1101.4
		END OF TESTPIT (0.7 metres)				
0.8						1101.2
1.0						1101.0
1.2						1100.8
1.4						1100.6
1.6						1100.4
1.8						1100.2
2						

TETRA TECH

Contractor: Ewing	Completion Depth: 0.7 m
Equipment Type: Excavator	Start Date: 2022 July 15
Logged By: JM	Completion Date: 2022 July 15
Reviewed By: AMM	Page 1 of 1

Testpit No: **TT-TP22-11**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	UTM: 459938 E; 7102303 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0		BEDROCK - minor fracturing, brown and grey	Unfrozen			0
1.0		END OF TESTPIT (1.0 metre) Note: Target depth reached				3.2
2						6.4

TETRA TECH

Contractor: Ewing	Completion Depth: 1 m
Equipment Type: Excavator	Start Date: 2022 August 24
Logged By: JS	Completion Date: 2022 August 24
Reviewed By: AMM	Page 1 of 1

Testpit No: **TT-TP22-12**

Victoria GOLD CORP

Project: VGCX HLF Phase 2 - Geotechnical Support	Project No: ENG.WARC03235-23
Location: Eagle Gold Mine	
Dublin Gulch, Yukon	UTM: 459939 E; 7102326 N; Z 8

Depth (m)	Method	Soil Description	Ground Ice Description	Moisture Content (%)	Plastic Limit / Moisture Content / Liquid Limit (20 40 60 80)	Depth (ft)
0		SAND AND GRAVEL (COLLUVIUM) - some silt, fine to coarse grained sand, angular gravel to 150 mm diameter, damp, brown	Unfrozen			0
0.2		BEDROCK - minor fracturing, competent Type 2, brown grey				0.2
0.4						0.4
0.6						0.6
0.8						0.8
1.0						1.0
1.2		END OF TESTPIT (1.2 metres) Note: Target depth reached				1.2
1.4						1.4
1.6						1.6
1.8						1.8
2						2

TETRA TECH

Contractor: Ewing	Completion Depth: 1.2 m
Equipment Type: Excavator	Start Date: 2022 August 25
Logged By: JS	Completion Date: 2022 August 25
Reviewed By: AMM	Page 1 of 1

APPENDIX E

COMPACTION TESTING RESULTS

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: VGCX HLF Phase 2 | **Test Apparatus:** | **Troxler No:**

Geotechnical Support | **Specified Compaction:** 95 % Std. Proctor Max. Dry Density

Project No.: 704-ENG.WARC03235-17 | **Specified Moisture** (MC): As below

Client: Victoria Gold | **Temperature** **Air:** ºC **Soil:** ºC

Attention: Steve Dew | **Date Tested:** As Below **By:** JS

Contractor: Ewing Transport | **Construction Period:**

Soil Description: Colluvium Soil (2250kg/m³ @ 7.3%)

Date yyyy/mm/dd	**Test No.** / Probe (mm)	**Location:**	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density	Opt. MC %	Comp % SPD
2021-09-21	**1** / 250	South Perim Berm - 1st Lift, point 43		2219	7.1	2250	7.3	**98.6**
	2 / 250	South Perim Berm - 1st Lift, halfway between point 44 & 45		2185	6.0	2250	7.3	**97.1**
	3 / 250	South Perim Berm - 2nd Lift, point 43		2271	4.9	2250	7.3	**100.9**
	4 / 250	South Perim Berm - 2nd Lift, halfway between point 44 & 45		2073	5.6	2250	7.3	**92.1**
	5 / 250	South Perim Berm - 3rd Lift, point 43		2206	5.7	2250	7.3	**98.0**
	6 / 250	South Perim Berm - 3rd Lift, halfway between point 44 & 45		2142	6.0	2250	7.3	**95.2**
	7 / 250	South Perim Berm - 4th Lift, point 43		2238	5.1	2250	7.3	**99.5**
	8 / 250	South Perim Berm - 4th Lift, half way between point 44 & 45		2204	6.1	2250	7.3	**98.0**
	9 / 250	South Perim Berm - 5th Lift, point 43		2189	5.4	2250	7.3	**97.3**
	10 / 250	South Perim Berm - 5th Lift, half way between point 44 & 45		2161	4.9	2250	7.3	**96.0**
	11 / 250	South Perim Berm - 6th Lift, point 43		2221	6.6	2250	7.3	**98.7**
2021-09-22	**12** / 250	South Perim Berm - 7th Lift point 43		2181	4.5	2250	7.3	**96.9**

Remarks: Due to unknown final berm thickness, lifts were tracked by number instead of depth to final grade

Max dry density based on Proctor results

Copies:

Reviewed By: _____ E.I.T.

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TETRA TECH

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: VGCX HLF Phase 2 — **Test Apparatus:** — **Troxler No:** —

Geotechnical Support — **Specified Compaction:** 95 % Std. Proctor Max. Dry Density

Project No.: 704-ENG.WARC03235-17 — **Specified Moisture** (MC): As below

Client: Victoria Gold — **Temperature** **Air:** ºC **Soil:** ºC

Attention: Steve Dew — **Date Tested:** As Below **By:** JS

Contractor: Ewing Transport — **Construction Period:**

Soil Description: Colluvium Soil (2250kg/m³ @ 7.3 %)

Date yyyy/mm/dd	Test No. / Probe (mm)	Location:	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density	Opt. MC %	Comp % SPD
2021-09-22	**13** / 250	South Perim Berm - 7th Lift, halfway between point 44 & 45		2164	4.3	2250	7.3	**96.2**
	14 / 250	South Perim Berm - 8th Lift, point 43		2146	5.4	2250	7.3	**95.4**
	15 / 250	South Perim Berm - 8th Lift, halfway between point 44 & 45		2163	5.8	2250	7.3	**96.1**
	16 / 250	South Perim Berm - 9th Lift, point 43		2179	7.0	2250	7.3	**96.8**
	17 / 250	South Perim Berm - 9th Lift, halfway between point 44 & 45		2183	5.2	2250	7.3	**97.0**
	18 / 250	South Perim Berm - 10th Lift, point 43		2214	7.8	2250	7.3	**98.4**
	19 / 250	South Perim Berm - 10th Lift, halfway between point 44 & 45		2221	7.0	2250	7.3	**98.7**
2021-09-23	**20** / 250	South Perim Berm - 11th Lift, point 43		2255	5.1	2250	7.3	**100.2**
	21 / 250	South Perim Berm - 11th Lift, halfway between point 44 & 45		2176	7.4	2250	7.3	**96.7**
	22 / 250	South Perim Berm - 12th Lift, point 43		2250	5.1	2250	7.3	**100.0**
	23 / 250	South Perim Berm - 12th Lift, halfway between point 44 & 45		2255	5.5	2250	7.3	**100.2**
	24 / 250	South Perim Berm - 13th Lift, point 45		2199	5.5	2250	7.3	**97.7**

Remarks: Due to unknown final berm thickness, lifts were tracked by number instead of depth to final grade

Max dry density based on Proctor results

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TETRA TECH

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: VGCX HLF Phase 2 | **Test Apparatus:** | **Troxler No:**

Geotechnical Support | **Specified Compaction:** 95 % Std. Proctor Max. Dry Density

Project No.: 704-ENG.WARC03235-17 | **Specified Moisture** (MC): As below

Client: Victoria Gold | **Temperature** **Air:** ºC **Soil:** ºC

Attention: Steve Dew | **Date Tested:** As Below **By:** JS/BM

Contractor: Ewing Transport | **Construction Period:**

Soil Description: Colluvium Soil (2250kg/m³ @ 7.3 %)

Date yyyy/mm/dd	**Test No.** Probe (mm)	**Location:**	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density	Opt. MC %	Comp % SPD
2021-09-23	**25** 250	South Perim Berm - 13th Lift, halfway between point 44 & 45		2196	5.9	2250	7.3	**97.6**
	26 250	South Perim Berm - 13th Lift, point 43		2243	4.9	2250	7.3	**99.7**
	27 250	South Perim Berm - 14th Lift, halfway between point 44 & 45		2183	8.4	2250	7.3	**97.0**
	28 250	South Perim Berm - 14th Lift, point 43		2239	6.8	2250	7.3	**99.5**
	29 250	South Perim Berm - 15th Lift, halfway between point 43 & 44		2136	7.9	2250	7.3	**94.9**
	30 250	South Perim Berm - 15th Lift, point 44		2207	6.2	2250	7.3	**98.1**
	31 250	South Perim Berm - 15th Lift, point 45		2183	6.6	2250	7.3	**97.0**
2021-09-24	**32** 250	South Perim Berm - 16th Lift: 460053E, 71011828N		2178	8.6	2250	7.3	**96.8**
	33 300	South Perim Berm - 16th Lift: 460013E, 7101803N		2144	8.2	2250	7.3	**95.3**
	34 300	South Perim Berm - 17th Lift: 460054E, 7101828N		2158	8.0	2250	7.3	**95.9**
	35 250	South Perim Berm - 17th Lift: 460050E, 7101823N		2150	8.3	2250	7.3	**95.6**
	36 250	South Perim Berm - 18th Lift: 460045E, 7101816N		2179	8.9	2250	7.3	**96.8**

Remarks: Due to unknown final berm thickness, lifts were tracked by number instead of depth to final grade

Max dry density based on Proctor results

Copies:

Reviewed By: _____ E.I.T.

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TETRA TECH

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: VGCX HLF Phase 2 **Test Apparatus:** **Troxler No:**

Geotechnical Support **Specified Compaction:** 95 % Std. Proctor Max. Dry Density

Project No.: 704-ENG.WARC03235-17 **Specified Moisture** (MC): As below

Client: Victoria Gold **Temperature** **Air:** ºC **Soil:** ºC

Attention: Steve Dew **Date Tested:** As Below **By:** BM

Contractor: Ewing Transport **Construction Period:**

Soil Description: Colluvium Soil (2250kg/m³ @ 7.3 %)

Date yyyy/mm/dd	Test No. / Probe (mm)	Location:	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density	Opt. MC %	Comp % SPD
2021-09-24	**37** / 300	South Perim Berm - 19th Lift: 460039E, 7101821N		2164	6.9	2250	7.3	**96.2**
2021-09-25	**38** / 300	South Perim Berm - 20th Lift: 460049E, 7101830N		2215	7.2	2250	7.3	**98.4**
	39 / 250	South Perim Berm - 18th Lift: 460012E, 7101804N		2143	10.4	2250	7.3	**95.2**
	40 / 250	South Perim Berm - 21st Lift: 460035E, 7101825N		2155	7.8	2250	7.3	**95.8**
	41 / 250	South Perim Berm - 22nd Lift: 460053E, 7101830N		2162	8.7	2250	7.3	**96.1**
	42 / 200	South Perim Berm - 19th Lift: 46007E, 7101799N		2144	9.1	2250	7.3	**95.3**
	43 / 250	South Perim Berm - 23rd Lift: 460047E, 7101828N		2181	7.8	2250	7.3	**96.9**
2021-09-26	**44** / 250	South Perim Berm - 24th Lift: 460048E, 7101828N		2200	7.8	2250	7.3	**97.8**
	45 / 250	South Perim Berm - 24th Lift: 460022E, 7101815N		2231	6.4	2250	7.3	**99.2**
	46 / 250	South Perim Berm - 25th Lift: 460054E, 7101831N		2246	7.6	2250	7.3	**99.8**
	47 / 250	South Perim Berm - 20th Lift: 460014E, 7101802N		2183	7.9	2250	7.3	**97.0**
	48 / 250	South Perim Berm - 26th Lift: 460054E, 7101831N		2212	6.3	2250	7.3	**98.3**

Remarks: Due to unknown final berm thickness, lifts were tracked by number instead of depth to final grade

Max dry density based on Proctor results

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TETRA TECH

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: VGCX HLF Phase 2 | **Test Apparatus:** | **Troxler No:**

Geotechnical Support | **Specified Compaction:** 95 % Std. Proctor Max. Dry Density

Project No.: 704-ENG.WARC03235-17 | **Specified Moisture** (MC): As below

Client: Victoria Gold | **Temperature** **Air:** ºC **Soil:** ºC

Attention: Steve Dew | **Date Tested:** As Below **By:** BM

Contractor: Ewing Transport | **Construction Period:**

Soil Description: Colluvium Soil (2250kg/m³ @ 7.3 %)

Date yyyy/mm/dd	Test No. / Probe (mm)	Location:	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density	Opt. MC %	Comp % SPD
2021-09-26	**49** / 250	South Perim Berm - 21st Lift: 460019E, 7101803N		2142	6.4	2250	7.3	**95.2**
2021-09-27	**50** / 250	South Perim Berm - 27th Lift: 460058E, 7101829N		2221	5.8	2250	7.3	**98.7**
	51 / 250	South Perim Berm - 28th Lift: 460050E, 7101829N		2138	8.0	2250	7.3	**95.0**
	52 / 250	South Perim Berm - 27th Lift: 460024E, 7101811N		2253	5.1	2250	7.3	**100.1**
	53 / 250	South Perim Berm - 29th Lift: 460058E, 7101839N		2153	6.3	2250	7.3	**95.7**
	54 / 250	South Perim Berm - 28th Lift: 460026E, 7101808N		2147	5.9	2250	7.3	**95.4**
2021-09-28	**55** / 300	South Perim Berm - 29th Lift: 460036E, 7101811N		2220	5.7	2250	7.3	**98.7**
	56 / 300	South Perim Berm - 29th Lift: 460054E, 7101833N		2169	5.8	2250	7.3	**96.4**
	57 / 250	South Perim Berm - 30th Lift: 460033E, 7101814N		2283	4.5	2250	7.3	**101.5**
	58 / 300	South Perim Berm - 30th Lift: 460057E, 7101836N		2180	5.8	2250	7.3	**96.9**
	59 / 300	South Perim Berm - 31st Lift: 460030E, 7101823N		2233	5.3	2250	7.3	**99.2**
2021-09-29	**60** / 250	South Perim Berm - 31st Lift: 460062E, 7101843N		2140	5.0	2250	7.3	**95.1**

Remarks: Due to unknown final berm thickness, lifts were tracked by number instead of depth to final grade

Max dry density based on Proctor results

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TETRA TECH

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: VGCX HLF Phase 2 | **Test Apparatus:** | **Troxler No:**

Geotechnical Support | **Specified Compaction:** 95 % Std. Proctor Max. Dry Density

Project No.: 704-ENG.WARC03235-17 | **Specified Moisture** (MC): As below

Client: Victoria Gold | **Temperature** **Air:** ºC **Soil:** ºC

Attention: Steve Dew | **Date Tested:** As Below **By:** BM

Contractor: Ewing Transport | **Construction Period:**

Soil Description: Colluvium Soil (2250kg/m³ @ 7.3 %)

Date yyyy/mm/dd	Test No. / Probe (mm)	Location:	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density	Opt. MC %	Comp % SPD
2021-09-29	**61** / 250	South Perim Berm - 32nd Lift: 460036E, 7101820N		2142	6.0	2250	7.3	**95.2**
	62 / 250	South Perim Berm - 32nd Lift: 460073E, 7101847N		2182	7.2	2250	7.3	**97.0**
2021-10-01	**63** / 300	South Perim Berm - 33rd Lift: 460022E, 7101820N		2142	7.5	2250	7.3	**95.2**
	64 / 250	South Perim Berm - 33rd Lift: 460006E, 7101824N		2137	4.3	2250	7.3	**95.0**
	65 / 300	South Perim Berm - 34th Lift: 460044E, 7101829N		2170	6.4	2250	7.3	**96.4**
	66 / 300	South Perim Berm - 34th Lift: 460067E, 7101844N		2173	4.5	2250	7.3	**96.6**
	67 / 300	South Perim Berm - 35th Lift: 460044E, 7101830N		2147	6.5	2250	7.3	**95.4**
2021-10-02	**68** / 300	South Perim Berm - 35th Lift: 460063E, 7101852N		2213	6.7	2250	7.3	**98.4**
	69 / 300	South Perim Berm - 36th Lift: 460040E, 7101825N		2181	7.7	2250	7.3	**96.9**
	70 / 300	South Perim Berm - 36th Lift: 460066E, 7101845N		2260	5.3	2250	7.3	**100.4**
	71 / 300	South Perim Berm - 37th Lift: 460037E, 7101824N		2202	6.0	2250	7.3	**97.9**
2021-10-03	**72** / 300	South Perim Berm - 37th Lift: 460066E, 7101849N		2137	6.8	2250	7.3	**95.0**

Remarks: Due to unknown final berm thickness, lifts were tracked by number instead of depth to final grade

Max dry density based on Proctor results

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TETRA TECH

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: VGCX HLF Phase 2 **Test Apparatus:** **Troxler No:**

Geotechnical Support **Specified Compaction:** 95 % Std. Proctor Max. Dry Density

Project No.: 704-ENG.WARC03235-17 **Specified Moisture** (MC): As below

Client: Victoria Gold **Temperature** **Air:** ºC **Soil:** ºC

Attention: Steve Dew **Date Tested:** As Below **By:** BM

Contractor: Ewing Transport **Construction Period:**

Soil Description: Colluvium Soil (2250kg/m³ @ 7.3 %)

Date yyyy/mm/dd	**Test No.** Probe (mm)	**Location:**	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density	Opt. MC %	Comp % SPD
2021-10-03	**73** 250	South Perim Berm - 38th Lift: 460038E, 7101830N		2151	8.6	2250	7.3	**95.6**
	74 300	South Perim Berm - 38th Lift: 460070E, 7101845N		2149	7.9	2250	7.3	**95.5**
	75 250	South Perim Berm - 39th Lift: 460040E, 7101837N		2188	8.6	2250	7.3	**97.2**
2021-10-04	**76** 300	South Perim Berm - 39th Lift: 460068E, 7101852N		2170	7.7	2250	7.3	**96.4**
	77 250	South Perim Berm - 40th Lift: 460041E, 7101832N		2176	6.9	2250	7.3	**96.7**
	78 300	South Perim Berm - 40th Lift: 460070E, 7101851N		2223	7.5	2250	7.3	**98.8**
	79 250	South Perim Berm - 41st Lift: 460043E, 7101829N		2208	8.2	2250	7.3	**98.1**
	80 250	South Perim Berm - 41st Lift: 460058E, 7101855N		2140	9.0	2250	7.3	**95.1**
	81 250	South Perim Berm - 42nd Lift: 460049E, 7101838N		2192	7.8	2250	7.3	**97.4**
2021-10-05	**82** 250	South Perim Berm - 42nd Lift: 460069E, 7101861N		2155	5.8	2250	7.3	**95.8**
	83 250	South Perim Berm - 43rd Lift: 460046E, 7101836N		2149	6.1	2250	7.3	**95.5**
	84 300	South Perim Berm - 43rd Lift: 460070E, 7101859N		2223	5.1	2250	7.3	**98.8**

Remarks: Due to unknown final berm thickness, lifts were tracked by number instead of depth to final grade

Max dry density based on Proctor results

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TETRA TECH

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: VGCX HLF Phase 2 | **Test Apparatus:** | **Troxler No:**

Geotechnical Support | **Specified Compaction:** 95 % Std. Proctor Max. Dry Density

Project No.: 704-ENG.WARC03235-17 | **Specified Moisture** (MC): As below

Client: Victoria Gold | **Temperature** **Air:** ºC **Soil:** ºC

Attention: Steve Dew | **Date Tested:** As Below **By:** BM

Contractor: Ewing Transport | **Construction Period:**

Soil Description: Colluvium Soil (2250kg/m³ @ 7.3 %)

Date yyyy/mm/dd	Test No. / Probe (mm)	Location:	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density	Opt. MC %	Comp % SPD
2021-10-05	**85** / 300	South Perim Berm - 44th Lift: 460050E, 7101842N		2178	5.9	2250	7.3	**96.8**
	86 / 300	South Perim Berm - 44th Lift: 460074E, 7101861N		2237	6.0	2250	7.3	**99.4**
	87 / 250	South Perim Berm - 45th Lift: 460056E, 7101848N		2140	8.4	2250	7.3	**95.1**
2021-10-06	**88** / 250	South Perim Berm - 45th Lift: 460071E, 7101865N		2168	7.1	2250	7.3	**96.4**
	89 / 250	South Perim Berm - 46th Lift: 460045E, 7101850N		2177	6.3	2250	7.3	**96.8**
	90 / 300	South Perim Berm - 46th Lift: 460068E, 7101864N		2138	6.4	2250	7.3	**95.0**
	91 / 300	South Perim Berm - 47th Lift: 460053E, 7101847N		2201	6.2	2250	7.3	**97.8**
	92 / 300	South Perim Berm - 47th Lift: 460076E, 7101872N		2142	6.4	2250	7.3	**95.2**
2021-10-07	**93** / 250	South Perim Berm - 48th Lift: 460061E, 7101851N		2156	7.2	2250	7.3	**95.8**
	94 / 250	South Perim Berm - 48th Lift: 460069E, 7101874N		2204	5.8	2250	7.3	**98.0**
	95 / 300	South Perim Berm - 49th Lift: 460054E, 7101851N		2179	5.8	2250	7.3	**96.8**
	96 / 300	South Perim Berm - 49th Lift: 460077E, 7101873N		2167	5.8	2250	7.3	**96.3**

Remarks: Due to unknown final berm thickness, lifts were tracked by number instead of depth to final grade

Max dry density based on Proctor results

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TETRA TECH

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: VGCX HLF Phase 2 | **Test Apparatus:** | **Troxler No:**

Geotechnical Support | **Specified Compaction:** 95 % Std. Proctor Max. Dry Density

Project No.: 704-ENG.WARC03235-17 | **Specified Moisture** (MC): As below

Client: Victoria Gold | **Temperature** **Air:** ºC **Soil:** ºC

Attention: Steve Dew | **Date Tested:** As Below **By:** BM

Contractor: Ewing Transport | **Construction Period:**

Soil Description: Colluvium Soil (2250kg/m³ @ 7.3 %)

Date yyyy/mm/dd	Test No. / Probe (mm)	Location:	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density	Opt. MC %	Comp % SPD
2021-10-07	**97** / 300	South Perim Berm - 50th Lift: 460058E, 7101866N		2137	6.6	2250	7.3	**95.0**
2021-10-08	**98** / 250	South Perim Berm - 50th Lift: 460069E, 7101874N		2190	6.2	2250	7.3	**97.3**
	99 / 250	South Perim Berm - 51st Lift: 460053E, 7101851N	GR	2199	6.6	2250	7.3	**97.7**
	100 / 300	South Perim Berm - 51st Lift: 460085E, 7101884N		2298	5.0	2250	7.3	**102.1**
	101 / 300	South Perim Berm - 52nd Lift: 460074E, 7101870N		2210	5.6	2250	7.3	**98.2**
	102 / 250	South Perim Berm - 52nd Lift: 460094E, 7101889N		2151	5.7	2250	7.3	**95.6**
2021-10-09	**103** / 250	South Perim Berm - 53rd Lift: 460113E, 7101896N		2144	5.2	2250	7.3	**95.3**
	104 / 300	South Perim Berm - 53rd Lift: 460088E, 7101883N		2144	4.9	2250	7.3	**95.3**
	105 / 250	South Perim Berm - 53rd Lift: 460082E, 7101884N		2140	6.0	2250	7.3	**95.1**
	106 / 250	South Perim Berm - 54th Lift: 460114E, 7101903N		2201	5.9	2250	7.3	**97.8**
	107 / 250	South Perim Berm - 54th Lift: 460084E, 7101880N		2201	5.7	2250	7.3	**97.8**
	108 / 250	South Perim Berm - 55th Lift: 4600122E, 7101903N		2169	5.7	2250	7.3	**96.4**

Remarks: Due to unknown final berm thickness, lifts were tracked by number instead of depth to final grade

Max dry density based on Proctor results

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TETRA TECH

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: VGCX HLF Phase 2 — **Test Apparatus:** — **Troxler No:** —

Geotechnical Support — **Specified Compaction:** 95 % Std. Proctor Max. Dry Density

Project No.: 704-ENG.WARC03235-17 — **Specified Moisture** (MC): As below

Client: Victoria Gold — **Temperature** **Air:** — ºC **Soil:** — ºC

Attention: Steve Dew — **Date Tested:** As Below **By:** BM

Contractor: Ewing Transport — **Construction Period:** —

Soil Description: Colluvium Soil (2250kg/m³ @ 7.3 %)

Date yyyy/mm/dd	Test No. / Probe (mm)	Location:	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density	Opt. MC %	Comp % SPD
2021-10-10	**109** / 250	South Perim Berm - 55th Lift: 460090E, 7101883N		2183	5.0	2250	7.3	**97.0**
	110 / 250	South Perim Berm - 56th Lift: 460119E, 7101902N		2175	5.9	2250	7.3	**96.7**
	111 / 250	South Perim Berm - 56th Lift: 460094E, 7101885N		2174	4.9	2250	7.3	**96.6**
	112 / 250	South Perim Berm - 57th Lift: 460103E, 7101892N		2164	5.8	2250	7.3	**96.2**
2021-10-11	**113** / 250	South Perim Berm - 58th Lift: 460117E, 7101902N		2184	5.6	2250	7.3	**97.1**
	114 / 250	South Perim Berm - 58th Lift: 460099E, 7101887N		2161	5.4	2250	7.3	**96.0**
	115 / 300	South Perim Berm - 59th Lift: 460133E, 7101904N		2177	7.2	2250	7.3	**96.8**
	116 / 300	South Perim Berm - 59th Lift: 460105E, 7101884N		2196	6.5	2250	7.3	**97.6**
	117 / 250	South Perim Berm - 59th Lift: 460129E, 7101900N		2153	5.2	2250	7.3	**95.7**
2021-10-13	**118** / 250	South Perim Berm - 60th Lift: 460158E, 7101900N		2153	6.7	2250	7.3	**95.7**
	119 / 250	South Perim Berm - 60th Lift: 460137E, 7101908N		2160	6.6	2250	7.3	**96.0**
2021-10-15	**120** / 300	South Perim Berm - 61st Lift: 460145E, 7101914N		2151	5.8	2250	7.3	**95.6**

Remarks: Due to unknown final berm thickness, lifts were tracked by number instead of depth to final grade

Max dry density based on Proctor results

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TETRA TECH

COMPACTION DENSITY TEST SUMMARY REPORT

ASTM Designation D6938

Project: VGCX HLF Phase 2 **Test Apparatus:** **Troxler No:**

Geotechnical Support **Specified Compaction:** 95 % Std. Proctor Max. Dry Density

Project No.: 704-ENG.WARC03235-17 **Specified Moisture** (MC): As below

Client: Victoria Gold **Temperature** **Air:** ºC **Soil:** ºC

Attention: Steve Dew **Date Tested:** As Below **By:** BM

Contractor: Ewing Transport **Construction Period:**

Soil Description: Colluvium Soil (2250kg/m³ @ 7.3 %)

Date yyyy/mm/dd	Test No. / Probe (mm)	Location:	Depth to Grade (m)	Dry Density (kg/m³)	MC %	Max. Dry Density	Opt. MC %	Comp % SPD
2021-10-15	**121** / 250	South Perim Berm - Bypass Entrance: 460037E, 7101833N	GR	2160	6.6	2250	7.3	**96.0**
2021-10-16	**122** / 300	South Perim Berm - 62nd Lift: 460124E, 7101901N		2141	5.5	2250	7.3	**95.2**
2021-10-17	**123** / 250	North Perim Berm - 1st Lift: 459611E, 7102436N		2150	4.4	2250	7.3	**95.6**
	124 / 300	North Perim Berm - 2nd Lift: 459636E, 7102449N		2171	5.5	2250	7.3	**96.5**
	125 / 250	North Perim Berm - 3rd Lift: 459645E, 7102449N		2218	5.0	2250	7.3	**98.6**
2021-10-18	**126** / 300	North Perim Berm - 4th Lift: 459634E, 7102445N		2138	3.7	2250	7.3	**95.0**
	127 / 250	North Perim Berm - 5th Lift: 459639E, 7102446N		2182	4.2	2250	7.3	**97.0**
	128 / 250	North Perim Berm - 6th Lift: 459639E, 7102446N		2154	4.8	2250	7.3	**95.7**
	129 / 250	North Perim Berm - 7th Lift: 459657E, 7102452N		2196	4.7	2250	7.3	**97.6**
2021-10-19	**130** / 300	North Perim Berm - 7th Lift; 459611E, 7102428N		2244	4.8	2250	7.3	**99.7**
	131 / 250	North Perim Berm - 8th Lift: 459624E, 7102434N		2142	5.7	2250	7.3	**95.2**
	132 / 300	North Perim Berm - 1st Lift: 459765E, 7102503N		2167	5.3	2250	7.3	**96.3**

Remarks: Due to unknown final berm thickness, lifts were tracked by number instead of depth to final grade

Max dry density based on Proctor results

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TETRA TECH

FIELD DENSITY TEST SUMMARY REPORT

ASTM D6938

PROJECT INFORMATION

Project Number: 704-ENG.WARC03235-23
Project: VGCX HLF Phase 2
Client: JDS Energy and Mining Inc
900-999 West Hastings Street
Vancouver Britsh Columbia -
Attention:

Site: Eagle Gold Mine
Tech(s): ---, JM, JS

TEST INFORMATION

Contractor: ---
Standard Area Name: [Other Info]
Surface Works : [North Berm]
Proctor Type: Standard (ASTM D698)
Soil Description(s):

```
o SAND, gravelly,some silt . . . . . : 2250kg/m3 @7.0% : Est
o sand, gravel, colluvium . . . . . : 2150kg/m3 @7.0% : Est
```

Report #: 1
Specified Compaction (%): 95.0

Test #	Date	Location	Grade Depth (m)	Probe Depth (mm)	Dry Density (kg/m³)	MC (%)	Proctor Density (kg/m³)	MC Opt (%)	MC Range (%)	Cmpct. (%)
1	Jun 16, 2022	459475, 7102246 perimeter construction	-2.50	300	2171	6.6	2250 (Est)	7.0	5.0 9.0	96.5
2	Jun 16, 2022	459471, 7102237 perimeter construction	-2.20	300	2218	5.6	2250 (Est)	7.0	5.0 9.0	98.6
3	Jun 16, 2022	459497, 7102309 perimeter construction	-1.80	300	2163	6.1	2250 (Est)	7.0	5.0 9.0	96.1
4	Jun 16, 2022	459487, 7102322 perimeter construction	-1.50	300	2138	4.5	2250 (Est)	7.0	5.0 9.0	95.0
5	Jun 16, 2022	459781, 7102306 perimeter construction	-1.10	300	2272	3.9	2250 (Est)	7.0	5.0 9.0	101.0
6	Jun 22, 2022	459565, 7102360 perimeter construction	0.00	300	2162	5.8	2250 (Est)	7.0	5.0 9.0	96.1
7	Jun 23, 2022	459621, 7102406 perimeter construction	0.00	300	2094	6.3	2150 (Est)	7.0	5.0 9.0	97.4
8	Jul 01, 2022	459859, 7102545 perimeter construction	0.00	300	2057	5.8	2150 (Est)	7.0	5.0 9.0	95.7
9	Jul 01, 2022	459941, 7102570 perimeter construction	0.00	300	2077	4.4	2150 (Est)	7.0	5.0 9.0	96.6
10	Jul 01, 2022	459847, 7102542 perimeter construction	0.00	300	2078	5.1	2150 (Est)	7.0	5.0 9.0	96.7

Remarks:

cc:

Reviewed By:

Name:
Adam Mickey E.I.T.

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FIELD DENSITY TEST SUMMARY REPORT

ASTM D6938

PROJECT INFORMATION

Project Number: 704-ENG.WARC03235-23
Project: VGCX HLF Phase 2
Client: JDS Energy and Mining Inc
900-999 West Hastings Street
Vancouver Britsh Columbia -
Attention:

Site: Eagle Gold Mine
Tech(s): JM

TEST INFORMATION

Contractor: ---
Standard Area Name: [Other Info]
Surface Works : [North Berm]
Proctor Type: Standard (ASTM D698)
Soil Description(s):

```
o SAND, gravelly,some silt . . . . . : 2250kg/m3 @7.0% : Est
o Sand, silt, gravel fine grains . . . . . : 2100kg/m3 @7.0% : Est
o sand, gravel, colluvium . . . . . : 2150kg/m3 @7.0% : Est
```

Report #: 1
Specified Compaction (%): 95.0

Test #	Date	Location	Grade Depth (m)	Probe Depth (mm)	Dry Density (kg/m³)	MC (%)	Proctor Density (kg/m³)	MC Opt (%)	MC Range (%)	Cmpct. (%)
11	Jul 02, 2022	459944, 7102576 perimeter construction	0.00	300	2045	5.3	2150 (Est)	7.0	5.0 9.0	95.1
12	Jul 02, 2022	489900, 7102576 perimeter construction	0.00	300	2030	5.2	2100 (Est)	7.0	5.0 9.0	96.7
13	Jul 02, 2022	459851, 7102534 perimeter construction	0.00	250	2010	4.9	2100 (Est)	7.0	5.0 9.0	95.7
14	Jul 02, 2022	459941, 7102571 perimeter construction	0.00	300	2009	4.8	2100 (Est)	7.0	5.0 9.0	95.7
15	Jul 09, 2022	459989, 7102582 perimeter construction	0.00	300	2148	5.4	2250 (Est)	7.0	5.0 9.0	95.5
16	Jul 09, 2022	459859, 7102541 perimeter construction	0.00	300	2139	5.6	2250 (Est)	7.0	5.0 9.0	95.1
17	Jul 09, 2022	460007, 7102582 perimeter construction	0.00	300	2196	4.4	2250 (Est)	7.0	5.0 9.0	97.6
18	Jul 09, 2022	460053, 7102586 perimeter construction	0.00	300	2159	5.7	2250 (Est)	7.0	5.0 9.0	96.0
19	Jul 09, 2022	459860, 7102545 perimeter construction	0.00	300	2154	6.8	2250 (Est)	7.0	5.0 9.0	95.7
20	Jul 12, 2022	460089, 7102583 perimeter construction	0.00	300	2206	5.5	2250 (Est)	7.0	5.0 9.0	98.0

Remarks:

cc:

Reviewed By:

Name:
Adam Mickey E.I.T.

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FIELD DENSITY TEST SUMMARY REPORT

ASTM D6938

PROJECT INFORMATION

Project Number: 704-ENG.WARC03235-23
Project: VGCX HLF Phase 2
Client: JDS Energy and Mining Inc
900-999 West Hastings Street
Vancouver Britsh Columbia -
Attention:

Site: Eagle Gold Mine
Tech(s): JM

TEST INFORMATION

Contractor: ---
Standard Area Name: [Other Info]
Surface Works : [North Berm]
Proctor Type: Standard (ASTM D698)
Soil Description(s):

```
o SAND, gravelly,some silt . . . . . : 2250kg/m3 @7.0% : Est
```

Report #: 1
Specified Compaction (%): 95.0

Test #	Date	Location	Grade Depth (m)	Probe Depth (mm)	Dry Density (kg/m³)	MC (%)	Proctor Density (kg/m³)	MC Opt (%)	MC Range (%)	Cmpct. (%)
21	Jul 12, 2022	460028, 7102577 perimeter construction	0.00	300	2290	6.8	2250 (Est)	7.0	5.0 9.0	101.8
22	Jul 12, 2022	459967, 7102571 perimeter construction	0.00	300	2186	4.9	2250 (Est)	7.0	5.0 9.0	97.2
23	Jul 12, 2022	460092, 7102589 perimeter construction	0.00	300	2158	7.5	2250 (Est)	7.0	5.0 9.0	95.9
24	Jul 12, 2022	460091, 7102616 perimeter construction	0.00	300	2281	6.2	2250 (Est)	7.0	5.0 9.0	101.4
25	Jul 13, 2022	460078, 7102588 perimeter construction	0.00	300	2186	7.4	2250 (Est)	7.0	5.0 9.0	97.2
26	Jul 13, 2022	460704, 7102601 perimeter construction	0.00	300	2159	5.7	2250 (Est)	7.0	5.0 9.0	96.0
27	Jul 13, 2022	460101, 7102588 perimeter construction	0.00	300	2144	6.1	2250 (Est)	7.0	5.0 9.0	95.3
28	Jul 13, 2022	460114, 7102586 perimeter construction	0.00	300	2157	6.6	2250 (Est)	7.0	5.0 9.0	95.9
29	Jul 13, 2022	459983, 7102567 perimeter construction	0.00	300	2143	5.7	2250 (Est)	7.0	5.0 9.0	95.2
30	Jul 13, 2022	460034, 7102583 perimeter construction	0.00	300	2302	5.5	2250 (Est)	7.0	5.0 9.0	102.3

Remarks:

cc:

Reviewed By:

Name:
Adam Mickey E.I.T.

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FIELD DENSITY TEST SUMMARY REPORT

ASTM D6938

PROJECT INFORMATION

Project Number: 704-ENG.WARC03235-23
Project: VGCX HLF Phase 2
Client: JDS Energy and Mining Inc
900-999 West Hastings Street
Vancouver Britsh Columbia -
Attention:

Site: Eagle Gold Mine
Tech(s): JM

TEST INFORMATION

Contractor: ---
Standard Area Name: [Other Info]
Surface Works : [North Berm]
Proctor Type: Standard (ASTM D698)
Soil Description(s):

o SAND, gravelly,some silt . . . . . : 2250kg/m3 @7.0% : Est

Report #: 1
Specified Compaction (%): 95.0

Test #	Date	Location	Grade Depth (m)	Probe Depth (mm)	Dry Density (kg/m³)	MC (%)	Proctor Density (kg/m³)	MC Opt (%)	MC Range (%)	Cmpct. (%)
31	Jul 14, 2022	459976, 7102571 perimeter construction	0.00	300	2163	6.5	2250 (Est)	7.0	5.0 9.0	96.1
32	Jul 14, 2022	460060. 7102591 perimeter construction	0.00	300	2145	6.2	2250 (Est)	7.0	5.0 9.0	95.3
33	Jul 14, 2022	460106, 7102591 perimeter construction	0.00	300	2138	6.6	2250 (Est)	7.0	5.0 9.0	95.0
34	Jul 14, 2022	459996, 7102571 perimeter construction	0.00	300	2285	5.5	2250 (Est)	7.0	5.0 9.0	101.6
35	Jul 15, 2022	460006, 7102572 perimeter construction	0.00	300	2152	5.3	2250 (Est)	7.0	5.0 9.0	95.6
36	Jul 15, 2022	460054, 7102579 perimeter construction	0.00	300	2149	5.7	2250 (Est)	7.0	5.0 9.0	95.5
37	Jul 15, 2022	460095, 7102590 perimeter construction	0.00	300	2139	6.2	2250 (Est)	7.0	5.0 9.0	95.1
38	Jul 15, 2022	460093, 7102579 perimeter construction	0.00	300	2149	4.6	2250 (Est)	7.0	5.0 9.0	95.5
39	Jul 15, 2022	460037, 7102575 perimeter construction	0.00	300	2152	5.2	2250 (Est)	7.0	5.0 9.0	95.6
40	Jul 15, 2022	460006, 7102572 perimeter construction	0.00	300	2152	5.3	2250 (Est)	7.0	5.0 9.0	95.6

Remarks:

cc:

Reviewed By:

Name:
Adam Mickey E.I.T.

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FIELD DENSITY TEST SUMMARY REPORT

ASTM D6938

PROJECT INFORMATION

Project Number: 704-ENG.WARC03235-23
Project: VGCX HLF Phase 2
Client: JDS Energy and Mining Inc
900-999 West Hastings Street
Vancouver Britsh Columbia -
Attention:

Site: Eagle Gold Mine
Tech(s): JM

TEST INFORMATION

Contractor: ---
Standard Area Name: [Other Info]
Surface Works : [North Berm]
Proctor Type: Standard (ASTM D698)
Soil Description(s):

```
o SAND, gravelly,some silt . . . . . : 2250kg/m3 @7.0% : Est
```

Report #: 1
Specified Compaction (%): 95.0

Test #	Date	Location	Grade Depth (m)	Probe Depth (mm)	Dry Density (kg/m³)	MC (%)	Proctor Density (kg/m³)	MC Opt (%)	MC Range (%)	Cmpct. (%)
41	Jul 15, 2022	460054, 7102579 perimeter construction	0.00	300	2149	5.7	2250 (Est)	7.0	5.0 9.0	95.5
42	Jul 15, 2022	460095, 7102590 perimeter construction	0.00	300	2139	6.2	2250 (Est)	7.0	5.0 9.0	95.1
43	Jul 15, 2022	460093, 7102579 perimeter construction	0.00	300	2149	4.6	2250 (Est)	7.0	5.0 9.0	95.5
44	Jul 15, 2022	406037, 7102575 perimeter construction	0.00	300	2152	5.2	2250 (Est)	7.0	5.0 9.0	95.6
45	Jul 17, 2022	460098, 7102575 perimeter construction	0.00	300	2155	6.8	2250 (Est)	7.0	5.0 9.0	95.8
46	Jul 17, 2022	460048, 7102568 perimeter construction	0.00	300	2138	6.8	2250 (Est)	7.0	5.0 9.0	95.0
47	Jul 17, 2022	460053, 7102580 perimeter construction	0.00	300	2153	6.5	2250 (Est)	7.0	5.0 9.0	95.7
48	Jul 20, 2022	460061, 7102568 perimeter construction	0.00	300	2160	6.6	2250 (Est)	7.0	5.0 9.0	96.0
49	Jul 21, 2022	460098, 7102575 perimeter construction	0.00	300	2141	6.8	2250 (Est)	7.0	5.0 9.0	95.2
50	Jul 21, 2022	460073, 7102579 perimeter construction	0.00	300	2174	6.5	2250 (Est)	7.0	5.0 9.0	96.6

Remarks:

cc:

Reviewed By:

Name:
Adam Mickey E.I.T.

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FIELD DENSITY TEST SUMMARY REPORT

ASTM D6938

PROJECT INFORMATION

Project Number: 704-ENG.WARC03235-23
Project: VGCX HLF Phase 2
Client: JDS Energy and Mining Inc
900-999 West Hastings Street
Vancouver Britsh Columbia -
Attention:

Site: Eagle Gold Mine
Tech(s): JM

TEST INFORMATION

Contractor: ---
Standard Area Name: [Other Info]
Surface Works : [North Berm]
Proctor Type: Standard (ASTM D698)
Soil Description(s):
o SAND, gravelly,some silt . . . . . : 2250kg/m3 @7.0% : Est

Report #: 1
Specified Compaction (%): 95.0

Test #	Date	Location	Grade Depth (m)	Probe Depth (mm)	Dry Density (kg/m³)	MC (%)	Proctor Density (kg/m³)	MC Opt (%)	MC Range (%)	Cmpct. (%)
51	Jul 21, 2022	460064, 7102572 perimeter construction	0.00	300	2154	4.3	2250 (Est)	7.0	5.0 9.0	95.7
52	Jul 22, 2022	460091, 7102582 perimeter construction	0.00	300	2167	7.1	2250 (Est)	7.0	5.0 9.0	96.3
53	Jul 22, 2022	460093, 7102575 perimeter construction	0.00	300	2169	6.3	2250 (Est)	7.0	5.0 9.0	96.4
54	Jul 23, 2022	460115, 7102577 perimeter construction	0.00	300	2153	5.7	2250 (Est)	7.0	5.0 9.0	95.7
55	Jul 23, 2022	460131, 7102579 perimeter construction	0.00	300	2155	6.3	2250 (Est)	7.0	5.0 9.0	95.8
56	Jul 24, 2022	460000, 7102573 perimeter construction	0.00	300	2164	5.7	2250 (Est)	7.0	5.0 9.0	96.2

Remarks:

cc:

Reviewed By:

Name:
Adam Mickey E.I.T.

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APPENDIX F

LAYFIELD'S QC PACKAGE

LAYFIELD
Canada

Project Completion QA/QC Package for

Victoria Gold Corp

Phase 2A Heap Leach Pad

Dublin Gulch
Eagle Gold Mine, Yukon

Supply and Install of NWL60 GCL and 80 mil RT LLDPE

Prepared By: Jason Wheeler

Reviewed By: Jason Wheeler

Date Revised: August 2, 2022

Layfield Canada Ltd.

Table of Contents

for

Victoria Gold Corp

Phase 2A Heap Leach Pad

Dublin Gulch
Eagle Gold Mine, Yukon

1)	Geosynthetics Inventory Log	30 pgs.
2)	Certificate of Inspection of Soil Subgrade Surface	6 pgs.
3)	Geomembrane Deployment Log	24 pgs.
4)	Geomembrane Seam & Test Log	58 pgs.
5)	Geomembrane Detail & Test Log	37 pgs.
6)	Geomembrane Destruct Log	18 pgs.
7)	As-built	1 pg.
8)	Certificate of Final Inspection and Acceptance	2 pgs.
9)	Geomembrane Mill Certificates	43 pgs.
10)	GCL Mill Certificates	86 pgs.
11)	Installation Warranty	1 pg.

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF INSPECTION OF SOIL SUBGRADE SURFACE

PROJECT NAME: Eagle Gold Mine Heap Leach Pad Liner Phase 2A
PROJECT NUMBER: CT001708
OWNER/CONTRACTOR: Victoria Gold / JDS
LOCATION: Dublin Gulch, YT

I, the undersigned, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the soil subgrade surface described below, and:

- ☑ *found it to be an acceptable surface on which to install geomembrane; OR*
- ☐ *found it to be an Unacceptable surface on which to install geomembrane*

Area Inspected (☑ Partial or ☐ Complete): East Slope
Dimensions of Subgrade Inspection: 121m x 209m 25289m2
Anchor Trench Dimensions: 0.75m x 0.75m
Comments: Layfield has inspected and accepted the subgrade for Containment Liner installation

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield and Layfield makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade inspected on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

LAYFIELD REPRESENTATIVE:

Date: 06/18/22
Signature:
Name: Chad Messervey
Title: Project Supervisor

OWNERS REPRESENTATIVE:

I, the undersigned, a duly appointed representative of the Owner, hereby understand the soil subgrade surface inspection described above and authorize Layfield to proceed with deployment of geosynthetics on the subgrade provided.

Date: 06/18/22
Signature:
Name: Jacob Swarty
Title: CQA Engineer
Company: Tetra Tech

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF INSPECTION OF SOIL SUBGRADE SURFACE

PROJECT NAME: Eagle Gold Phase 2A
PROJECT NUMBER: CT001708
OWNER/CONTRACTOR: Victoria Gold / JDS
LOCATION: Dublin Gultch, YT

I, the undersigned, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the soil subgrade surface described below, and:

☑ *found it to be an acceptable surface on which to install geomembrane; OR*

☐ *found it to be an Unacceptable surface on which to install geomembrane*

Area Inspected (☑ Partial or ☐ Complete): ALF East Slope.
Dimensions of Subgrade Inspection: 86m by 175m Approx 15000sqm (14964m²)
Anchor Trench Dimensions: 0.75m by 0.75m
Comments: Layfield has inspected and found it acceptable for containment liner installation

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield and Layfield makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade inspected on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

LAYFIELD REPRESENTATIVE:

Date: 06/25/2022
Signature:
Name: Chad Messervey
Title: Project Supervisor

OWNERS REPRESENTATIVE:

I, the undersigned, a duly appointed representative of the Owner, hereby understand the soil subgrade surface inspection described above and authorize Layfield to proceed with deployment of geosynthetics on the subgrade provided.

Date: 06/25/2022
Signature:
Name: Jacob Swartz
Title: Geotechnical Engineer QA
Company: Tetra Tech

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF INSPECTION OF SOIL SUBGRADE SURFACE

PROJECT NAME: Eagle Gold HLF Phase 2A
PROJECT NUMBER: CT001708
OWNER/CONTRACTOR: Victoria Gold / JDS
LOCATION: Dublin Gulch YT

I, the undersigned, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the soil subgrade surface described below, and:

☑ *found it to be an acceptable surface on which to install geomembrane; OR*
☐ *found it to be an Unacceptable surface on which to install geomembrane*

Area Inspected (☑ Partial or ☐ Complete): East Slope
Dimensions of Subgrade Inspection: Approx 15,000 sqm
Anchor Trench Dimensions: 0.75 x 0.75m
Comments: Layfield has inspected and accepted are for Containment liner installation

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield and Layfield makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade inspected on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

LAYFIELD REPRESENTATIVE:

Date: 06/29/22
Signature:
Name: Chad Messervey
Title: Project Supervisor

OWNERS REPRESENTATIVE:

I, the undersigned, a duly appointed representative of the Owner, hereby understand the soil subgrade surface inspection described above and authorize Layfield to proceed with deployment of geosynthetics on the subgrade provided.

Date: 06/29/2022
Signature:
Name: Jacob Swartz
Title: Geotechnical Engineer / CQA
Company: Tetra Tech

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF INSPECTION OF SOIL SUBGRADE SURFACE

PROJECT NAME: Eagle Gold Phase 2A
PROJECT NUMBER: CT00 1208
OWNER/CONTRACTOR: Victoria Gold / JDS
LOCATION: Dublin Gulch, YT

I, the undersigned, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the soil subgrade surface described below, and:

☑ *found it to be an acceptable surface on which to install geomembrane; OR*
☐ *found it to be an Unacceptable surface on which to install geomembrane*

Area Inspected (☑ Partial or ☐ Complete): East slope North East corner
Dimensions of Subgrade Inspection: Approx 25000 sqm
Anchor Trench Dimensions: 0.7m by 0.7m
Comments: Layfield has inspected and accepted subgrade for containment liner installation

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield and Layfield makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade inspected on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

LAYFIELD REPRESENTATIVE:

Date: 07/01/22
Signature:
Name: Chad Messenger
Title: Project Supervisor

OWNERS REPRESENTATIVE:

I, the undersigned, a duly appointed representative of the Owner, hereby understand the soil subgrade surface inspection described above and authorize Layfield to proceed with deployment of geosynthetics on the subgrade provided.

Date: July. 11/22
Signature:
Name: Josh McKenzie
Title: Geotechnical Technician
Company: Tetra Tech

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF INSPECTION OF SOIL SUBGRADE SURFACE

PROJECT NAME: Eagle Gold Phase 2A
PROJECT NUMBER: CT001708
OWNER/CONTRACTOR: Victoria Gold / JDS
LOCATION: Dublin Gulch YT

I, the undersigned, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the soil subgrade surface described below, and:

- ☑ *found it to be an acceptable surface on which to install geomembrane; OR*
- ☐ *found it to be an Unacceptable surface on which to install geomembrane*

Area Inspected (☑ Partial or ☐ Complete): East Slope
Dimensions of Subgrade Inspection: Approx 15000 sqm
Anchor Trench Dimensions: 0.75m by 0.75m.
Comments: Layfield has inspected and accepted subgrade for containment liner installation

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield and Layfield makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade inspected on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

LAYFIELD REPRESENTATIVE:

Date: 07/02/22
Signature:
Name: Chad Messervey
Title: Project Supervisor

OWNERS REPRESENTATIVE:

I, the undersigned, a duly appointed representative of the Owner, hereby understand the soil subgrade surface inspection described above and authorize Layfield to proceed with deployment of geosynthetics on the subgrade provided.

Date: July. 02/22
Signature:
Name: Josh McKenzie
Title: CQA Technician
Company: Tetra Tech

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF INSPECTION OF SOIL SUBGRADE SURFACE

PROJECT NAME: Eagle Gold Phase 2A
PROJECT NUMBER: CT001708
OWNER/CONTRACTOR: Victoria Gold / JDS
LOCATION: Dublin Gultch YT

I, the undersigned, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the soil subgrade surface described below, and:

☑ *found it to be an acceptable surface on which to install geomembrane; OR*
☐ *found it to be an Unacceptable surface on which to install geomembrane*

Area Inspected (☐Partial or ☑Complete): Remaining Subgrade North Slope
Dimensions of Subgrade Inspection: Approx 20,000 sqm
Anchor Trench Dimensions: 0.7m by 0.7m
Comments: Layfield has inspected and Accepted all remaining Subgrade. for Phase 2A

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield and Layfield makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade inspected on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

LAYFIELD REPRESENTATIVE:

Date: 07/10/22
Signature:
Name: Chad Messervey
Title: Project Supervisor

OWNERS REPRESENTATIVE:

I, the undersigned, a duly appointed representative of the Owner, hereby understand the soil subgrade surface inspection described above and authorize Layfield to proceed with deployment of geosynthetics on the subgrade provided.

Date: July. 09/22
Signature:
Name: Josh McKenzie
Title: ~~Tetra Tech~~ Geotechnical Technician
Company: Tetra Tech

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-06-16
PRODUCT TYPE: LLDPE/80MIL/DST
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	NO TAG	2.00	121.9	6.8	GOOD
2	1001-156005	2.00	121.9	6.8	GOOD
3	1001-156010	2.00	121.9	6.8	GOOD
4	1001-156011	2.00	121.9	6.8	GOOD
5	1001-156012	2.00	121.9	6.8	GOOD
6	1001-156013	2.00	121.9	6.8	GOOD
7	1001-156016	2.00	121.9	6.8	GOOD
8	1001-156017	2.00	121.9	6.8	GOOD
9	1001-156018	2.00	121.9	6.8	GOOD
10	1001-156020	2.00	121.9	6.8	GOOD
11	1001-156021	2.00	121.9	6.8	GOOD
12	1001-156022	2.00	121.9	6.8	GOOD
13	1001-156023	2.00	121.9	6.8	GOOD
14	1001-156024	2.00	121.9	6.8	GOOD
15	1001-156025	2.00	121.9	6.8	GOOD
16	1001-156026	2.00	121.9	6.8	GOOD
17	1001-156028	2.00	121.9	6.8	GOOD
18	1001-156029	2.00	121.9	6.8	GOOD
19	1001-156030	2.00	121.9	6.8	GOOD
20	1001-156031	2.00	121.9	6.8	GOOD
21	1001-156032	2.00	121.9	6.8	GOOD
22	1001-156033	2.00	121.9	6.8	GOOD
23	1001-156034	2.00	121.9	6.8	GOOD
24	1001-156036	2.00	121.9	6.8	GOOD
25	1001-156037	2.00	121.9	6.8	GOOD
26	1001-156038	2.00	121.9	6.8	GOOD
27	1001-156041	2.00	121.9	6.8	GOOD
28	1001-156042	2.00	121.9	6.8	GOOD
29	1001-156043	2.00	121.9	6.8	GOOD
30	1001-156044	2.00	121.9	6.8	GOOD

TOTAL PAGE AREA: 24867.6 m^2

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-06-16
PRODUCT TYPE: LLDPE/80MIL/DST
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	1001-156045	2.00	121.9	6.8	GOOD
2	1001-156046	2.00	121.9	6.8	GOOD
3	1001-156047	2.00	121.9	6.8	GOOD
4	1001-156048	2.00	121.9	6.8	GOOD
5	1001-156049	2.00	121.9	6.8	GOOD
6	1001-156050	2.00	121.9	6.8	GOOD
7	1001-156050	2.00	121.9	6.8	GOOD
8	1001-156051	2.00	121.9	6.8	GOOD
9	1001-156052	2.00	121.9	6.8	GOOD
10	1001-156053	2.00	121.9	6.8	GOOD
11	1001-156054	2.00	121.9	6.8	GOOD
12	1001-156056	2.00	121.9	6.8	GOOD
13	1001-156058	2.00	121.9	6.8	GOOD
14	1001-156059	2.00	121.9	6.8	GOOD
15	1001-156060	2.00	121.9	6.8	GOOD
16	1001-156061	2.00	121.9	6.8	GOOD
17	1001-156062	2.00	121.9	6.8	GOOD
18	1001-156101	2.00	121.9	6.8	GOOD
19	1001-156102	2.00	121.9	6.8	GOOD
20	1001-156103	2.00	121.9	6.8	GOOD
21	1001-156104	2.00	121.9	6.8	GOOD
22	1001-156105	2.00	121.9	6.8	GOOD
23	1001-156107	2.00	121.9	6.8	GOOD
24	1001-156108	2.00	121.9	6.8	GOOD
25	1001-156109	2.00	121.9	6.8	GOOD
26	1001-156110	2.00	121.9	6.8	GOOD
27	1001-156112	2.00	121.9	6.8	GOOD
28	1001-156113	2.00	121.9	6.8	GOOD
29	1001-156114	2.00	121.9	6.8	GOOD
30	1001-156115	2.00	121.9	6.8	GOOD

TOTAL PAGE AREA: 24867.6 m^2

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-06-16
PRODUCT TYPE: LLDPE/80MIL/DST
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	1001-156116	2.00	121.9	6.8	GOOD
2	1001-156119	2.00	121.9	6.8	GOOD
3	1001-156120	2.00	121.9	6.8	GOOD
4	1001-156121	2.00	121.9	6.8	GOOD
5	1001-156122	2.00	121.9	6.8	GOOD
6	1001-156123	2.00	121.9	6.8	GOOD
7	1001-156124	2.00	121.9	6.8	GOOD
8	1001-156125	2.00	121.9	6.8	GOOD
9	1001-156126	2.00	121.9	6.8	GOOD
10	1001-156127	2.00	121.9	6.8	GOOD
11	1001-156129	2.00	121.9	6.8	GOOD
12	1001-156130	2.00	121.9	6.8	GOOD
13	1001-156131	2.00	121.9	6.8	GOOD
14	1001-156132	2.00	121.9	6.8	GOOD
15	1001-156133	2.00	121.9	6.8	GOOD
16	1001-156134	2.00	121.9	6.8	GOOD
17	1001-156135	2.00	121.9	6.8	GOOD
18	1001-156136	2.00	121.9	6.8	GOOD
19	1001-156137	2.00	121.9	6.8	GOOD
20	1001-156138	2.00	121.9	6.8	GOOD
21	1001-156139	2.00	121.9	6.8	GOOD
22	1001-156139	2.00	121.9	6.8	GOOD
23	1001-156141	2.00	121.9	6.8	GOOD
24	1001-156142	2.00	121.9	6.8	GOOD
25	1001-156143	2.00	121.9	6.8	GOOD
26	1001-156144	2.00	121.9	6.8	GOOD
27	1001-156145	2.00	121.9	6.8	GOOD
28	1001-156146	2.00	121.9	6.8	GOOD
29	1001-156147	2.00	121.9	6.8	GOOD
30	1001-156148	2.00	121.9	6.8	GOOD

TOTAL PAGE AREA: 24867.6 m^2

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-06-16
PRODUCT TYPE: LLDPE/80MIL/DST
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	1001-156150	2.00	121.9	6.8	GOOD
2	1001-156152	2.00	121.9	6.8	GOOD
3	1001-156153	2.00	121.9	6.8	GOOD
4	1001-156154	2.00	121.9	6.8	GOOD
5	1001-156155	2.00	121.9	6.8	GOOD
6	1001-156156	2.00	121.9	6.8	GOOD
7	1001-156157	2.00	121.9	6.8	GOOD
8	1001-156158	2.00	121.9	6.8	GOOD
9	1001-156159	2.00	121.9	6.8	GOOD
10	1001-156160	2.00	121.9	6.8	GOOD
11	1001-156161	2.00	121.9	6.8	GOOD
12	1001-156162	2.00	121.9	6.8	GOOD
13	1001-156163	2.00	121.9	6.8	GOOD
14	1001-156165	2.00	121.9	6.8	GOOD
15	1001-156166	2.00	121.9	6.8	GOOD
16	1001-156167	2.00	121.9	6.8	GOOD
17	1001-156168	2.00	121.9	6.8	GOOD
18	1001-156169	2.00	121.9	6.8	GOOD
19	1001-156170	2.00	121.9	6.8	GOOD
20	1001-156171	2.00	121.9	6.8	GOOD
21	1001-156172	2.00	121.9	6.8	GOOD
22	1001-156173	2.00	121.9	6.8	GOOD
23	1001-156174	2.00	121.9	6.8	GOOD
24	1001-156175	2.00	121.9	6.8	GOOD
25	1001-156176	2.00	121.9	6.8	GOOD
26	1001-156177	2.00	121.9	6.8	GOOD
27	1001-156178	2.00	121.9	6.8	GOOD
28	1001-156179	2.00	121.9	6.8	GOOD
29	1001-156182	2.00	121.9	6.8	GOOD
30	1001-156183	2.00	121.9	6.8	GOOD

TOTAL PAGE AREA: 24867.6 m^2

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-06-16
PRODUCT TYPE: LLDPE/80MIL/DST
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	1001-156184	2.00	121.9	6.8	GOOD
2	1001-156185	2.00	121.9	6.8	GOOD
3	1001-156186	2.00	121.9	6.8	GOOD
4	1001-156187	2.00	121.9	6.8	GOOD
5	1001-156188	2.00	121.9	6.8	GOOD
6	1001-156189	2.00	121.9	6.8	GOOD
7	1001-156190	2.00	121.9	6.8	GOOD
8	1001-156191	2.00	121.9	6.8	GOOD
9	1001-156192	2.00	121.9	6.8	GOOD
10	1001-156193	2.00	121.9	6.8	GOOD
11	1001-156194	2.00	121.9	6.8	GOOD
12	1001-156195	2.00	121.9	6.8	GOOD
13	1001-156196	2.00	121.9	6.8	GOOD
14	1001-156197	2.00	121.9	6.8	GOOD
15	1001-156198	2.00	121.9	6.8	GOOD
16	1001-156199	2.00	121.9	6.8	GOOD
17	1001-156200	2.00	121.9	6.8	GOOD
18	1001-156201	2.00	121.9	6.8	GOOD
19	1001-156202	2.00	121.9	6.8	GOOD
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TOTAL PAGE AREA: 15749.48 m^2

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-06-18
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373661	3.66kg/m2	45.7	4.72	
2	0242-373674	3.66kg/m2	45.7	4.72	
3	0242-373837	3.66kg/m2	45.7	4.72	
4	0242-373860	3.66kg/m2	45.7	4.72	
5	0242-373861	3.66kg/m2	45.7	4.72	
6	0242-373863	3.66kg/m2	45.7	4.72	
7	0242-373865	3.66kg/m2	45.7	4.72	
8	0242-373874	3.66kg/m2	45.7	4.72	
9	0242-373883	3.66kg/m2	45.7	4.72	
10	0242-373884	3.66kg/m2	45.7	4.72	
11	0242-373902	3.66kg/m2	45.7	4.72	
12	0242-373903	3.66kg/m2	45.7	4.72	
13	0242-373907	3.66kg/m2	45.7	4.72	
14	0242-373912	3.66kg/m2	45.7	4.72	
15	0242-373927	3.66kg/m2	45.7	4.72	
16	0242-373928	3.66kg/m2	45.7	4.72	
17	0242-373930	3.66kg/m2	45.7	4.72	
18	0242-373932	3.66kg/m2	45.7	4.72	
19	0242-374561	3.66kg/m2	45.7	4.72	
20	0242-374562	3.66kg/m2	45.7	4.72	
21	0242-374563	3.66kg/m2	45.7	4.72	
22	0242-374568	3.66kg/m2	45.7	4.72	
23	0242-374576	3.66kg/m2	45.7	4.72	
24	GCL NO TAG #1	3.66kg/m2	45.7	4.72	
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TOTAL PAGE AREA: 5176.896 m²

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-06-19
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373730	3.66kg/m2	45.7	4.72	
2	0242-373737	3.66kg/m2	45.7	4.72	
3	0242-373774	3.66kg/m2	45.7	4.72	
4	0242-373777	3.66kg/m2	45.7	4.72	
5	0242-373782	3.66kg/m2	45.7	4.72	
6	0242-373789	3.66kg/m2	45.7	4.72	
7	0242-373791	3.66kg/m2	45.7	4.72	
8	0242-373878	3.66kg/m2	45.7	4.72	
9	0242-373880	3.66kg/m2	45.7	4.72	
10	0242-373920	3.66kg/m2	45.7	4.72	
11	0242-373934	3.66kg/m2	45.7	4.72	
12	0242-373943	3.66kg/m2	45.7	4.72	
13	GCL NO TAG #2	3.66kg/m2	45.7	4.72	
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TOTAL PAGE AREA: 2804.152 m^2

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-06-20
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373721	3.66kg/m2	45.7	4.72	
2	0242-373778	3.66kg/m2	45.7	4.72	
3	0242-373836	3.66kg/m2	45.7	4.72	
4	0242-373843	3.66kg/m2	45.7	4.72	
5	0242-373885	3.66kg/m2	45.7	4.72	
6	0242-373913	3.66kg/m2	45.7	4.72	
7	0242-373918	3.66kg/m2	45.7	4.72	
8	0242-373926	3.66kg/m2	45.7	4.72	
9	0242-374569	3.66kg/m2	45.7	4.72	
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TOTAL PAGE AREA: 1941.336 m^2

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-06-21
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373613	3.66kg/m2	45.7	4.72	
2	0242-373631	3.66kg/m2	45.7	4.72	
3	0242-373636	3.66kg/m2	45.7	4.72	
4	0242-373649	3.66kg/m2	45.7	4.72	
5	0242-373651	3.66kg/m2	45.7	4.72	
6	0242-373652	3.66kg/m2	45.7	4.72	
7	0242-373783	3.66kg/m2	45.7	4.72	
8	0242-373786	3.66kg/m2	45.7	4.72	
9	0242-373787	3.66kg/m2	45.7	4.72	
10	0242-373792	3.66kg/m2	45.7	4.72	
11	0242-373867	3.66kg/m2	45.7	4.72	
12	0242-373877	3.66kg/m2	45.7	4.72	
13	0242-373906	3.66kg/m2	45.7	4.72	
14	0242-374572	3.66kg/m2	45.7	4.72	
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TOTAL PAGE AREA: 3019.856 m²

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-06-22
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373611	3.66kg/m2	45.7	4.72	
2	0242-373617	3.66kg/m2	45.7	4.72	
3	0242-373619	3.66kg/m2	45.7	4.72	
4	0242-373626	3.66kg/m2	45.7	4.72	
5	0242-373627	3.66kg/m2	45.7	4.72	
6	0242-373628	3.66kg/m2	45.7	4.72	
7	0242373637	3.66kg/m2	45.7	4.72	
8	0242-373642	3.66kg/m2	45.7	4.72	
9	0242-373644	3.66kg/m2	45.7	4.72	
10	0242-373646	3.66kg/m2	45.7	4.72	
11	0242-373648	3.66kg/m2	45.7	4.72	
12	0242-373810	3.66kg/m2	45.7	4.72	
13	0242-373817	3.66kg/m2	45.7	4.72	
14	0242-373818	3.66kg/m2	45.7	4.72	
15	0242-373819	3.66kg/m2	45.7	4.72	
16	0242-373839	3.66kg/m2	45.7	4.72	
17	0242-373841	3.66kg/m2	45.7	4.72	
18	0242-373868	3.66kg/m2	45.7	4.72	
19	0242-373875	3.66kg/m2	45.7	4.72	
20	0242-373886	3.66kg/m2	45.7	4.72	
21	0242-373888	3.66kg/m2	45.7	4.72	
22	0242-373889	3.66kg/m2	45.7	4.72	
23	0242-373890	3.66kg/m2	45.7	4.72	
24	0242-373898	3.66kg/m2	45.7	4.72	
25	0242-373910	3.66kg/m2	45.7	4.72	
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TOTAL PAGE AREA: 5392.6 m²

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-06-23
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373781	3.66kg/m2	45.7	4.72	
2	0242-373815	3.66kg/m2	45.7	4.72	
3	0242-373879	3.66kg/m2	45.7	4.72	
4	0242-373887	3.66kg/m2	45.7	4.72	
5	0242-373891	3.66kg/m2	45.7	4.72	
6	0242-373893	3.66kg/m2	45.7	4.72	
7	0242-373911	3.66kg/m2	45.7	4.72	
8	0242-373914	3.66kg/m2	45.7	4.72	
9	0242-374564	3.66kg/m2	45.7	4.72	
10	0242-374571	3.66kg/m2	45.7	4.72	
11	0242-374574	3.66kg/m2	45.7	4.72	
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TOTAL PAGE AREA: 2372.744 m^2

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-06-25
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-369305	3.66kg/m2	45.7	4.72	
2	0242-369397	3.66kg/m2	45.7	4.72	
3	0242-369569	3.66kg/m2	45.7	4.72	
4	0242-373594	3.66kg/m2	45.7	4.72	
5	0242-373595	3.66kg/m2	45.7	4.72	
6	0242-373597	3.66kg/m2	45.7	4.72	
7	0242-373599	3.66kg/m2	45.7	4.72	
8	0242-373602	3.66kg/m2	45.7	4.72	
9	0242-373605	3.66kg/m2	45.7	4.72	
10	0242-373607	3.66kg/m2	45.7	4.72	
11	0242-373630	3.66kg/m2	45.7	4.72	
12	0242-373650	3.66kg/m2	45.7	4.72	
13	0242-373659	3.66kg/m2	45.7	4.72	
14	0242-373664	3.66kg/m2	45.7	4.72	
15	0242-373667	3.66kg/m2	45.7	4.72	
16	0242-373671	3.66kg/m2	45.7	4.72	
17	0242-373675	3.66kg/m2	45.7	4.72	
18	0242-373772	3.66kg/m2	45.7	4.72	
19	0242-373773	3.66kg/m2	45.7	4.72	
20	0242-373793	3.66kg/m2	45.7	4.72	
21	0242-373816	3.66kg/m2	45.7	4.72	
22	0242-373838	3.66kg/m2	45.7	4.72	
23	0242-373844	3.66kg/m2	45.7	4.72	
24	0242-373873	3.66kg/m2	45.7	4.72	
25	0242-373901	3.66kg/m2	45.7	4.72	
26	0242-374570	3.66kg/m2	45.7	4.72	
27	0242-374575	3.66kg/m2	45.7	4.72	
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TOTAL PAGE AREA: 5824.008 m²

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-06-26
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-368563	3.66kg/m2	45.7	4.72	
2	0242-373609	3.66kg/m2	45.7	4.72	
3	0242-373610	3.66kg/m2	45.7	4.72	
4	0242-373614	3.66kg/m2	45.7	4.72	
5	0242-373623	3.66kg/m2	45.7	4.72	
6	0242-373625	3.66kg/m2	45.7	4.72	
7	0242-373639	3.66kg/m2	45.7	4.72	
8	0242-373641	3.66kg/m2	45.7	4.72	
9	0242-373643	3.66kg/m2	45.7	4.72	
10	0242-373645	3.66kg/m2	45.7	4.72	
11	0242-373656	3.66kg/m2	45.7	4.72	
12	0242-373657	3.66kg/m2	45.7	4.72	
13	0242-373666	3.66kg/m2	45.7	4.72	
14	0242-373669	3.66kg/m2	45.7	4.72	
15	0242-373670	3.66kg/m2	45.7	4.72	
16	0242-373673	3.66kg/m2	45.7	4.72	
17	0242-373862	3.66kg/m2	45.7	4.72	
18	0242-373864	3.66kg/m2	45.7	4.72	
19	0242-373866	3.66kg/m2	45.7	4.72	
20	0242-373871	3.66kg/m2	45.7	4.72	
21	0242-373917	3.66kg/m2	45.7	4.72	
22	0242-373919	3.66kg/m2	45.7	4.72	
23	0242-373923	3.66kg/m2	45.7	4.72	
24	0242-373924	3.66kg/m2	45.7	4.72	
25	0242-373925	3.66kg/m2	45.7	4.72	
26	0242-373931	3.66kg/m2	45.7	4.72	
27	0242-373935	3.66kg/m2	45.7	4.72	
28	0242-393596	3.66kg/m2	45.7	4.72	
29	0243-373632	3.66kg/m2	45.7	4.72	
30					

TOTAL PAGE AREA: 6255.416 m²

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-06-27
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373601	3.66kg/m2	45.7	4.72	
2	0242-373603	3.66kg/m2	45.7	4.72	
3	0242-373606	3.66kg/m2	45.7	4.72	
4	0242-373615	3.66kg/m2	45.7	4.72	
5	0242-373616	3.66kg/m2	45.7	4.72	
6	0242-373620	3.66kg/m2	45.7	4.72	
7	0242-373621	3.66kg/m2	45.7	4.72	
8	0242-373622	3.66kg/m2	45.7	4.72	
9	0242-373629	3.66kg/m2	45.7	4.72	
10	0242-373633	3.66kg/m2	45.7	4.72	
11	0242-373654	3.66kg/m2	45.7	4.72	
12	0242-373658	3.66kg/m2	45.7	4.72	
13	0242-373665	3.66kg/m2	45.7	4.72	
14	0242-373668	3.66kg/m2	45.7	4.72	
15	0242-373672	3.66kg/m2	45.7	4.72	
16	0242-373676	3.66kg/m2	45.7	4.72	
17	0242-373770	3.66kg/m2	45.7	4.72	
18	0242-373771	3.66kg/m2	45.7	4.72	
19	0242-373828	3.66kg/m2	45.7	4.72	
20	0242-373829	3.66kg/m2	45.7	4.72	
21	0242-373842	3.66kg/m2	45.7	4.72	
22	0242-373869	3.66kg/m2	45.7	4.72	
23	0242-373881	3.66kg/m2	45.7	4.72	
24	0242-373882	3.66kg/m2	45.7	4.72	
25	0242-373892	3.66kg/m2	45.7	4.72	
26	0242-373900	3.66kg/m2	45.7	4.72	
27	0242-373938	3.66kg/m2	45.7	4.72	
28	0242-374039	3.66kg/m2	45.7	4.72	
29	0242-374045	3.66kg/m2	45.7	4.72	
30	GCL NO TAG #3	3.66kg/m2	45.7	4.72	

TOTAL PAGE AREA: 6471.12 m²

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-06-29
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373598	3.66kg/m2	45.7	4.72	
2	0242-373600	3.66kg/m2	45.7	4.72	
3	0242-373604	3.66kg/m2	45.7	4.72	
4	0242-373612	3.66kg/m2	45.7	4.72	
5	0242-373635	3.66kg/m2	45.7	4.72	
6	0242-373638	3.66kg/m2	45.7	4.72	
7	0242-373640	3.66kg/m2	45.7	4.72	
8	0242-373647	3.66kg/m2	45.7	4.72	
9	0242-373653	3.66kg/m2	45.7	4.72	
10	0242-373655	3.66kg/m2	45.7	4.72	
11	0242-373663	3.66kg/m2	45.7	4.72	
12	0242-373835	3.66kg/m2	45.7	4.72	
13	0242-373840	3.66kg/m2	45.7	4.72	
14	0242-373870	3.66kg/m2	45.7	4.72	
15	0242-373872	3.66kg/m2	45.7	4.72	
16	0242-373876	3.66kg/m2	45.7	4.72	
17	0242-373899	3.66kg/m2	45.7	4.72	
18	0242-374038	3.66kg/m2	45.7	4.72	
19	0242-374043	3.66kg/m2	45.7	4.72	
20	0242-374065	3.66kg/m2	45.7	4.72	
21	0242-374075	3.66kg/m2	45.7	4.72	
22	0242-374081	3.66kg/m2	45.7	4.72	
23	0242-374120	3.66kg/m2	45.7	4.72	
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TOTAL PAGE AREA: 4961.192 m²

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-06-30
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373618	3.66kg/m2	45.7	4.72	
2	0242-373679	3.66kg/m2	45.7	4.72	
3	0242-373696	3.66kg/m2	45.7	4.72	
4	0242-373752	3.66kg/m2	45.7	4.72	
5	0242-373833	3.66kg/m2	45.7	4.72	
6	0242-373834	3.66kg/m2	45.7	4.72	
7	0242-373908	3.66kg/m2	45.7	4.72	
8	0242-373966	3.66kg/m2	45.7	4.72	
9	0242-374040	3.66kg/m2	45.7	4.72	
10	0242-374041	3.66kg/m2	45.7	4.72	
11	0242-374042	3.66kg/m2	45.7	4.72	
12	0242-374044	3.66kg/m2	45.7	4.72	
13	0242-374046	3.66kg/m2	45.7	4.72	
14	0242-374047	3.66kg/m2	45.7	4.72	
15	0242-374062	3.66kg/m2	45.7	4.72	
16	0242-374063	3.66kg/m2	45.7	4.72	
17	0242-374064	3.66kg/m2	45.7	4.72	
18	0242-374066	3.66kg/m2	45.7	4.72	
19	0242-374067	3.66kg/m2	45.7	4.72	
20	0242-374068	3.66kg/m2	45.7	4.72	
21	0242-374069	3.66kg/m2	45.7	4.72	
22	0242-374070	3.66kg/m2	45.7	4.72	
23	0242-374076	3.66kg/m2	45.7	4.72	
24	0242-374078	3.66kg/m2	45.7	4.72	
25	0242-374087	3.66kg/m2	45.7	4.72	
26	0242-374088	3.66kg/m2	45.7	4.72	
27	0242-374112	3.66kg/m2	45.7	4.72	
28	0242-374119	3.66kg/m2	45.7	4.72	
29	GCL NO TAG #4	3.66kg/m2	45.7	4.72	
30					

TOTAL PAGE AREA: 6255.416 m²

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-07-01
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373992	3.66kg/m2	45.7	4.72	
2	0242-374015	3.66kg/m2	45.7	4.72	
3	0242-374016	3.66kg/m2	45.7	4.72	
4	0242-374021	3.66kg/m2	45.7	4.72	
5	0242-374028	3.66kg/m2	45.7	4.72	
6	0242-374029	3.66kg/m2	45.7	4.72	
7	0242-374031	3.66kg/m2	45.7	4.72	
8	0242-374034	3.66kg/m2	45.7	4.72	
9	0242-374035	3.66kg/m2	45.7	4.72	
10	0242-374036	3.66kg/m2	45.7	4.72	
11	0242-374037	3.66kg/m2	45.7	4.72	
12	0242-374080	3.66kg/m2	45.7	4.72	
13	0242-374089	3.66kg/m2	45.7	4.72	
14	0242-374094	3.66kg/m2	45.7	4.72	
15	0242-374102	3.66kg/m2	45.7	4.72	
16	0242-374114	3.66kg/m2	45.7	4.72	
17	0242-374123	3.66kg/m2	45.7	4.72	
18	0242-374125	3.66kg/m2	45.7	4.72	
19	0242-374126	3.66kg/m2	45.7	4.72	
20	0274-374008	3.66kg/m2	45.7	4.72	
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TOTAL PAGE AREA: 4314.08 m²

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-07-02
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373677	3.66kg/m2	45.7	4.72	
2	0242-37372?	3.66kg/m2	45.7	4.72	
3	0242-373722	3.66kg/m2	45.7	4.72	
4	0242-373727	3.66kg/m2	45.7	4.72	
5	0242-373728	3.66kg/m2	45.7	4.72	
6	0242-373733	3.66kg/m2	45.7	4.72	
7	0242-373751	3.66kg/m2	45.7	4.72	
8	0242-373753	3.66kg/m2	45.7	4.72	
9	0242-373758	3.66kg/m2	45.7	4.72	
10	0242-373769	3.66kg/m2	45.7	4.72	
11	0242-373800	3.66kg/m2	45.7	4.72	
12	0242-373824	3.66kg/m2	45.7	4.72	
13	0242-373826	3.66kg/m2	45.7	4.72	
14	0242-373827	3.66kg/m2	45.7	4.72	
15	0242-373858	3.66kg/m2	45.7	4.72	
16	0242-373973	3.66kg/m2	45.7	4.72	
17	0242-373979	3.66kg/m2	45.7	4.72	
18	0242-373980	3.66kg/m2	45.7	4.72	
19	0242-373998	3.66kg/m2	45.7	4.72	
20	0242-374014	3.66kg/m2	45.7	4.72	
21	0242-374019	3.66kg/m2	45.7	4.72	
22	0242-374025	3.66kg/m2	45.7	4.72	
23	0242-374072	3.66kg/m2	45.7	4.72	
24	0242-374096	3.66kg/m2	45.7	4.72	
25	0242-374104	3.66kg/m2	45.7	4.72	
26	0242-374108	3.66kg/m2	45.7	4.72	
27					
28					
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TOTAL PAGE AREA: 5608.304 m²

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-07-03
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373690	3.66kg/m2	45.7	4.72	
2	0242-373795	3.66kg/m2	45.7	4.72	
3	0242-373796	3.66kg/m2	45.7	4.72	
4	0242-373798	3.66kg/m2	45.7	4.72	
5	0242-373801	3.66kg/m2	45.7	4.72	
6	0242-373803	3.66kg/m2	45.7	4.72	
7	0242-373811	3.66kg/m2	45.7	4.72	
8	0242-373832	3.66kg/m2	45.7	4.72	
9	0242-373845	3.66kg/m2	45.7	4.72	
10	0242-373846	3.66kg/m2	45.7	4.72	
11	0242-373847	3.66kg/m2	45.7	4.72	
12	0242-373849	3.66kg/m2	45.7	4.72	
13	0242-373851	3.66kg/m2	45.7	4.72	
14	0242-373852	3.66kg/m2	45.7	4.72	
15	0242-373859	3.66kg/m2	45.7	4.72	
16	0242-373896	3.66kg/m2	45.7	4.72	
17	0242-373990	3.66kg/m2	45.7	4.72	
18	0242-373994	3.66kg/m2	45.7	4.72	
19	0242-374004	3.66kg/m2	45.7	4.72	
20	0242-374005	3.66kg/m2	45.7	4.72	
21	0242-374009	3.66kg/m2	45.7	4.72	
22	0242-374057	3.66kg/m2	45.7	4.72	
23	0242-374566	3.66kg/m2	45.7	4.72	
24	0242-374573	3.66kg/m2	45.7	4.72	
25	GCL NO TAG #8	3.66kg/m2	45.7	4.72	
26					
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TOTAL PAGE AREA: 5392.6 m^2

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-07-04
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373723	3.66kg/m2	45.7	4.72	
2	0242-373726	3.66kg/m2	45.7	4.72	
3	0242-373740	3.66kg/m2	45.7	4.72	
4	0242-373775	3.66kg/m2	45.7	4.72	
5	0242-373797	3.66kg/m2	45.7	4.72	
6	0242-373799	3.66kg/m2	45.7	4.72	
7	0242-373814	3.66kg/m2	45.7	4.72	
8	0242-373850	3.66kg/m2	45.7	4.72	
9	0242-373894	3.66kg/m2	45.7	4.72	
10	0242-373987	3.66kg/m2	45.7	4.72	
11	0242-373991	3.66kg/m2	45.7	4.72	
12	0242-374001	3.66kg/m2	45.7	4.72	
13	0242-374006	3.66kg/m2	45.7	4.72	
14	0242-374010	3.66kg/m2	45.7	4.72	
15	0242-374017	3.66kg/m2	45.7	4.72	
16	0242-374109	3.66kg/m2	45.7	4.72	
17	0242-374129	3.66kg/m2	45.7	4.72	
18	0242-374567	3.66kg/m2	45.7	4.72	
19	0242-378848	3.66kg/m2	45.7	4.72	
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TOTAL PAGE AREA: 4098.376 m²

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-07-06
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373729	3.66kg/m2	45.7	4.72	
2	0242-373731	3.66kg/m2	45.7	4.72	
3	0242-373732	3.66kg/m2	45.7	4.72	
4	0242-373734	3.66kg/m2	45.7	4.72	
5	0242-373743	3.66kg/m2	45.7	4.72	
6	GCL NO TAG # 9	3.66kg/m2	45.7	4.72	
7	GCL NO TAG #5	3.66kg/m2	45.7	4.72	
8	GCL NO TAG #6	3.66kg/m2	45.7	4.72	
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TOTAL PAGE AREA: 1725.632 m^2

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-07-07
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373725	3.66kg/m2	45.7	4.72	
2	0242-373776	3.66kg/m2	45.7	4.72	
3	0242-373784	3.66kg/m2	45.7	4.72	
4	0242-373785	3.66kg/m2	45.7	4.72	
5	0242-373790	3.66kg/m2	45.7	4.72	
6	0242-373802	3.66kg/m2	45.7	4.72	
7	0242-373804	3.66kg/m2	45.7	4.72	
8	0242-373805	3.66kg/m2	45.7	4.72	
9	0242-373812	3.66kg/m2	45.7	4.72	
10	0242-373813	3.66kg/m2	45.7	4.72	
11	0242-373820	3.66kg/m2	45.7	4.72	
12	0242-373821	3.66kg/m2	45.7	4.72	
13	0242-373822	3.66kg/m2	45.7	4.72	
14	0242-373825	3.66kg/m2	45.7	4.72	
15	0242-373853	3.66kg/m2	45.7	4.72	
16	0242-373854	3.66kg/m2	45.7	4.72	
17	0242-373856	3.66kg/m2	45.7	4.72	
18	0242-373857	3.66kg/m2	45.7	4.72	
19	0242-373965	3.66kg/m2	45.7	4.72	
20	0242-373977	3.66kg/m2	45.7	4.72	
21	0242-373995	3.66kg/m2	45.7	4.72	
22	0242-373999	3.66kg/m2	45.7	4.72	
23	0242-374000	3.66kg/m2	45.7	4.72	
24	0242-374053	3.66kg/m2	45.7	4.72	
25	0242-374055	3.66kg/m2	45.7	4.72	
26	0242-374058	3.66kg/m2	45.7	4.72	
27	0242-374059	3.66kg/m2	45.7	4.72	
28	0242-374061	3.66kg/m2	45.7	4.72	
29	0242-374850	3.66kg/m2	45.7	4.72	
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TOTAL PAGE AREA: 6255.416 m²

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-07-08
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373905	3.66kg/m2	45.7	4.72	
2	0242-373929	3.66kg/m2	45.7	4.72	
3	0242-373936	3.66kg/m2	45.7	4.72	
4	0242-373937	3.66kg/m2	45.7	4.72	
5	0242-373940	3.66kg/m2	45.7	4.72	
6	0242-373942	3.66kg/m2	45.7	4.72	
7	0242-373964	3.66kg/m2	45.7	4.72	
8	0242-373968	3.66kg/m2	45.7	4.72	
9	0242-373969	3.66kg/m2	45.7	4.72	
10	0242-373970	3.66kg/m2	45.7	4.72	
11	0242-373971	3.66kg/m2	45.7	4.72	
12	0242-373976	3.66kg/m2	45.7	4.72	
13	0242-373981	3.66kg/m2	45.7	4.72	
14	0242-373982	3.66kg/m2	45.7	4.72	
15	0242-373985	3.66kg/m2	45.7	4.72	
16	0242-373989	3.66kg/m2	45.7	4.72	
17	0242-373996	3.66kg/m2	45.7	4.72	
18	0242-374002	3.66kg/m2	45.7	4.72	
19	0242-374003	3.66kg/m2	45.7	4.72	
20	2042-373944	3.66kg/m2	45.7	4.72	
21	GCL NO TAG # 7	3.66kg/m2	45.7	4.72	
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TOTAL PAGE AREA: 4529.784 m^2

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-07-10
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373779	3.66kg/m2	45.7	4.72	
2	0242-373780	3.66kg/m2	45.7	4.72	
3	0242-373788	3.66kg/m2	45.7	4.72	
4	0242-373806	3.66kg/m2	45.7	4.72	
5	0242-373807	3.66kg/m2	45.7	4.72	
6	0242-373808	3.66kg/m2	45.7	4.72	
7	0242-373809	3.66kg/m2	45.7	4.72	
8	0242-373855	3.66kg/m2	45.7	4.72	
9	0242-373895	3.66kg/m2	45.7	4.72	
10	0242-373904	3.66kg/m2	45.7	4.72	
11	0242-373909	3.66kg/m2	45.7	4.72	
12	0242-373915	3.66kg/m2	45.7	4.72	
13	0242-373916	3.66kg/m2	45.7	4.72	
14	0242-373933	3.66kg/m2	45.7	4.72	
15	0242-373939	3.66kg/m2	45.7	4.72	
16	0242-373967	3.66kg/m2	45.7	4.72	
17	0242-373975	3.66kg/m2	45.7	4.72	
18	0242-373997	3.66kg/m2	45.7	4.72	
19	0242-374048	3.66kg/m2	45.7	4.72	
20	0242-374049	3.66kg/m2	45.7	4.72	
21	0242-374051	3.66kg/m2	45.7	4.72	
22	0242-374054	3.66kg/m2	45.7	4.72	
23	0242-374056	3.66kg/m2	45.7	4.72	
24	0242-374060	3.66kg/m2	45.7	4.72	
25	0242-374093	3.66kg/m2	45.7	4.72	
26	0242-374098	3.66kg/m2	45.7	4.72	
27	0242-374099	3.66kg/m2	45.7	4.72	
28	0242-374105	3.66kg/m2	45.7	4.72	
29	0242-374107	3.66kg/m2	45.7	4.72	
30	0242-374110	3.66kg/m2	45.7	4.72	

TOTAL PAGE AREA: 6471.12 m^2

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-07-10
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-374111	3.66kg/m2	45.7	4.72	
2	0242-374128	3.66kg/m2	45.7	4.72	
3	0242-374130	3.66kg/m2	45.7	4.72	
4	0242-374131	3.66kg/m2	45.7	4.72	
5	0242-374132	3.66kg/m2	45.7	4.72	
6	0242-374133	3.66kg/m2	45.7	4.72	
7	0242-374134	3.66kg/m2	45.7	4.72	
8	0242-374135	3.66kg/m2	45.7	4.72	
9	0242-374565	3.66kg/m2	45.7	4.72	
10	0242-374577	3.66kg/m2	45.7	4.72	
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TOTAL PAGE AREA: 2157.04 m²

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-07-11
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373685	3.66kg/m2	45.7	4.72	
2	0242-373707	3.66kg/m2	45.7	4.72	
3	0242-373760	3.66kg/m2	45.7	4.72	
4	0242-373823	3.66kg/m2	45.7	4.72	
5	0242-373831	3.66kg/m2	45.7	4.72	
6	0242-373963	3.66kg/m2	45.7	4.72	
7	0242-373993	3.66kg/m2	45.7	4.72	
8	0242-374007	3.66kg/m2	45.7	4.72	
9	0242-374011	3.66kg/m2	45.7	4.72	
10	0242-374013	3.66kg/m2	45.7	4.72	
11	0242-374018	3.66kg/m2	45.7	4.72	
12	0242-374060	3.66kg/m2	45.7	4.72	
13	0242-374079	3.66kg/m2	45.7	4.72	
14	0242-374086	3.66kg/m2	45.7	4.72	
15	0242-374090	3.66kg/m2	45.7	4.72	
16	0242-374091	3.66kg/m2	45.7	4.72	
17	0242-374092	3.66kg/m2	45.7	4.72	
18	0242-374095	3.66kg/m2	45.7	4.72	
19	0242-374097	3.66kg/m2	45.7	4.72	
20	0242-374100	3.66kg/m2	45.7	4.72	
21	0242-374101	3.66kg/m2	45.7	4.72	
22	0242-374103	3.66kg/m2	45.7	4.72	
23	0242-374106	3.66kg/m2	45.7	4.72	
24	0242-374115	3.66kg/m2	45.7	4.72	
25	0242-374117	3.66kg/m2	45.7	4.72	
26	0242-374121	3.66kg/m2	45.7	4.72	
27	0242-374122	3.66kg/m2	45.7	4.72	
28	0242-374124	3.66kg/m2	45.7	4.72	
29	0242-374127	3.66kg/m2	45.7	4.72	
30	0242-374565	3.66kg/m2	45.7	4.72	

TOTAL PAGE AREA: 6471.12 m²

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-07-12
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373678	3.66kg/m2	45.7	4.72	
2	0242-373688	3.66kg/m2	45.7	4.72	
3	0242-373689	3.66kg/m2	45.7	4.72	
4	0242-373694	3.66kg/m2	45.7	4.72	
5	0242-373695	3.66kg/m2	45.7	4.72	
6	0242-373698	3.66kg/m2	45.7	4.72	
7	0242-373699	3.66kg/m2	45.7	4.72	
8	0242-373700	3.66kg/m2	45.7	4.72	
9	0242-373701	3.66kg/m2	45.7	4.72	
10	0242-373702	3.66kg/m2	45.7	4.72	
11	0242-373703	3.66kg/m2	45.7	4.72	
12	0242-373704	3.66kg/m2	45.7	4.72	
13	0242-373705	3.66kg/m2	45.7	4.72	
14	0242-373706	3.66kg/m2	45.7	4.72	
15	0242-373708	3.66kg/m2	45.7	4.72	
16	0242-373709	3.66kg/m2	45.7	4.72	
17	0242-373711	3.66kg/m2	45.7	4.72	
18	0242-373712	3.66kg/m2	45.7	4.72	
19	0242-373714	3.66kg/m2	45.7	4.72	
20	0242-373715	3.66kg/m2	45.7	4.72	
21	0242-373716	3.66kg/m2	45.7	4.72	
22	0242-373717	3.66kg/m2	45.7	4.72	
23	0242-373718	3.66kg/m2	45.7	4.72	
24	0242-373719	3.66kg/m2	45.7	4.72	
25	0242-373759	3.66kg/m2	45.7	4.72	
26	0242-373762	3.66kg/m2	45.7	4.72	
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TOTAL PAGE AREA: 5608.304 m²

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-07-13
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373660	3.66kg/m2	45.7	4.72	
2	0242-373680	3.66kg/m2	45.7	4.72	
3	0242-373681	3.66kg/m2	45.7	4.72	
4	0242-373682	3.66kg/m2	45.7	4.72	
5	0242-373683	3.66kg/m2	45.7	4.72	
6	0242-373684	3.66kg/m2	45.7	4.72	
7	0242-373686	3.66kg/m2	45.7	4.72	
8	0242-373687	3.66kg/m2	45.7	4.72	
9	0242-373691	3.66kg/m2	45.7	4.72	
10	0242-373692	3.66kg/m2	45.7	4.72	
11	0242-373693	3.66kg/m2	45.7	4.72	
12	0242-373697	3.66kg/m2	45.7	4.72	
13	0242-373710	3.66kg/m2	45.7	4.72	
14	0242-373724	3.66kg/m2	45.7	4.72	
15	0242-373756	3.66kg/m2	45.7	4.72	
16	0242-373757	3.66kg/m2	45.7	4.72	
17	0242-373761	3.66kg/m2	45.7	4.72	
18	0242-373763	3.66kg/m2	45.7	4.72	
19	0242-373764	3.66kg/m2	45.7	4.72	
20	0242-373765	3.66kg/m2	45.7	4.72	
21	0242-373766	3.66kg/m2	45.7	4.72	
22	0242-373767	3.66kg/m2	45.7	4.72	
23	0242-373768	3.66kg/m2	45.7	4.72	
24	0242-373984	3.66kg/m2	45.7	4.72	
25	0242-373986	3.66kg/m2	45.7	4.72	
26	0242-373988	3.66kg/m2	45.7	4.72	
27	0242-374012	3.66kg/m2	45.7	4.72	
28	0242-374052	3.66kg/m2	45.7	4.72	
29	0242-374073	3.66kg/m2	45.7	4.72	
30	0242-374074	3.66kg/m2	45.7	4.72	

TOTAL PAGE AREA: 6471.12 m²

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-07-13
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-374077	3.66kg/m2	45.7	4.72	
2	0242-374082	3.66kg/m2	45.7	4.72	
3	0242-374083	3.66kg/m2	45.7	4.72	
4	0242-374113	3.66kg/m2	45.7	4.72	
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TOTAL PAGE AREA: 862.816 m^2

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

INVENTORY LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
DATE OF INVENTORY: 2022-07-14
PRODUCT TYPE: GCL
MATERIAL MANUFACTURER: SOLMAX

#	ROLL NUMBER	MATERIAL DIMENSIONS			REMARKS
		THICKNESS	LENGTH (m)	WIDTH (m)	
1	0242-373735	3.66kg/m2	45.7	4.72	
2	0242-373737	3.66kg/m2	45.7	4.72	
3	0242-373738	3.66kg/m2	45.7	4.72	
4	0242-373741	3.66kg/m2	45.7	4.72	
5	0242-373742	3.66kg/m2	45.7	4.72	
6	0242-373744	3.66kg/m2	45.7	4.72	
7	0242-373745	3.66kg/m2	45.7	4.72	
8	0242-373747	3.66kg/m2	45.7	4.72	
9	0242-373748	3.66kg/m2	45.7	4.72	
10	0242-373749	3.66kg/m2	45.7	4.72	
11	0242-373750	3.66kg/m2	45.7	4.72	
12	0242-373754	3.66kg/m2	45.7	4.72	
13	0242-373755	3.66kg/m2	45.7	4.72	
14	0242-373978	3.66kg/m2	45.7	4.72	
15	0242-373983	3.66kg/m2	45.7	4.72	
16	0242-374020	3.66kg/m2	45.7	4.72	
17	0242-374022	3.66kg/m2	45.7	4.72	
18	0242-374023	3.66kg/m2	45.7	4.72	
19	0242-374024	3.66kg/m2	45.7	4.72	
20	0242-374026	3.66kg/m2	45.7	4.72	
21	0242-374027	3.66kg/m2	45.7	4.72	
22	0242-374030	3.66kg/m2	45.7	4.72	
23	0242-374032	3.66kg/m2	45.7	4.72	
24	0242-374033	3.66kg/m2	45.7	4.72	
25	502343555	3.66kg/m2	45.7	4.72	
26	502343670	3.66kg/m2	45.7	4.72	
27	502343953	3.66kg/m2	45.7	4.72	
28	502347546	3.66kg/m2	45.7	4.72	
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TOTAL PAGE AREA: 6039.712 m^2

QC TECH: Glenn Revilla
SUPERVISOR: Chad Messervey
SUBMISSION DATE: 2022-07-17

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-06-18

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
1	1001-156184	124.6	6.8	20	OK	CM	OK
2	1001-156032	7	6.8	20	OK	CM	OK
3	1001-156032	58.6	6.8	20	OK	CM	OK
4	1001-156032	57.3	6.8	20	OK	CM	OK
5	1001-156185	16	6.8	20	OK	CM	OK

TOTAL PAGE AREA 1791.8 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 1 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-06-19

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
6	1001-156185	65.4	6.8	15	OK	CM	OK
7	1001-156185	62.1	3.4	15	OK	CM	OK
8	1001-156185	41	6.8	15	OK	CM	OK
9	1001-156143	85	6.8	15	OK	CM	OK
10	1001-156198	62	6.8	23	OK	CM	OK
11	1001-156198	62	3.5	23	OK	CM	OK
12	1001-156198	62	6.8	23	OK	CM	OK
13	1001-156198	61.5	3.4	23	OK	CM	OK
14	1001-156143	35.5	6.8	23	OK	CM	OK
15	1001-156113	83	6.8	23	OK	CM	OK
16	1001-156113	38.5	6.8	23	OK	CM	OK
17	1001-156188	79.7	6.8	23	OK	CM	OK
18	1001-156188	43	6.8	23	OK	CM	OK
19	1001-156116	74.3	6.8	23	OK	CM	OK
20	1001-156116	48.1	6.8	23	OK	CM	OK
21	1001-156115	67.2	6.8	23	OK	CM	OK

TOTAL PAGE AREA 5973.2 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 2 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-06-20

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
22	1001-156115	17	6.8	12	OK	CM	OK
23	1001-156115	32	6.8	12	OK	CM	OK
24	1001-156115	16	6.8	12	OK	CM	OK
25	1001-156173	33.4	6.8	12	OK	CM	OK
26	1001-156173	46.4	6.8	12	OK	CM	OK
27	1001-156173	19	6.8	12	OK	CM	OK
28	1001-156173	40	6.8	12	OK	CM	OK
29	1001-156147	41.6	6.8	12	OK	CM	OK
30	1001-156147	78	6.8	12	OK	CM	OK
31	1001-156147	17	6.8	12	OK	CM	OK

TOTAL PAGE AREA 2314.72 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 3 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-06-21

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
32	1001-156038	95	6.8	18	OK	CM	OK
33	1001-156038	23.5	6.8	18	OK	CM	OK
34	1001-156148	71.5	6.8	18	OK	CM	OK
35	1001-156148	48.4	6.8	18	OK	CM	OK
36	1001-156199	43	6.8	18	OK	CM	OK
37	1001-156199	77.9	6.8	18	OK	CM	OK
38	1001-156025	12	6.8	18	OK	CM	OK
39	1001-156025	90.2	6.8	18	OK	CM	OK

TOTAL PAGE AREA 3138.2 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 4 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-06-22

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
40	1001-156123	90.5	6.8	20	OK	CM	OK
41	1001-156123	32.4	6.8	20	OK	CM	OK
42	1001-156033	57.6	6.8	20	OK	CM	OK
43	1001-156033	64.5	6.8	20	OK	CM	OK
44	1001-156015	25.5	6.8	20	OK	CM	OK
45	1001-156015	90.5	6.8	20	OK	CM	OK
46	1001-156015	9.5	6.8	20	OK	CM	OK
47	1001-156015	16.6	6.8	20	OK	CM	OK
48	1001-156037	60.5	6.8	20	OK	CM	OK
49	1001-156037	61.9	6.8	20	OK	CM	OK
50	1001-156029	22.5	6.8	20	OK	CM	OK
51	1001-156029	84.7	6.8	20	OK	CM	OK
52	1001-156034	72.8	6.8	20	OK	CM	OK

TOTAL PAGE AREA 4688.6 m^2

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 5 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-06-23

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
53	1001-156034	36.3	6.8	20	OK	CM	OK
54	1001-156171	51.3	6.8	20	OK	CM	OK
55	1001-156171	79.4	6.8	20	OK	CM	OK
56	1001-156036	5	6.8	20	OK	CM	OK
57	1001-156036	80	6.8	20	OK	CM	OK
58	1001-156036	42.6	6.8	20	OK	CM	OK
59	1001-156023	41	6.8	20	OK	CM	OK
60	1001-156170	5.6	6.8	20	OK	CM	OK
61	1001-156023	81	6.8	20	OK	CM	OK

TOTAL PAGE AREA 2870.96 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 6 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-06-25

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
62	1001-156170	86	6.8	24	OK	CM	OK
63	1001-156170	32	6.8	24	OK	CM	OK
64	1001-156031	49	6.8	24	OK	CM	OK
65	1001-156031	79	6.8	24	OK	CM	OK
66	1001-156134	12.4	6.8	24	OK	CM	OK
67	1001-156134	76	6.8	24	OK	CM	OK
68	1001-156134	26.3	6.8	24	OK	CM	OK
69	1001-156183	57	6.8	24	OK	CM	OK
70	1001-156183	62.5	6.8	24	OK	CM	OK
71	1001-156135	22	6.8	24	OK	CM	OK
72	1001-156135	85	6.8	24	OK	CM	OK
73	1001-156135	14	6.8	24	OK	CM	OK
74	1001-156193	72.7	6.8	24	OK	CM	OK
75	1001-156193	50	6.8	24	OK	CM	OK
76	1001-156161	37	6.8	24	OK	CM	OK
77	1001-156161	85	6.8	24	OK	CM	OK
78	1001-156133	2	6.8	26	OK	CM	OK

TOTAL PAGE AREA 5765.72 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 7 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-06-26

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
79	1001-156133	90	6.8	26	OK	CM	OK
80	1001-156133	31	6.8	26	OK	CM	OK
81	1001-156186	60	6.8	26	OK	CM	OK
82	1001-156186	63	6.8	26	OK	CM	OK
83	1001-156024	28.3	6.8	26	OK	CM	OK
84	1001-156024	94	6.8	26	OK	CM	OK
85	1001-156169	94	6.8	26	OK	CM	OK
86	1001-156169	27.6	6.8	26	OK	CM	OK
87	1001-156142	69.7	6.8	26	OK	CM	OK
88	1001-156142	52.5	6.8	26	OK	CM	OK
89	1001-156187	44	6.8	26	OK	CM	OK
90	1001-156187	77	6.8	26	OK	CM	OK
91	1001-156167	20.4	6.8	26	OK	CM	OK
92	1001-156167	98	6.8	26	OK	CM	OK
93	1001-156196	100	6.8	26	OK	CM	OK

TOTAL PAGE AREA 6456.6 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 8 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-06-27

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
94	1001-156196	22.8	6.8	26	OK	CM	OK
95	1001-156178	77.7	6.8	26	OK	CM	OK
96	1001-156178	44.2	6.8	26	OK	CM	OK
97	1001-156179	58.4	6.8	26	OK	CM	OK
98	1001-156179	61.7	6.8	26	OK	CM	OK
99	1001-156028	40.4	6.8	26	OK	CM	OK
100	1001-156028	83	6.8	26	OK	CM	OK
101	1001-156194	22.5	6.8	26	OK	CM	OK
102	1001-156194	101	6.8	26	OK	CM	OK
103	1001-156150	4	6.8	26	OK	CM	OK
104	1001-156150	105	6.8	26	OK	CM	OK
105	1001-156022	106	6.8	26	OK	CM	OK
106	1001-156022	15	6.8	26	OK	CM	OK
107	1001-156133	94.4	6.8	26	OK	CM	OK
108	1001-156133	27	6.8	26	OK	CM	OK
109	1001-156013	84	6.8	26	OK	CM	OK

TOTAL PAGE AREA 6440.28 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 9 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-06-29

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
110	1001-156013	38	6.8	17	OK	CM	OK
111	1001-156197	75.5	6.8	17	OK	CM	OK
112	1001-156197	37	6.8	17	OK	CM	OK
113	1001-156119	78.4	6.8	17	OK	CM	OK
114	1001-156119	44	6.8	17	OK	CM	OK
115	1001-156120	74.4	6.8	17	OK	CM	OK
116	1001-156120	46.7	6.8	17	OK	CM	OK
117	1001-156200	72	6.8	17	OK	CM	OK
118	1001-156200	48.8	6.8	17	OK	CM	OK
119	1001-156132	74	6.8	17	OK	CM	OK
120	1001-156132	42	6.8	17	OK	CM	OK
121	1001-156139	81.5	6.8	17	OK	CM	OK

TOTAL PAGE AREA 4843.64 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 10 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-06-30

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
122	1001-156139	34.5	6.8	26	OK	CM	OK
123	1001-156122	90	6.8	26	OK	CM	OK
124	1001-156137	121	6.8	26	OK	CM	OK
125	1001-156122	5	6.8	26	OK	CM	OK
126	1001-156122	22.7	6.8	26	OK	CM	OK
127	1001-156110	106	6.8	26	OK	CM	OK
128	1001-156110	12	6.8	26	OK	CM	OK
129	1001-156130	120	6.8	26	OK	CM	OK
130	1001-156210	122	6.8	26	OK	CM	OK
131	1001-156125	13	6.8	26	OK	CM	OK
132	1001-156125	108	6.8	26	OK	CM	OK
133	1001-156176	27	6.8	26	OK	CM	OK
134	1001-156176	94	6.8	26	OK	CM	OK
135	1001-156631	47.5	6.8	26	OK	CM	OK

TOTAL PAGE AREA 6274.36 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 11 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-07-01

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
136	1001-156131	74	6.8	25	OK	CM	OK
137	1001-156124	74	6.8	25	OK	CM	OK
138	1001-156124	46.2	6.8	25	OK	CM	OK
139	1001-156017	109	6.8	25	OK	CM	OK
140	1001-156017	11.2	6.8	25	OK	CM	OK
141	1001-156109	121	6.8	25	OK	CM	OK
142	1001-156016	33.5	6.8	25	OK	CM	OK
143	1001-156016	89	6.8	25	OK	CM	OK
144	1001-156141	86	6.8	25	OK	CM	OK

TOTAL PAGE AREA 4378.52 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 12 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-07-02

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
145	1001-156141	32.4	6.8	26	OK	CM	OK
146	1001-156041	94.5	6.8	26	OK	CM	OK
147	1001-156041	20.8	6.8	26	OK	CM	OK
148	1001-156046	99.8	6.8	26	OK	CM	OK
149	1001-156041	10	6.8	26	OK	CM	OK
150	1001-156046	21.7	6.8	26	OK	CM	OK
151	1001-156043	82.2	6.8	26	OK	CM	OK
152	1001-156043	37	6.8	26	OK	CM	OK
153	1001-156167	71.5	6.8	26	OK	CM	OK
154	1001-156167	47.8	6.8	28	OK	CM	OK
155	1001-156010	58.7	6.8	28	OK	CM	OK
156	1001-156010	5.4	6.8	28	OK	CM	OK
157	1001-156010	36.8	6.8	28	OK	CM	OK
158	1001-156136	81.8	6.8	28	OK	CM	OK
159	1001-156136	81.8	6.8	28	OK	CM	OK
160	1001-156053	21.8	6.8	28	OK	CM	OK

TOTAL PAGE AREA 5467.2 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 13 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-07-03

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
161	1001-156053	100	6.8	28	OK	CM	OK
162	1001-156026	4.7	6.8	28	OK	CM	OK
163	1001-156026	103.6	6.8	28	OK	CM	OK
164	1001-156026	15.6	6.8	28	OK	CM	OK
165	1001-156154	90.3	6.8	28	OK	CM	OK
166	1001-156154	32.6	6.8	28	OK	CM	OK
167	1001-156044	74	6.8	28	OK	CM	OK
168	1001-156044	49.5	6.8	28	OK	CM	OK
169	1001-156165	56.5	6.8	28	OK	CM	OK
170	1001-156165	67.6	6.8	28	OK	CM	OK
171	1001-156152	37.4	6.8	28	OK	CM	OK
172	1001-156152	84.2	6.8	28	OK	CM	OK
173	1001-156156	19.3	6.8	28	OK	CM	OK

TOTAL PAGE AREA 5000.04 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 14 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-07-04

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
174	1001-156156	99.8	6.8	30	OK	CM	OK
175	1001-156172	97.8	6.8	30	OK	CM	OK
176	1001-156172	20	6.8	30	OK	CM	OK
177	1001-156160	77.5	6.8	30	OK	CM	OK
178	1001-156160	43.5	6.8	30	OK	CM	OK
179	1001-156162	50.8	6.8	30	OK	CM	OK
180	1001-156162	72.3	6.8	30	OK	CM	OK
181	1001-156146	18.4	6.8	30	OK	CM	OK
182	1001-156146	88.2	6.8	30	OK	CM	OK
183	1001-156146	14.1	6.8	30	OK	CM	OK
184	1001-156180	68	6.8	30	OK	CM	OK
185	1001-156180	10.4	3	30	OK	CM	OK
186	1001-156180	23.4	3	30	OK	CM	OK

TOTAL PAGE AREA 4524.12 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 15 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-07-06

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
187	1001-156180	40.7	6.8	26	OK	CM	OK
188	1001-156159	22.8	6.8	26	OK	CM	OK
189	1001-156159	46.4	6.8	26	OK	CM	OK
190	1001-156180	7.1	6.8	26	OK	CM	OK
191	1001-156159	43.5	6.8	26	OK	CM	OK
192	1001-156159	6.2	6.8	26	OK	CM	OK
193	1001-156114	26.8	6.8	26	OK	CM	OK
194	1001-156159	11.1	6.8	26	OK	CM	OK
195	1001-156114	11.9	6.8	26	OK	CM	OK
196	1001-156114	8	6.8	26	OK	CM	OK
197	1001-156114	4	6.8	26	OK	CM	OK

TOTAL PAGE AREA 1553.8 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 16 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-07-07

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
198	1001-156114	74.3	6.8	26	OK	CM	OK
199	1001-156114	8.4	6.8	26	OK	CM	OK
200	1001-156144	76	6.8	26	OK	CM	OK
201	1001-156144	43.3	6.8	26	OK	CM	OK
202	1001-156157	50.4	6.8	26	OK	CM	OK
203	1001-156144	7.6	6.8	26	OK	CM	OK
204	1001-156157	69	6.8	26	OK	CM	OK
205	1001-156126	28	6.8	26	OK	CM	OK
206	1001-156126	91.4	6.8	26	OK	CM	OK
207	1001-156177	24.8	6.8	26	OK	CM	OK
208	1001-156177	100.7	6.8	26	OK	CM	OK
209	1001-156155	27.6	6.8	26	OK	CM	OK
210	1001-156155	98.2	6.8	26	OK	CM	OK
211	1001-156112	43	6.8	26	OK	CM	OK
212	1001-156112	83.4	6.8	26	OK	CM	OK
213	1001-156168	71	6.8	26	OK	CM	OK

TOTAL PAGE AREA 6100.28 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 17 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-07-08

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
214	1001-156168	54.8	6.8	22	OK	CM	OK
215	1001-156192	112	6.8	22	OK	CM	OK
216	1001-156192	13.3	6.8	22	OK	CM	OK
217	1001-156166	121.2	6.8	22	OK	CM	OK
218	1001-156020	44.8	6.8	22	OK	CM	OK
219	1001-156020	80.3	6.8	22	OK	CM	OK
220	1001-156190	116.6	6.8	22	OK	CM	OK
221	1001-156190	9.5	6.8	22	OK	CM	OK
222	1001-156051	122	6.8	22	OK	CM	OK
223	1001-156182	67.7	6.8	22	OK	CM	OK

TOTAL PAGE AREA 5046.96 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 18 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-07-10

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
224	1001-156182	51	6.8	18	OK	CM	OK
225	1001-156052	121.4	6.8	18	OK	CM	OK
226	1001-156104	25	6.8	18	OK	CM	OK
227	1001-156104	95.7	6.8	18	OK	CM	OK
228	1001-156058	101	6.8	18	OK	CM	OK
229	1001-156058	20.5	6.8	18	OK	CM	OK
230	1001-156105	121.9	6.8	18	OK	CM	OK
231	1001-156054	53	6.8	18	OK	CM	OK
232	1001-156054	68.9	6.8	18	OK	CM	OK
233	1001-156195	122.4	6.8	18	OK	CM	OK
234	1001-156011	2.8	6.8	18	OK	CM	OK
235	1001-156011	118.6	6.8	18	OK	CM	OK
236	1001-156102	73.8	6.8	18	OK	CM	OK
237	1001-156102	41	6.8	18	OK	CM	OK
238	1001-156030	122.4	6.8	20	OK	CM	OK
239	1001-156035	20	6.8	20	OK	CM	OK

TOTAL PAGE AREA 7883.92 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 19 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-07-11

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
240	1001-156035	101	6.8	11	OK	CM	OK
241	1001-156129	91	6.8	11	OK	CM	OK
242	1001-156129	32.1	6.8	11	OK	CM	OK
243	1001-156108	122.3	6.8	11	OK	CM	OK
244	1001-156163	35.3	6.8	11	OK	CM	OK
245	1001-156163	86.5	6.8	11	OK	CM	OK
246	1001-156107	101.4	6.8	11	OK	CM	OK
247	1001-156107	20.6	6.8	11	OK	CM	OK
248	1001-156191	122.3	6.8	11	OK	CM	OK
249	1001-156018	44.8	6.8	11	OK	CM	OK
250	1001-156018	77.3	6.8	11	OK	CM	OK
251	1001-156153	110	6.8	11	OK	CM	OK

TOTAL PAGE AREA 6423.28 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 20 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-07-12

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
252	1001-156153	12	6.8	11	OK	CM	OK
253	1001-156158	121.9	6.8	11	OK	CM	OK
254	1001-156047	51.3	6.8	11	OK	CM	OK
255	1001-156047	70.8	6.8	11	OK	CM	OK
256	1001-156121	113.1	6.8	11	OK	CM	OK
257	1001-156121	6.6	6.8	11	OK	CM	OK
258	1001-156059	122	6.8	11	OK	CM	OK
259	1001-156060	52	6.8	11	OK	CM	OK
260	1001-156121	6.8	6.8	11	OK	CM	OK
261	1001-156060	69.4	6.8	11	OK	CM	OK
262	1001-156062	100.2	6.8	11	OK	CM	OK
263	1001-156062	21.4	6.8	11	OK	CM	OK
264	1001-156103	120.7	6.8	11	OK	CM	OK
265	1001-156050	27.4	6.8	11	OK	CM	OK

TOTAL PAGE AREA 6090.08 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 21 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-07-13

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
266	1001-156050	92.8	6.8	11	OK	CM	OK
267	1001-156101	65.5	6.8	11	OK	CM	OK
268	1001-156050	8.8	6.8	11	OK	CM	OK
269	1001-156101	55.7	6.8	11	OK	CM	OK
270	1001-156202	83.6	6.8	11	OK	CM	OK
271	1001-156202	36	6.8	11	OK	CM	OK
272	1001-156042	103.6	6.8	11	OK	CM	OK
273	1001-156202	5.3	6.8	11	OK	CM	OK
274	1001-156042	17.8	6.8	11	OK	CM	OK
275	1001-156145	111.8	6.8	11	OK	CM	OK
276	1001-156145	8.2	6.8	11	OK	CM	OK
277	1001-156021	120.5	6.8	11	OK	CM	OK
278	1001-156174	2.3	6.8	11	OK	CM	OK
279	1001-156145	2.3	6.8	11	OK	CM	OK
280	1001-156174	118.4	6.8	11	OK	CM	OK
281	1001-156064	6.8	6.8	11	OK	CM	OK
282	1001-156064	112.8	6.8	11	OK	CM	OK
283	1001-156049	11.3	6.8	11	OK	CM	OK

TOTAL PAGE AREA 6551.8 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 22 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-07-14

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
284	1001-156049	107.8	6.8	11	OK	CM	OK
285	1001-156151	12.7	6.8	11	OK	CM	OK
286	1001-156049	4.8	6.8	11	OK	CM	OK
287	1001-156151	108	6.8	11	OK	CM	OK
288	1001-156048	5.7	6.8	11	OK	CM	OK
289	1001-156048	112	6.8	11	OK	CM	OK
290	1001-156175	2	6.8	11	OK	CM	OK
291	1001-156048	6.5	6.8	11	OK	CM	OK
292	1001-156175	104.5	6.8	11	OK	CM	OK
293	1001-156175	13.5	6.8	11	OK	CM	OK
294	1001-156056	93	6.8	11	OK	CM	OK
295	1001-156175	6.7	6.8	11	OK	CM	OK
296	1001-156056	27.4	6.8	11	OK	CM	OK
297	1001-156045	6.6	6.8	11	OK	CM	OK
298	1001-156045	53	6.8	11	OK	CM	OK
299	1001-156039	37	6.8	11	OK	CM	OK
300	1001-156045	15.2	6.8	11	OK	CM	OK
301	1001-156039	62.2	6.8	11	OK	CM	OK
302	1001-156039	20.8	6.8	11	OK	CM	OK
303	1001-156012	43.3	6.8	11	OK	CM	OK

TOTAL PAGE AREA 5730.36 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 23 of 24

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER Primary Containment
DEPLOYMENT DATE 2022-07-14

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
304	1001-156039	14.4	6.8	11	OK	CM	OK
305	1001-156012	36.4	6.8	11	OK	CM	OK
306	1001-156012	36	6.8	11	OK	CM	OK
307	1001-156012	18.8	6.8	11	OK	CM	OK
308	no tag 1	3	6.8	11	OK	CM	OK
309	no tag 2	7	6.8	11	OK	CM	OK

TOTAL PAGE AREA 786.08 m²

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 24 of 24

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-18

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-057	1230	BA	20	60.0%	460°C	143	139	141	139	142	135	132	145	128	139	164	165	161	163	157	CM	SM/SM
2	EC-WW-023	1230	LA	20	50.0%	460°C	150	144	143	141	146	130	127	131	133	128	176	176	180	181	178	CM	TEX/SM
3	EC-WW-023	1230	LA	20	50.0%	460°C	144	137	139	153	146	140	131	141	121	147	173	175	169	169	172	CM	TEX/TEX
4	EC-WW-023	1230	LA	20	40.0%	460°C	144	137	139	153	146	140	131	141	121	147	173	175	169	169	170	CM	TEX/TEX
5	EC-WW-057	1230	BA	20	60.0%	460°C	143	139	141	139	142	135	132	145	128	139	164	165	161	163	157	CM	SM/SM
6	EC-WW-057	1230	BA	20	50.0%	460°C	150	144	143	141	146	130	127	131	133	128	176	176	180	181	178	CM	TEX/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
1 / 2	SEOS	NEOS	1327	22	LA	EC-WW-023	6.8		AP+PS	2022-06-21	1245	1250	40	40	PASS	CM
3 / 4	SEOS	NEOS	1510	22	LA	EC-WW-023	6.8		AP+PS	2022-06-21	1320	1325	40	40	PASS	CM
1 / 3	WEOS	EEOS	1522	22	BA	EC-WW-057	57.0		AP+PS	2022-06-21	1246	1251	40	40	PASS	CM
4 / 5	SEOS	NEOS	1529	22	LA	EC-WW-023	6.8		AP+PS	2022-06-21	1320	1325	40	40	PASS	CM
1 / 4	WEOS	EEOS	1546	22	BA	EC-WW-057	57.0		AP+PS	2022-06-21	1320	1325	40	40	PASS	CM
1 / 5	WEOS	EEOS	1605	22	BA	EC-WW-057	9.0		AP+PS	2022-06-21	1245	1250	40	40	PASS	CM
2 / 5	WEOS	EEOS	1608	22	BA	EC-WW-057	7.0	DS-2	AP+PS	2022-06-21	1245	1250	40	40	PASS	CM
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PAGE TOTAL							150.4									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-18

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
7	EC-WW-057	1630	BA	20	60.0%	460°C	135	139	137	139	139	132	132	132	131	133	157	162	153	157	161	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
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TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 2 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-19

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-057	800	BA	10	60.0%	460°C	125	135	141	138	141	119	137	130	135	136	156	160	170	173	178	CM	SM.SM
2	EC-WW-057	800	BA	10	50.0%	460°C	130	150	149	134	140	136	131	135	131	141	168	172	166	181	180	CM	TEX/SM
3	EC-WW-057	800	BA	10	50.0%	460°C	162	153	147	141	137	153	131	144	142	141	177	175	182	177	179	CM	TEX/TEX
4	EC-WW-029	830	LA	10	50.0%	460°C	133	121	140	129	130	120	159	163	164	132	179	177	183	184	178	CM	TEX/TEX
5	EC-WW-029	830	LA	10	50.0%	460°C	110	117	122	131	132	135	127	130	132	133	175	177	182	177	180	CM	TEX/SM
6	EC-WW-029	830	LA	10	60.0%	460°C	129	131	127	130	133	131	127	130	128	125	181	179	183	180	177	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
6 / 7	SEOS	NEOS	855	15	LA	EC-WW-029	3.4		AP+PS	2022-06-21	1445	1450	40	40	PASS	CM
5 / 7	EEOS	WEOS	920	15	BA	EC-WW-057	1.0		AP+PS	2022-06-21	1246	1251	40	40	PASS	CM
5 / 7	EEOS	WEOS	922	15	BA	EC-WW-057	13.8	DS-1	AP+PS	2022-06-21	1246	1251	40	40	PASS	CM
4 / 7	EEOS	WEOS	930	15	BA	EC-WW-057	46.6		AP+PS	2022-06-21	1246	1251	40	40	PASS	CM
8 / 9	SEOS	NEOS	940	15	LA	EC-WW-029	6.8		AP+PS	2022-06-21	1450	1455	40	40	PASS	CM
7 / 9	EEOS	WEOS	953	15	LA	EC-WW-029	33.0		AP+PS	2022-06-21	900	905	40	40	PASS	CM
7 / 9	EEOS	WEOS	1012	15	LA	EC-WW-029	29.0	DS-3	AP+PS	2022-06-21	1310	1315	40	40	PASS	CM
9 / 11	SEOS	NEOS	1015	15	BA	EC-WW-057	3.4	DS-6	AP+PS	2022-06-21	1310	1315	40	40	PASS	CM
6 / 9	EEOS	WEOS	1025	15	LA	EC-WW-029	23.5		AP+PS	2022-06-21	1445	1450	40	40	PASS	CM
9 / 11	EEOS	WEOS	1030	15	BA	EC-WW-057	62.7	DS-6	AP+PS	2022-06-21	900	905	40	40	PASS	CM
6 / 8	EEOS	WEOS	1035	15	LA	EC-WW-029	42.0		AP+PS	2022-06-21	1500	1505	40	40	PASS	CM
4 / 6	EEOS	WEOS	1045	15	BA	EC-WW-057	65.4		AP+PS	2022-06-21	1500	1505	40	40	PASS	CM
9 / 10	EEOS	WEOS	1050	15	BA	EC-WW-057	21.0		AP+PS	2022-06-21	1500	1505	40	40	PASS	CM
3 / 6	EEOS	WEOS	1050	23	BA	EC-WW-057	58.6		AP+PS	2022-06-22	1450	1455	40	40	PASS	CM
8 / 10	EEOS	WEOS	1058	15	BA	EC-WW-057	41.5		AP+PS	2022-06-21	850	855	40	40	PASS	CM
12 / 13	SEOS	NEOS	1237	23	BA	EC-WW-057	3.4		AP+PS	2022-06-21	1515	1520	40	40	PASS	CM
14 / 15	SEOS	NEOS	1241	23	LA	EC-WW-029	6.8		AP+PS	2022-06-21	1525	1530	40	40	PASS	CM
11 / 13	EEOS	WEOS	1300	23	LA	EC-WW-029	61.5	DS-4	AP+PS	2022-06-21	1515	1520	40	40	PASS	CM
11 / 12	EEOS	WEOS	1326	23	LA	EC-WW-029	1.0		VB	2022-06-24					PASS	CM
10 / 12	EEOS	WEOS	1327	23	LA	EC-WW-029	61.0		AP+PS	2022-06-22	1515	1520	40	40	PASS	CM
						PAGE TOTAL	585.4									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 3 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-19

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
7	EC-WW-057	1200	BA	23	60.0%	460°C	139	134	147	141	132	135	142	135	136	137	165	166	169	163	167	CM	SM/SM
8	EC-WW-057	1200	BA	23	50.0%	460°C	138	143	140	144	153	134	132	133	135	134	172	169	168	171	165	CM	TEX/SM
9	EC-WW-057	1200	BA	23	40.0%	460°C	149	156	154	161	152	152	147	155	146	149	171	176	172	170	169	CM	TEX/TEX
10	EC-WW-057	1200	LA	23	60.0%	460°C	145	146	149	149	147	132	136	140	141	147	158	156	12	154	157	CM	SM/SM
11	EC-WW-029	1200	LA	23	50.0%	460°C	143	153	149	146	146	142	151	148	146	142	141	159	161	158	152	CM	TEX/SM
12	EC-WW-029	1200	LA	23	40.0%	460°C	147	147	141	150	143	149	144	142	144	146	169	169	163	168	167	CM	TEX-TEX

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
13 / 15	EEOS	WEOS	1332	23	BA	EC-WW-057	62.0	DS-5	AP+PS	2022-06-22	1525	1530	40	40	PASS	CM
12 / 15	EEOS	WEOS	1358	23	BA	EC-WW-057	24.0		AP+PS	2022-06-22	1515	1520	40	40	PASS	CM
12 / 14	EEOS	WEOS	1408	23	BA	EC-WW-057	35.5		AP+PS	2022-06-22	1515	1520	40	40	PASS	CM
16 / 17	SEOS	NEOS	1451	23	BA	EC-WW-057	6.8		VB	2022-06-24					PASS	CM
15 / 17	EEOS	WEOS	1500	23	LA	EC-WW-029	80.0	DS-7	AP+PS	2022-06-22	750	755	40	40	PASS	CM
18 / 19	SEOS	NEOS	1506	15	LA	EC-WW-029	6.8		AP+PS	2022-06-22	800	805	40	40	PASS	CM
15 / 16	EEOS	WEOS	1532	23	LA	EC-WW-029	2.4		AP+PS	2022-06-22	750	755	40	40	PASS	CM
14 / 16	EEOS	WEOS	1534	23	LA	EC-WW-029	36.1		AP+PS	2022-06-22	910	915	40	40	PASS	CM
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PAGE TOTAL							253.6									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-19

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
13	EC-WW-029	1600	LA	23	60.0%	460°C	126	142	133	135	132	123	133	124	122	127	162	161	167	161	166	CM	SM/SM
14	EC-WW-029	1600	LA	23	40.0%	460°C	141	155	147	145	148	142	143	148	148	145	171	169	166	163	170	CM	TEX/SM
15	EC-WW-057	1800	BA	24	60.0%	460°C	123	119	123	119	124	123	122	124	120	121	144	153	152	153	161	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
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TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 5 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-20

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-023	1330	EA	22	40.0%	460°C	163	154	159	149	169	160	173	154	144	149	181	204	207	182	195	CM	TEX/TEX
2	EC-WW-029	1330	LA	22	60.0%	460°C	162	156	136	164	153	118	119	121	119	123	180	178	177	185	176	CM	SM/SM
3	EC-WW-029	1330	LA	22	50.0%	460°C	163	155	175	163	170	161	160	134	141	145	180	182	180	175	177	CM	TEX/SM
4	EC-WW-057	1330	BA	22	60.0%	460°C	146	144	153	147	151	149	148	146	143	144	189	191	179	189	181	CM	SM/SM
5	EC-WW-057	1330	BA	22	50.0%	460°C	130	147	151	158	151	146	144	137	142	147	189	186	192	179	191	CM	TEX/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
24 / 25	SEOS	NEOS	1345	15	EA	EC-WW-023	6.8		AP+PS	2022-06-22	920	925	40	40	PASS	CM
23 / 25	EEOS	WEOS	1354	15	BA	EC-WW-057	15.3		AP+PS	2022-06-22	920	925	40	40	PASS	CM
22 / 23	EEOS	WEOS	1355	15	LA	EC-WW-029	15.5	DS-10	AP+PS	2022-06-22	900	905	40	40	PASS	CM
23 / 24	EEOS	WEOS	1401	15	BA	EC-WW-057	16.0		AP+PS	2022-06-22	900	905	40	40	PASS	CM
26 / 27	SEOS	NEOS	1404	15	EA	EC-WW-023	6.8		AP+PS	2022-06-22	1006	1011	40	40	PASS	CM
25 / 27	EEOS	WEOS	1410	15	LA	EC-WW-029	1.0		VB	2022-06-24					PASS	CM
25 / 26	EEOS	WEOS	1411	15	LA	EC-WW-029	31.7		AP+PS	2022-06-24	1205	1210	40	40	PASS	CM
24 / 26	EEOS	WEOS	1422	15	LA	EC-WW-029	14.4	DS-15	AP+PS	2022-06-23	940	945	40	40	PASS	CM
28 / 29	EEOS	WEOS	1432	15	EA	EC-WW-023	6.8		AP+PS	2022-06-23	820	825	40	40	PASS	CM
27 / 29	EEOS	WEOS	1432	15	BA	EC-WW-057	18.6		AP+PS	2022-06-23	1006	1011	40	40	PASS	CM
26 / 29	EEOS	WEOS	1440	15	BA	EC-WW-057	5.8		AP+PS	2022-06-23	850	855	40	40	PASS	CM
26 / 28	EEOS	WEOS	1442	15	BA	EC-WW-057	40.0		AP+PS	2022-06-23	850	855	40	40	PASS	CM
30 / 31	EEOS	WEOS	1448	15	EA	EC-WW-023	6.8		AP+PS	2022-06-23	823	828	40	40	PASS	CM
29 / 31	SEOS	NEOS	1451	15	LA	EC-WW-029	0.8		VB	2022-06-24					PASS	CM
30 / 29	EEOS	WEOS	1452	15	LA	EC-WW-029	41.0		AP+PS	2022-06-23	830	835	40	40	PASS	CM
21 / 31	NEEOS	SWEOS	1505	15	BA	EC-WW-057	17.4		AP+PS	2022-06-23	823	828	40	40	PASS	CM
28 / 30	SEOS	NEOS	1513	15	LA	EC-WW-029	40.0	DS-8	AP+PS	2022-06-23	830	835	40	40	PASS	CM
21 / 29	NEEOS	SWEOS	1515	15	BA	EC-WW-057	18.6		AP+PS	2022-06-23	823	828	40	40	PASS	CM
17 / 19	EEOS	WEOS	1518	15	LA	EC-WW-029	741.0		AP+PS	2022-06-23	800	805	40	40	PASS	CM
21 / 27	NEEOS	SWEOS	1525	15	BA	EC-WW-057	18.6		AP+PS	2022-06-23	822	827	40	40	PASS	CM
						PAGE TOTAL	1062.9									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 6 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-20

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
21 / 25	NEEOS	SWEOS	1530	15	BA	EC-WW-057	10.5		AP+PS	2022-06-23	1205	1210	40	40	PASS	CM
20 / 25	NEEOS	SWEOS	1535	15	BA	EC-WW-057	8.1		AP+PS	2022-06-23	822	827	40	40	PASS	CM
20 / 23	NEEOS	SWEOS	1540	15	BA	EC-WW-057	18.4		AP+PS	2022-06-23	900	905	40	40	PASS	CM
17 / 18	EEOS	WEOS	1546	15	LA	EC-WW-029	4.4		AP+PS	2022-06-23	755	800	40	40	PASS	CM
20 / 22	NEEOS	SWEOS	1550	15	BA	EC-WW-057	18.4	DS-14	AP+PS	2022-06-23	900	905	40	40	PASS	CM
16 / 18	EEOS	WEOS	1550	15	LA	EC-WW-029	37.8	DS-9	AP+PS	2022-06-23	755	800	40	40	PASS	CM
20 / 21	SEOS	NEOS	1608	15	LA	EC-WW-029	6.8		AP+PS	2022-06-23	810	815	40	40	PASS	CM
19 / 20	EEOS	WEOS	1618	15	BA	EC-WW-057	7.0		AP+PS	2022-06-23	810	815	40	40	PASS	CM
18 / 20	EEOS	WEOS	1621	15	BA	EC-WW-057	40.1	DS-13	AP+PS	2022-06-23	805	810	40	40	PASS	CM
19 / 21	EEOS	WEOS	1622	15	LA	EC-WW-029	67.2		AP+PS	2022-06-23	810	815	40	40	PASS	CM
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/																
PAGE TOTAL							218.7									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 7 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-21

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-023	1000	RM	15	55.0%	460°C	134	136	142	138	141	153	140	150	145	143	168	169	171	167	170	CM	SM/SM
2	EC-WW-022	1000	EA	15	40.0%	460°C	179	152	161	186	170	165	160	155	162	164	186	179	181	185	182	CM	TEX/TEX
3	EC-WW-029	1000	BF	15	60.0%	460°C	155	151	149	147	148	141	123	142	150	149	181	179	182	178	181	CM	SM/SM
4	EC-WW-023	1450	RM	18	500.0%	460°C	153	155	162	162	152	149	146	154	148	151	186	181	182	184	179	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
21 / 32	EEOS	WEOS	1010	18	RM	EC-WW-023	1.5		VB	2022-06-24					PASS	CM
31 / 32	EEOS	WEOS	1011	18	RM	EC-WW-023	16.5		AP+PS	2022-06-23	824	829	40	40	PASS	CM
30 / 32	EEOS	WEOS	1026	18	BF	EC-WW-029	48.8		AP+PS	2022-06-23	824	829	40	40	PASS	CM
32 / 34	EEOS	WEOS	1044	18	RM	EC-WW-023	71.2		AP+PS	2022-06-24	1303	1308	40	40	PASS	CM
30 / 32	EEOS	WEOS	1050	18	BF	EC-WW-029	29.5	DS-11	AP+PS	2022-06-23	845	850	40	40	PASS	CM
33 / 34	SEOS	NEOS	1050	18	EA	EC-WW-022	6.8		AP+PS	2022-06-23	1303	1308	40	40	PASS	CM
32 / 33	EEOS	WEOS	1109	18	RM	EC-WW-023	23.5	DS-12	AP+PS	2022-06-23	1303	1308	40	40	PASS	CM
35 / 36	SEOS	NEOS	1232	20	EA	EC-WW-022	6.8		VB	2022-06-24					PASS	CM
34 / 36	EEOS	WEOS	1233	20	RM	EC-WW-023	42.8		AP+PS	2022-06-24	1154	1159	40	40	PASS	CM
34 / 35	EEOS	WEOS	1247	20	RM	EC-WW-023	27.3		AP+PS	2022-06-24	1154	1159	40	40	PASS	CM
36 / 38	EEOS	WEOS	1250	20	BF	EC-WW-029	12.7		AP+PS	2022-06-24	748	753	40	40	PASS	CM
37 / 38	EEOS	WEOS	1250	20	EA	EC-WW-022	6.8		AP+PS	2022-06-24	748	753	40	40	PASS	CM
33 / 35	EEOS	WEOS	1256	20	RM	EC-WW-023	22.5	DS-16	AP+PS	2022-06-23	1307	1312	40	40	PASS	CM
36 / 37	EEOS	WEOS	1256	20	BF	EC-WW-029	29.5		AP+PS	2022-06-24	748	753	40	40	PASS	CM
35 / 37	EEOS	WEOS	1306	20	BF	EC-WW-029	16.8		AP+PS	2022-06-23	1222	1227	40	40	PASS	CM
35 / 37	EEOS	WEOS	1315	20	BF	EC-WW-029	31.0	DS-25	AP+PS	2022-06-24	748	753	40	40	PASS	CM
38 / 39	EEOS	WEOS	1456	20	RM	EC-WW-023	17.9		AP+PS	2022-06-24	750	755	40	40	PASS	CM
37 / 39	EEOS	WEOS	1507	20	RM	EC-WW-023	78.0	DS-22	AP+PS	2022-06-24	750	755	40	40	PASS	CM
/																
/																
						PAGE TOTAL	489.9									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 8 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-22

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-022	1130	RM	20	40.0%	460°C	148	142	135	141	143	139	133	134	150	142	154	149	151	152	155	CM	TEX/TEX
2	EC-WW-022	1130	RM	20	60.0%	460°C	126	128	125	127	128	131	132	121	126	125	149	155	148	151	152	CM	SM/SM
3	EC-WW-023	1130	BF	20	60.0%	460°C	124	121	123	125	130	130	127	124	122	131	154	152	151	153	154	CM	SM/SM
4	EC-WW-023	1130	BF	20	40.0%	460°C	150	151	150	152	149	151	156	150	151	153	162	173	177	175	174	CM	TEX/TEX
5	EC-WW-029	1130	RF	20	40.0%	460°C	133	140	143	144	139	144	145	141	140	141	170	168	162	171	169	CM	TEX/TEX
6	EC-WW-029	1130	RF	20	60.0%	460°C	140	141	142	138	139	141	149	124	131	129	156	156	144	151	148	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
39 / 40	EEOS	WEOS	1222	20	RM	EC-WW-022	89.0	DS-23	AP+PS	2022-06-24	1038	1043	40	40	PASS	CM
40 / 42	EEOS	WEOS	1230	20	BF	EC-WW-023	57.3		AP+PS	2022-06-24	902	907	40	40	PASS	CM
41 / 42	SEOS	NEOS	1230	20	BF	EC-WW-023	6.8		AP+PS	2022-06-24	911	916	40	40	PASS	CM
43 / 44	SEOS	NEOS	1245	20	RF	EC-WW-029	6.8		AP+PS	2022-06-24	758	803	40	40	PASS	CM
40 / 41	EEOS	WEOS	1250	20	BF	EC-WW-023	32.4	DS-24	AP+PS	2022-06-24	902	907	40	40	PASS	CM
42 / 44	EEOS	WEOS	1315	20	RM	EC-WW-022	24.5		AP+PS	2022-06-24	758	803	40	40	PASS	CM
44 / 45	EEOS	WEOS	1315	20	BF	EC-WW-023	23.3		AP+PS	2022-06-24	804	809	40	40	PASS	CM
43 / 45	EEOS	WEOS	1320	20	BF	EC-WW-023	64.5	DS-20	AP+PS	2022-06-24	804	809	40	40	PASS	CM
42 / 43	EEOS	WEOS	1322	24	RM	EC-WW-022	32.6		AP+PS	2022-06-24	911	916	40	40	PASS	CM
46 / 47	NEOS	SEOS	1330	20	RF	EC-WW-029	6.8		AP+PS	2022-06-24	846	851	40	40	PASS	CM
41 / 43	EEOS	WEOS	1331	24	RM	EC-WW-022	32.4	DS-21	AP+PS	2022-06-24	911	916	40	40	PASS	CM
47 / 48	SEOS	NEOS	1347	24	RF	EC-WW-029	6.8		AP+PS	2022-06-24	827	832	40	40	PASS	CM
45 / 48	EEOS	WEOS	1404	24	RM	EC-WW-022	59.8		AP+PS	2022-06-24	827	832	40	40	PASS	CM
49 / 50	SEOS	NEOS	1415	24	RF	EC-WW-029	6.8		AP+PS	2022-06-24	815	820	40	40	PASS	CM
48 / 50	EEOS	WEOS	1420	24	BF	EC-WW-023	23.5		AP+PS	2022-06-24	815	820	40	40	PASS	CM
48 / 50	EEOS	WEOS	1420	24	BF	EC-WW-023	22.5		AP+PS	2022-06-24	815	820	40	40	PASS	CM
45 / 47	EEOS	WEOS	1422	24	RM	EC-WW-022	16.5		AP+PS	2022-06-24	827	832	40	40	PASS	CM
45 / 46	EEOS	WEOS	1427	24	RM	EC-WW-022	9.0	DS-19	AP+PS	2022-06-24	846	851	40	40	PASS	CM
48 / 49	EEOS	WEOS	1430	24	BF	EC-WW-023	23.2		AP+PS	2022-06-24	815	820	40	40	PASS	CM
48 / 49	EEOS	WEOS	1440	24	BF	EC-WW-023	13.3		AP+PS	2022-06-24	815	820	40	40	PASS	CM
						PAGE TOTAL	557.8									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 9 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-22

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
7	EC-WW-022	1600	RM	24	40.0%	460°C	134	146	150	146	141	141	146	140	142	140	156	161	162	159	160	CM	TEX/TEX
8	EC-WW-023	1600	BF	24	60.0%	460°C	133	144	136	138	141	128	136	138	136	137	159	161	160	144	159	CM	SM/SM
9	EC-WW-029	1610	RF	24	60.0%	460°C	121	123	120	126	122	128	127	126	138	129	159	163	157	158	161	CM	SM/SM
10	EC-WW-029	1615	RF	24	50.0%	460°C	147	146	135	146	145	128	122	130	131	123	161	158	160	157	160	CM	TEX/TEX
11	EC-WW-023	1630	BF	24	40.0%	460°C	141	142	144	145	140	130	131	142	134	141	150	146	169	161	159	CM	TEX/TEX
12	EC-WW-022	1630	RM	24	60.0%	460°C	132	138	132	141	140	121	127	130	128	131	154	160	161	157	159	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
47 / 49	EEOS	WEOS	1445	24	BF	EC-WW-023	6.4		AP+PS	2022-06-24	835	840	40	40	PASS	CM
50 / 51	EEOS	WEOS	1446	24	RM	EC-WW-022	21.8		AP+PS	2022-06-24	815	820	40	40	PASS	CM
47 / 49	EEOS	WEOS	1447	24	BF	EC-WW-023	9.7		AP+PS	2022-06-24	835	840	40	40	PASS	CM
49 / 51	EEOS	WEOS	1453	24	RM	EC-WW-022	61.9	DS-17	AP+PS	2022-06-24	835	840	40	40	PASS	CM
46 / 49	EEOS	WEOS	1500	24	BF	EC-WW-023	9.0	DS-18	AP+PS	2022-06-24	846	851	40	40	PASS	CM
51 / 52	EEOS	WEOS	1729	24	RM	EC-WW-022	72.8	DS-26	AP+PS	2022-06-24	1215	1220	40	40	PASS	CM
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/																
PAGE TOTAL							181.6									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-23

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-057	1000	BA	15	60.0%	460°C	121	134	131	134	132	137	131	133	130	129	155	154	156	158	151	CM	SM/SM
2	EC-WW-022	1011	BA	15	40.0%	460°C	142	150	164	161	152	140	141	154	153	149	172	171	169	168	170	CM	TEX/TEX
3	EC-WW-022	1025	RM	15	60.0%	460°C	126	134	129	127	130	128	129	126	127	131	155	154	151	157	156	CM	SM/SM
4	WC-WW-057	1100	RM	15	40.0%	460°C	143	141	132	140	144	136	140	132	141	142	161	161	160	159	162	CM	TEX/TEX
5	EC-WW-023	1200	EA	15	40.0%	460°C	123	124	121	122	125	129	121	133	131	128	148	149	151	161	159	CM	TEX/TEX

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
52 / 54	EEOS	WEOS	1200	18	RM	EC-WW-022	44.5		AP+PS	2022-06-24	1220	1225	40	40	PASS	CM
53 / 54	SEOS	NEOS	1200	18	EA	EC-WW-023	6.8		AP+PS	2022-06-24	1220	1225	40	40	PASS	CM
55 / 56	SEOS	NEOS	1218	18	BA	EC-WW-057	6.8		AP+PS	2022-06-24	1307	1312	40	40	PASS	CM
54 / 56	EEOS	WEOS	1225	18	BA	EC-WW-057	5.0		AP+PS	2022-06-24	1258	1303	40	40	PASS	CM
52 / 53	EEOS	WEOS	1227	18	RM	EC-WW-022	32.3	DS-28	AP+PS	2022-06-24	1220	1225	40	40	PASS	CM
54 / 55	EEOS	WEOS	1227	18	BA	EC-WW-057	9.4		AP+PS	2022-06-24	1307	1312	40	40	PASS	CM
54 / 55	EEOS	WEOS	1231	18	BA	EC-WW-057	30.2		AP+PS	2022-06-24	1307	1312	40	40	PASS	CM
52 / 53	EEOS	WEOS	1232	18	RM	EC-WW-022	4.0		AP+PS	2022-06-24	1215	1220	40	40	PASS	CM
53 / 55	EEOS	WEOS	1245	18	BA	EC-WW-057	30.8		AP+PS	2022-06-24	1225	1230	40	40	PASS	CM
56 / 57	EEOS	WEOS	1253	18	RM	EC-WW-022	5.0		VB	2022-06-24					PASS	CM
55 / 57	EEOS	WEOS	1255	18	RM	EC-WW-022	75.0		AP+PS	2022-06-24	1358	1403	40	40	PASS	CM
53 / 55	EEOS	WEOS	1300	18	BA	EC-WW-057	5.2	DS-27	AP+PS	2022-06-24	1358	1403	40	40	PASS	CM
58 / 59	SEOS	NEOS	1302	18	EA	EC-WW-023	6.8		AP+PS	2022-06-24	1410	1415	40	40	PASS	CM
57 / 59	WEOS	EEOS	1305	18	BA	EC-WW-057	25.3		AP+PS	2022-06-24	1440	1445	40	40	PASS	CM
57 / 58	WEOS	EEOS	1306	18	BA	EC-WW-057	42.6	DS-29	AP+PS	2022-06-24	1358	1403	40	40	PASS	CM
57 / 59	WEOS	EEOS	1315	18	BA	EC-WW-057	7.9		AP+PS	2022-06-24	1440	1445	40	40	PASS	CM
60 / 61	SEOS	NEOS	1333	18	EA	EC-WW-023	6.8		AP+PS	2022-06-24	1404	1409	40	40	PASS	CM
58 / 60	WEOS	EEOS	1339	18	RM	EC-WW-022	5.6	DS-30	AP+PS	2022-06-24	1404	1409	40	40	PASS	CM
58 / 61	WEOS	EEOS	1340	18	RM	EC-WW-022	37.0		AP+PS	2022-06-24	1410	1415	40	40	PASS	CM
59 / 61	WEOS	EEOS	1355	18	RM	EC-WW-022	44.0		AP+PS	2022-06-24	1410	1415	40	40	PASS	CM
						PAGE TOTAL	431.0									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 11 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-24

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
60 / 1B	NEOS	SEOS	930	20	GB	EC-EX-040	6.8		VB	2022-06-24					PASS	CM
58 / 1B	NEOS	SEOS	930	20	GB	EC-EX-040	6.8		VB	2022-06-24					PASS	CM
57 / 1B	NEOS	SEOS	930	20	GB	EC-EX-040	6.8		VB	2022-06-24					PASS	CM
55 / 1B	NEOS	SEOS	930	20	GB	EC-EX-040	6.8		VB	2022-06-24					PASS	CM
53 / 1B	NEOS	SEOS	930	20	GB	EC-EX-040	6.8		VB	2022-06-24					PASS	CM
52 / 1B	NEOS	SEOS	930	20	GB	EC-EX-040	6.8		VB	2022-06-24					PASS	CM
51 / 1B	NEOS	SEOS	941	20	EA	EC-EX-033	6.8		VB	2022-06-24					PASS	CM
49 / 1B	NEOS	SEOS	941	20	EA	EC-EX-033	6.8		VB	2022-06-24					PASS	CM
46 / 1B	NEOS	SEOS	941	20	EA	EC-EX-033	6.8		VB	2022-06-24					PASS	CM
45 / 1B	NEOS	SEOS	941	20	EA	EC-EX-033	6.8		VB	2022-06-24					PASS	CM
43 / 1B	NEOS	SEOS	941	20	EA	EC-EX-033	6.8		VB	2022-06-24					PASS	CM
41 / 1B	NEOS	SEOS	941	20	EA	EC-EX-033	6.8		VB	2022-06-24					PASS	CM
40 / 1B	NEOS	SEOS	1217	20	EA	EC-EX-033	6.8		VB	2022-06-24					PASS	CM
39 / 1B	NEOS	SEOS	1217	20	EA	EC-EX-033	6.8		VB	2022-06-24					PASS	CM
37 / 1B	NEOS	SEOS	1217	20	EA	EC-EX-033	6.8		VB	2022-06-24					PASS	CM
35 / 1B	NEOS	SEOS	1217	20	EA	EC-EX-033	6.8		VB	2022-06-24					PASS	CM
33 / 1B	NEOS	SEOS	1217	20	EA	EC-EX-033	6.8		VB	2022-06-24					PASS	CM
32 / 1B	NEOS	SEOS	1217	20	EA	EC-EX-033	6.8		VB	2022-06-24					PASS	CM
30 / 1B	NEOS	SEOS	1217	20	EA	EC-EX-033	6.8		VB	2022-06-24					PASS	CM
28 / 1B	NEOS	SEOS	1217	20	EA	EC-EX-033	6.8		VB	2022-06-24					PASS	CM
						PAGE TOTAL	136.0									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 12 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-24

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
24 / 1B	NEOS	SEOS	1400	20	GB	EC-EX-040	6.8		VB	2022-06-24					PASS	CM
23 / 1B	NEOS	SEOS	1400	20	GB	EC-EX-040	6.8		VB	2022-06-24					PASS	CM
22 / 1B	NEOS	SEOS	1400	20	GB	EC-EX-040	6.8		VB	2022-06-24					PASS	CM
20 / 1B	NEOS	SEOS	1400	20	GB	EC-EX-040	6.8		VB	2022-06-24					PASS	CM
18 / 1B	NEOS	SEOS	1400	20	GB	EC-EX-040	6.8		VB	2022-06-24					PASS	CM
16 / 1B	NEOS	SEOS	1600	20	GB	EC-EX-040	6.8		VB	2022-06-24					PASS	CM
14 / 1B	NEOS	SEOS	1600	20	GB	EC-EX-040	6.8		VB	2022-06-24					PASS	CM
12 / 1B	NEOS	SEOS	1600	20	GB	EC-EX-040	6.8		VB	2022-06-24					PASS	CM
26 / 1B	NEOS	SEOS	1605	20	EA	EC-EX-041	6.8		VB	2022-06-24					PASS	CM
10 / 1B	NEOS	SEOS	1630	20	EA	EC-EX-041	6.8		VB	2022-06-24					PASS	CM
8 / 1B	NEOS	SEOS	1630	20	EA	EC-EX-041	6.8		VB	2022-06-24					PASS	CM
6 / 1B	NEOS	SEOS	1630	20	EA	EC-EX-041	6.8		VB	2022-06-24					PASS	CM
3 / 1B	NEOS	SEOS	1630	20	EA	EC-EX-041	6.8		VB	2022-06-24					PASS	CM
1 / 1B	NEOS	SEOS	1630	20	EA	EC-EX-041	6.8		VB	2022-06-24					PASS	CM
/																
/																
/																
/																
/																
/																
PAGE TOTAL							95.2									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 13 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-25

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-057	1130	BA	20	60.0%	460°C	133	129	102	118	124	119	131	113	126	124	147	151	153	154	152	CM	SM/SM
2	EC-WW-057	1130	BA	20	45.0%	460°C	138	137	153	148	150	129	135	143	151	152	168	159	159	167	165	CM	TEX/SM
3	EC-WW-022	1130	RM	20	45.0%	460°C	132	139	131	135	143	135	132	130	141	137	158	154	152	161	159	CM	TEX/SM
4	EC-WW-022	1130	RM	20	60.0%	460°C	126	135	136	140	139	135	144	143	140	135	161	167	164	151	163	CM	SM/SM
5	EC-WW-023	1130	BF	20	45.0%	460°C	144	151	144	146	144	134	144	139	146	146	154	167	166	175	162	CM	TEX/TEX
6	EC-WW-023	1130	BF		60.0%	460°C	135	132	131	122	119	113	133	127	127	116	136	153	151	158	156	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
61 / 62	EEOS	WEOS	1200	24	BF	EC-WW-023	76.7		AP+PS	2022-06-25	1308	1313	40	40	PASS	CM
63 / 64	SEOS	NEOS	1220	24	RM	EC-WW-022	6.8		AP+PS	2022-06-25	1639	1644	40	40	PASS	CM
62 / 64	EEOS	WEOS	1220	24	BA	EC-WW-057	49.0		AP+PS	2022-06-25	1639	1644	40	40	PASS	CM
60 / 62	EEOS	WEOS	1225	24	BF	EC-WW-023	5.0		AP+PS	2022-06-25	1308	1313	40	40	PASS	CM
62 / 63	EEOS	WEOS	1235	24	BA	EC-WW-057	32.0	DS-31	AP+PS	2022-06-25	1639	1644	40	40	PASS	CM
65 / 66	SEOS	NEOS	1240	24	RM	EC-WW-022	6.8		AP+PS	2022-06-25	1627	1632	40	40	PASS	CM
64 / 66	EEOS	WEOS	1245	24	RM	EC-WW-022	12.4		AP+PS	2022-06-25	1631	1636	40	40	PASS	CM
64 / 65	EEOS	WEOS	1250	24	RM	EC-WW-022	38.2		AP+PS	2022-06-25	1636	1641	40	40	PASS	CM
66 / 67	EEOS	WEOS	1300	24	BF	EC-WW-023	12.9		AP+PS	2022-06-25	1627	1632	40	40	PASS	CM
63 / 65	EEOS	WEOS	1302	24	RM	EC-WW-022	31.8		AP+PS	2022-06-25	1636	1641	40	40	PASS	CM
65 / 67	EEOS	WEOS	1303	24	BF	EC-WW-023	70.4	DS-32	AP+PS	2022-06-25	1627	1632	40	40	PASS	CM
68 / 69	SEOS	NEOS	1326	24	RM	EC-WW-022	6.8		AP+PS	2022-06-25	1650	1655	40	40	PASS	CM
67 / 69	EEOS	WEOS	1328	24	BA	EC-WW-057	57.0		AP+PS	2022-06-25	1650	1655	40	40	PASS	CM
67 / 68	EEOS	WEOS	1347	24	BA	EC-WW-057	7.2		AP+PS	2022-06-25	1644	1649	40	40	PASS	CM
69 / 71	EEOS	WEOS	1352	24	BF	EC-WW-023	22.0		AP+PS	2022-06-25	1624	1629	40	40	PASS	CM
67 / 68	EEOS	WEOS	1355	24	BA	EC-WW-057	3.7		AP+PS	2022-06-25	1644	1649	40	40	PASS	CM
70 / 71	SEOS	NEOS	1355	24	RM	EC-WW-022	6.8		AP+PS	2022-06-25	1624	1629	40	40	PASS	CM
67 / 68	EEOS	WEOS	1357	24	BA	EC-WW-057	13.0	DS-33	AP+PS	2022-06-25	1650	1655	40	40	PASS	CM
69 / 70	EEOS	WEOS	1359	24	BF	EC-WW-023	39.0		AP+PS	2022-06-25	1624	1629	40	40	PASS	CM
71 / 72	EEOS	WEOS	1402	24	RM	EC-WW-022	22.0		AP+PS	2022-06-25	1630	1635	40	40	PASS	CM
						PAGE TOTAL	519.5									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 14 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-25

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
7	EC-WW-057	1530	BA	24	60.0%	460°C	141	142	133	144	142	120	127	127	134	130	155	164	160	157	171	CM	SM/SM
8	EC-WW-022	1530	RM	24	45.0%	460°C	139	145	143	132	135	132	140	136	129	134	146	153	135	167	158	CM	TEX/SM
9	EC-WW-022	1530	RM	24	60.0%	460°C	131	122	120	130	122	131	127	119	120	119	158	156	137	150	162	CM	SM/SM
10	EC-WW-023	1530	BF	24	60.0%	460°C	139	137	121	127	126	124	126	127	130	122	156	168	151	156	150	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
68 / 70	EEOS	WEOS	1408	24	BF	EC-WW-023	26.2	DS-34	AP+PS	2022-06-25	1655	1700	40	40	PASS	CM
70 / 72	EEOS	WEOS	1413	24	RM	EC-WW-022	62.0	DS-35	AP+PS	2022-06-25	1630	1635	40	40	PASS	CM
72 / 74	EEOS	WEOS	1643	24	BF	EC-WW-023	72.7		AP+PS	2022-06-26	724	729	40	40	PASS	CM
73 / 74	SEOS	NEOS	1645	24	RM	EC-WW-022	6.8		AP+PS	2022-06-26	724	729	40	40	PASS	CM
75 / 76	SEOS	NEOS	1703	24	RM	EC-WW-022	6.8		AP+PS	2022-06-26	942	947	40	40	PASS	CM
72 / 73	EEOS	WEOS	1707	24	BF	EC-WW-023	14.0	DS-36	AP+PS	2022-06-26	724	729	40	40	PASS	CM
74 / 76	EEOS	WEOS	1708	24	BA	EC-WW-057	36.7		AP+PS	2022-06-26	942	947	40	40	PASS	CM
74 / 75	EEOS	WEOS	1722	24	BA	EC-WW-057	36.0		AP+PS	2022-06-26	942	947	40	40	PASS	CM
77 / 78	SEOS	NEOS	1728	24	RM	EC-WW-022	6.8		AP+PS	2022-06-26	954	959	40	40	PASS	CM
76 / 78	EEOS	WEOS	1731	24	RM	EC-WW-022	2.0		AP+PS	2022-06-26	954	959	40	40	PASS	CM
76 / 77	EEOS	WEOS	1732	24	RM	EC-WW-022	37.0		AP+PS	2022-06-26	948	953	40	40	PASS	CM
73 / 75	EEOS	WEOS	1737	24	BA	EC-WW-057	14.2	DS-37	AP+PS	2022-06-26	948	953	40	40	PASS	CM
75 / 77	EEOS	WEOS	1742	24	RM	EC-WW-022	50.0	DS-38	AP+PS	2022-06-26	948	953	40	40	PASS	CM
/																
/																
/																
/																
/																
/																
/																
PAGE TOTAL							371.2									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-26

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-022	1230	RM	22	60.0%	460°C	129	128	126	135	125	134	135	124	135	134	158	153	164	151	158	CM	SM/SM
2	EC-WW-022	1230	RM	22	45.0%	443°C	123	148	135	147	134	142	147	142	130	144	153	164	172	165	168	CM	TEX/SM
3	EC-WW-057	1230	BA	22	45.0%	460°C	133	125	131	139	133	126	137	128	145	142	160	164	163	155	162	CM	TEX/TEX
4	EC-WW-057	1230	BA	22	60.0%	460°C	143	134	145	151	123	138	132	134	136	135	154	160	142	162	155	CM	SM/SM
5	EC-WW-023	1230	BF	22	60.0%	460°C	128	140	125	128	121	129	139	134	119	131	157	162	159	173	164	CM	SM/SM
6	EC-WW-023	1230	BF	22	45.0%	460°C	121	130	127	140	121	129	141	132	129	122	162	174	166	138	155	CM	TEX/TEX

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
77 / 79	EEOS	WEOS	1255	26	BF	EC-WW-023	18.0		AP+PS	2022-06-27	735	740	40	40	PASS	CM
82 / 83	SEOS	NEOS	1255	26	BA	EC-WW-057	6.8		AP+PS	2022-06-27	812	817	40	40	PASS	CM
77 / 79	EEOS	WEOS	1303	26	BF	EC-WW-023	15.0	DS-39	AP+PS	2022-06-27	738	843	40	40	PASS	CM
81 / 83	EEOS	WEOS	1310	26	BA	EC-WW-057	278.9		AP+PS	2022-06-27	812	817	40	40	PASS	CM
81 / 82	EEOS	WEOS	1315	26	BA	EC-WW-057	30.8		AP+PS	2022-06-27	751	756	40	40	PASS	CM
83 / 84	EEOS	WEOS	1317	26	RM	EC-WW-022	29.0		AP+PS	2022-06-27	816	821	40	40	PASS	CM
80 / 82	EEOS	WEOS	1325	26	BA	EC-WW-057	31.8		AP+PS	2022-06-27	751	756	40	40	PASS	CM
82 / 84	EEOS	WEOS	1326	26	RM	EC-WW-022	63.0	DS-41	AP+PS	2022-06-27	816	821	40	40	PASS	CM
86 / 87	EEOS	WEOS	1350	26	BA	EC-WW-057	6.8		AP+PS	2022-06-27	821	826	40	40	PASS	CM
84 / 85	EEOS	WEOS	1357	26	BF	EC-WW-023	94.0	DS-42	AP+PS	2022-06-27	820	825	40	40	PASS	CM
85 / 87	EEOS	WEOS	1400	26	RM	EC-WW-022	69.0		AP+PS	2022-06-27	821	826	40	40	PASS	CM
88 / 89	SEOS	NEOS	1413	26	BA	EC-WW-057	6.8		AP+PS	2022-06-27	837	842	40	40	PASS	CM
85 / 86	SEOS	NEOS	1421	26	RM	EC-WW-022	27.0	DS-43	AP+PS	2022-06-27	821	826	40	40	PASS	CM
87 / 89	EEOS	WEOS	1428	26	BA	EC-WW-057	44.5		AP+PS	2022-06-27	837	842	40	40	PASS	CM
87 / 88	EEOS	WEOS	1444	26	BA	EC-WW-057	24.7		AP+PS	2022-06-27	827	832	40	40	PASS	CM
90 / 91	SEOS	NEOS	1445	26	RM	EC-WW-022	6.8		AP+PS	2022-06-27	848	853	40	40	PASS	CM
86 / 88	EEOS	WEOS	1450	26	BA	EC-WW-057	27.6	DS-44	AP+PS	2022-06-27	827	832	40	40	PASS	CM
89 / 91	EEOS	WEOS	1450	26	RM	EC-WW-022	19.2		AP+PS	2022-06-27	848	853	40	40	PASS	CM
89 / 90	EEOS	WEOS	1456	26	RM	EC-WW-022	24.6		AP+PS	2022-06-27	839	844	40	40	PASS	CM
88 / 90	EEOS	WEOS	1503	26	RM	EC-WW-022	52.5	DS-45	AP+PS	2022-06-27	839	844	40	40	PASS	CM
						PAGE TOTAL	876.8									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-26

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
7	EC-WW-022	1630	RM	26	60.0%	460°C	128	143	130	129	145	133	111	135	125	125	170	158	149	155	167	CM	SM/SM
8	EC-WW-022	1630	RM	26	45.0%	460°C	142	139	150	170	149	145	155	149	126	127	150	182	173	185	180	CM	TEX/TEX
9	EC-WW-057	1630	BA	26	45.0%	460°C	148	164	133	143	141	141	146	127	124	128	158	165	168	166	132	CM	TEX/TEX
10	EC-WW-057	1630	BA	26	60.0%	460°C	132	129	126	141	133	132	133	128	133	129	137	162	162	170	161	CM	SM/SM
11	EC-WW-023	1630	BF	26	60.0%	460°C	131	140	131	121	119	124	128	128	144	129	156	163	130	152	161	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
91 / 92	EEOS	WEOS	1638	26	BF	EC-WW-023	19.8		AP+PS	2022-06-27	848	853	40	40	PASS	CM
90 / 92	EEOS	WEOS	1645	26	BF	EC-WW-023	77.0	DS-46	AP+PS	2022-06-27	848	853	40	40	PASS	CM
92 / 93	EEOS	WEOS	1652	26	RM	EC-WW-022	94.0		AP+PS	2022-06-27	850	855	40	40	PASS	CM
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PAGE TOTAL							190.8									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 17 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-27

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-023	1200	BF	24	60.0%	460°C	124	130	125	120	123	125	126	113	127	120	149	155	160	155	150	CM	SM/SM
2	EC-WW-023	1200	BF	24	45.0%	460°C	131	137	152	147	148	136	144	136	140	125	155	162	151	167	142	CM	TEX/SM
3	EC-WW-022	1200	RM	24	60.0%	460°C	123	136	125	129	120	139	145	133	138	125	159	166	147	162	136	CM	SM/SM
4	EC-WW-022	1200	RM	24	45.0%	460°C	156	135	152	130	123	157	141	152	133	124	144	157	163	179	175	CM	TEX/SM
5	EC-WW-057	1200	BA	24	45.0%	460°C	132	132	129	143	128	136	133	129	149	139	155	150	162	162	153	CM	TEX/TEX
6	EC-WW-057	1200	BA	24	60.0%	460°C	127	138	127	116	126	136	138	118	119	131	167	156	157	159	163	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
93 / 95	EEOS	WEOS	1235	26	BF	EC-WW-023	76.0		AP+PS	2022-06-28	749	758	40	40	PASS	CM
94 / 95	SEOS	NEOS	1245	26	BA	EC-WW-057	4.5		AP+PS	2022-06-28	821	826	40	40	PASS	CM
94 / 95	SEOS	NEOS	1249	26	BA	EC-WW-057	2.3		VB	2022-06-28					PASS	CM
96 / 97	SEOS	NEOS	1252	26	BA	EC-WW-057	5.8		AP+PS	2022-06-28	807	812	40	40	PASS	CM
95 / 97	EEOS	WEOS	1253	26	RM	EC-WW-022	57.0		AP+PS	2022-06-28	753	758	40	40	PASS	CM
93 / 94	EEOS	WEOS	1258	26	BF	EC-WW-023	22.8	DS-47	AP+PS	2022-06-28	816	826	40	40	PASS	CM
95 / 96	EEOS	WEOS	1310	26	RM	EC-WW-022	4.4		AP+PS	2022-06-28	810	815	40	40	PASS	CM
98 / 99	SEOS	NEOS	1310	26	BA	EC-WW-057	6.8		AP+PS	2022-06-28	759	804	40	40	PASS	CM
94 / 96	EEOS	WEOS	1316	26	RM	EC-WW-022	21.8	DS-48	AP+PS	2022-06-28	814	819	40	40	PASS	CM
97 / 99	EEOS	WEOS	1340	26	BA	EC-WW-057	40.4		AP+PS	2022-06-28	759	804	40	40	PASS	CM
97 / 98	EEOS	WEOS	1352	26	BA	EC-WW-057	17.3		AP+PS	2022-06-28	759	804	40	40	PASS	CM
100 / 101	SEOS	NEOS	1352	26	RM	EC-WW-022	6.8		AP+PS	2022-06-28	825	830	40	40	PASS	CM
99 / 101	EEOS	WEOS	1353	26	BF	EC-WW-023	22.5		AP+PS	2022-06-28	822	827	40	40	PASS	CM
99 / 100	EEOS	WEOS	1359	26	BF	EC-WW-023	18.0		AP+PS	2022-06-28	802	807	40	40	PASS	CM
96 / 98	EEOS	WEOS	1359	26	BA	EC-WW-057	44.0	DS-49	AP+PS	2022-06-28	807	812	40	40	PASS	CM
98 / 100	EEOS	WEOS	1405	26	BF	EC-WW-023	63.0	DS-50	AP+PS	2022-06-28	802	807	40	40	PASS	CM
102 / 103	SEOS	NEOS	1417	26	RM	EC-WW-022	6.8		AP+PS	2022-06-28	837	842	40	40	PASS	CM
101 / 103	EEOS	WEOS	1425	26	RM	EC-WW-022	4.0		AP+PS	2022-06-28	835	840	40	40	PASS	CM
101 / 102	EEOS	WEOS	1428	26	RM	EC-WW-022	17.5		AP+PS	2022-06-28	825	830	40	40	PASS	CM
100 / 102	EEOS	WEOS	1431	26	RM	EC-WW-022	83.0	DS-51	AP+PS	2022-06-28	825	830	40	40	PASS	CM
						PAGE TOTAL	524.7									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 18 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-27

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
7	EC-WW-057	1600	BA	26	45.0%	460°C	138	128	132	144	136	150	147	124	125	130	146	146	143	147	127	CM	TEX/SM
8	EC-WW-057	1600	BA	26	60.0%	460°C	114	123	119	126	127	36	113	126	130	129	137	141	132	123	137	CM	SM/SM
9	EC-WW-023	1600	BF	26	60.0%	460°C	121	120	116	118	119	121	117	125	126	101	143	134	119	125	132	CM	SM/SM
10	EC-WW-022	1600	RM	26	60.0%	460°C	119	132	123	128	123	125	118	122	128	120	141	150	152	147	141	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
103 / 104	EEOS	WEOS	1443	26	BA	EC-WW-057	4.0		AP+PS	2022-06-28	837	842	40	40	PASS	CM
102 / 104	EEOS	WEOS	1445	26	BA	EC-WW-057	101.0	DS-52	AP+PS	2022-06-28	837	842	40	40	PASS	CM
104 / 105	EEOS	WEOS	1654	26	BF	EC-WW-023	105.5	DS-53	AP+PS	2022-06-28	843	848	40	40	PASS	CM
105 / 107	EEOS	WEOS	1713	26	RM	EC-WW-022	9.0		AP+PS	2022-06-28	845	850	40	40	PASS	CM
106 / 107	SEOS	NEOS	1713	26	BA	EC-WW-057	6.8		AP+PS	2022-06-28	901	906	40	40	PASS	CM
108 / 109	SEOS	WEOS	1730	26	BA	EC-WW-057	6.8		AP+PS	2022-06-28	858	903	40	40	PASS	CM
105 / 106	EEOS	WEOS	1741	26	RM	EC-WW-022	15.0	DS-54	AP+PS	2022-06-28	901	906	40	40	PASS	CM
107 / 109	EEOS	WEOS	1745	26	BF	EC-WW-023	84.0		AP+PS	2022-06-28	850	855	40	40	PASS	CM
107 / 108	EEOS	WEOS	1809	26	BF	EC-WW-023	18.0		AP+PS	2022-06-28	857	903	40	40	PASS	CM
106 / 108	EEOS	WEOS	1812	26	BF	EC-WW-023	15.0	DS-55	AP+PS	2022-06-28	904	909	40	40	PASS	CM
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PAGE TOTAL							365.1									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 19 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-28

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
79 / 1B	NEOS	SEOS	1014	24	EB	EC-EX-041	7.0		VB	2022-06-28					PASS	CM
77 / 1B	NEOS	SEOS	1014	24	EB	EC-EX-041	7.0		VB	2022-06-28					PASS	CM
75 / 1B	NEOS	SEOS	1014	24	EB	EC-EX-041	7.0		VB	2022-06-28					PASS	CM
73 / 1B	NEOS	SEOS	1014	24	EB	EC-EX-041	7.0		VB	2022-06-28					PASS	CM
72 / 1B	NEOS	SEOS	1014	24	EB	EC-EX-041	7.0		VB	2022-06-28					PASS	CM
108 / 1B	NEOS	SEOS	1020	24	GB	EC-EX-040	7.0		VB	2022-06-28					PASS	CM
106 / 1B	NEOS	SEOS	1020	24	GB	EC-EX-040	7.0		VB	2022-06-28					PASS	CM
109 / 1B	NEOS	SEOS	1020	24	GB	EC-EX-040	7.0		VB	2022-06-28					PASS	CM
93 / 1B	NEOS	SEOS	1020	24	EA	EC-EX-034	7.0		VB	2022-06-28					PASS	CM
92 / 1B	NEOS	SEOS	1020	24	EA	EC-EX-034	7.0		VB	2022-06-28					PASS	CM
90 / 1B	NEOS	SEOS	1020	28	EA	EC-EX-034	7.0		VB	2022-06-28					PASS	CM
88 / 1B	NEOS	SEOS	1300	28	EA	EC-EX-034	7.0		VB	2022-06-28					PASS	CM
86 / 1B	NEOS	SEOS	1300	28	EA	EC-EX-034	7.0		VB	2022-06-28					PASS	CM
85 / 1B	NEOS	SEOS	1300	28	EA	EC-EX-034	7.0		VB	2022-06-28					PASS	CM
84 / 1B	NEOS	SEOS	1300	28	EA	EC-EX-034	7.0		VB	2022-06-28					PASS	CM
82 / 1B	NEOS	SEOS	1300	28	EA	EC-EX-034	7.0		VB	2022-06-28					PASS	CM
80 / 1B	NEOS	SEOS	1300	28	EA	EC-EX-034	7.0		VB	2022-06-28					PASS	CM
70 / 1B	NEOS	SEOS	1300	28	EB	EC-EX-041	7.0		VB	2022-06-28					PASS	CM
68 / 1B	NEOS	SEOS	1300	28	EB	EC-EX-041	7.0		VB	2022-06-28					PASS	CM
67 / 1B	NEOS	SEOS	1300	28	EB	EC-EX-041	7.0		VB	2022-06-28					PASS	CM
						PAGE TOTAL	140.0									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 20 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-28

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
65 / 1B	NEOS	SEOS	1300	28	EB	EC-EX-041	7.0		VB	2022-06-28					PASS	CM
63 / 1B	NEOS	SEOS	1300	28	EB	EC-EX-041	7.0		VB	2022-06-28					PASS	CM
62 / 1B	NEOS	SEOS	1300	28	EB	EC-EX-041	7.0		VB	2022-06-28					PASS	CM
102 / 1B	NEOS	SEOS	1345	28	GB	EC-EX-040	7.0		VB	2022-06-28					PASS	CM
100 / 1B	NEOS	SEOS	1345	28	GB	EC-EX-040	7.0		VB	2022-06-28					PASS	CM
98 / 1B	NEOS	SEOS	1345	28	GB	EC-EX-040	7.0		VB	2022-06-28					PASS	CM
96 / 1B	NEOS	SEOS	1345	28	GB	EC-EX-040	7.0		VB	2022-06-28					PASS	CM
94 / 1B	NEOS	SEOS	1345	28	GB	EC-EX-040	7.0		VB	2022-06-28					PASS	CM
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PAGE TOTAL							56.0									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 21 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-29

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-023	1130	RM	17	60.0%	460°C	126	127	124	120	125	121	120	125	122	124	146	157	143	153	155	CM	SM/SM
2	EC-WW-022	1130	LA	17	60.0%	460°C	135	123	127	126	131	124	132	127	122	122	162	145	149	151	151	CM	SM/SM
3	EC-WW-057	1130	BA	17	60.0%	460°C	142	138	139	138	141	146	149	142	140	142	163	169	164	166	167	CM	SM/SM
4	EC-WW-057	1130	BA	17	45.0%	460°C	159	161	143	173	141	139	150	132	148	135	171	180	175	189	178	CM	TEX/TEX

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
110 / 111	SEOS	NEOS	1145	20	BA	EC-WW-057	6.8		AP+PS	2022-06-30	727	732	40	40	PASS	CM
111 / 113	EEOS	WEOS	1204	20	LA	EC-WW-022	76.6		AP+PS	2022-06-30	732	737	40	40	PASS	CM
112 / 113	SEOS	NEOS	1205	20	BA	EC-WW-057	6.8		AP+PS	2022-06-30	732	737	40	40	PASS	CM
108 / 110	EEOS	WEOS	1205	20	RM	EC-WW-023	27.4		AP+PS	2022-06-30	727	732	40	40	PASS	CM
109 / 110	EEOS	WEOS	1213	20	RM	EC-WW-023	7.2		AP+PS	2022-06-30	727	732	40	40	PASS	CM
108 / 110	EEOS	WEOS	1215	20	RM	EC-WW-023	77.5	DS-56	AP+PS	2022-06-30	727	732	40	40	PASS	CM
110 / 113	EEOS	WEOS	1222	20	LA	EC-WW-022	1.0		VB	2022-06-30	732	737	40	40	PASS	CM
110 / 112	EEOS	WEOS	1223	20	LA	EC-WW-022	36.0	DS-57	AP+PS	2022-06-30	732	737	40	40	PASS	CM
113 / 115	EEOS	WEOS	1227	20	BA	EC-WW-057	73.6		VB	2022-07-01					PASS	CM
114 / 115	SEOS	NEOS	1235	20	RM	EC-WW-023	6.8		AP+PS	2022-06-30	738	743	40	40	PASS	CM
113 / 114	EEOS	WEOS	1257	20	BA	EC-WW-057	3.8		AP+PS	2022-06-30	736	741	40	40	PASS	CM
116 / 117	SEOS	NEOS	1257	20	RM	EC-WW-023	6.8		AP+PS	2022-06-30	736	741	40	40	PASS	CM
112 / 114	EEOS	WEOS	1259	20	BA	EC-WW-057	37.0	DS-58	AP+PS	2022-06-30	736	741	40	40	PASS	CM
115 / 117	EEOS	WEOS	1300	20	LA	EC-WW-022	71.5		AP+PS	2022-06-30	752	757	40	40	PASS	CM
115 / 116	EEOS	WEOS	1324	20	LA	EC-WW-022	1.5		VB	2022-07-01					PASS	CM
114 / 116	EEOS	WEOS	1325	20	LA	EC-WW-022	44.0	DS-59	AP+PS	2022-06-30	752	757	40	40	PASS	CM
117 / 119	EEOS	WEOS	1430	20	BA	EC-WW-057	72.4		AP+PS	2022-06-30	825	830	40	40	PASS	CM
118 / 119	SEOS	NEOS	1435	20	RM	EC-WW-023	6.8		AP+PS	2022-06-30	825	830	40	40	PASS	CM
120 / 121	SEOS	NEOS	1450	20	RM	EC-WW-023	6.8		AP+PS	2022-06-30	832	837	40	40	PASS	CM
119 / 121	EEOS	WEOS	1450	20	LA	EC-WW-022	72.5		AP+PS	2022-06-30	827	832	40	40	PASS	CM
						PAGE TOTAL	642.8									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 22 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-29

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
116 / 118	EEOS	WEOS	1454	20	BA	EC-WW-057	1.2		VB	2022-07-01					PASS	CM
116 / 118	EEOS	WEOS	1455	20	BA	EC-WW-057	44.0	DS-60	AP+PS	2022-06-30	825	830	40	40	PASS	CM
118 / 121	EEOS	WEOS	1514	20	LA	EC-WW-022	8.6		AP+PS	2022-06-30	827	832	40	40	PASS	CM
118 / 120	EEOS	WEOS	1516	20	LA	EC-WW-022	41.5	DS-61	AP+PS	2022-06-30	832	837	40	40	PASS	CM
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PAGE TOTAL							95.3									

TEST METHOD
AL - AIR LANCE | ST - SPARK TEST
AP - AIR PRESSURE | VB - EXTRUDED & VAC BOX
PS - POINT STRESS

REMARKS:

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 23 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-30

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-057	1130	BA	21	60.0%	460°C	129	128	133	133	129	123	125	132	132	137	147	146	144	154	146	CM	SM/SM
2	EC-WW-057	1130	BA	21	45.0%	460°C	146	147	158	147	155	160	167	141	158	147	177	174	161	171	168	CM	TEX/TEX
3	EC-WW-022	1130	LA	21	60.0%	460°C	132	128	131	133	134	124	138	130	131	127	144	156	141	136	126	CM	SM/SM
4	EC-WW-022	1130	LA	21	45.0%	460°C	140	148	137	148	136	138	140	133	137	139	141	150	169	155	150	CM	TEX/TEX
5	EC-WW-023	1130	RM	21	60.0%	460°C	120	142	124	132	126	136	147	127	134	121	162	162	162	162	155	CM	SM/SM
6	EC-WW-023	1130	RM	21	45.0%	460°C	147	145	137	149	142	139	142	134	150	147	152	162	165	169	163	CM	TEX/TEX

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
121 / 123	EEOS	WEOS	1210	26	RM	EC-WW-023	44.4		AP+PS	2022-07-01	806	811	40	40	PASS	CM
122 / 123	EEOS	WEOS	1214	26	BA	EC-WW-057	6.8		AP+PS	2022-07-01	759	804	40	40	PASS	CM
121 / 123	EEOS	WEOS	1229	26	RM	EC-WW-023	36.4		AP+PS	2022-07-01	806	811	40	40	PASS	CM
128 / 129	SEOS	NEOS	1232	26	BA	EC-WW-057	6.8		AP+PS	2022-07-01	840	845	40	40	PASS	CM
124 / 125	EEOS	WEOS	1234	26	LA	EC-WW-022	6.8		AP+PS	2022-07-01	816	821	40	40	PASS	CM
123 / 125	SEOS	NEOS	1239	26	LA	EC-WW-022	5.0		AP+PS	2022-07-01	816	821	40	40	PASS	CM
120 / 123	EEOS	WEOS	1240	26	RM	EC-WW-023	9.5		AP+PS	2022-07-01	759	804	40	40	PASS	CM
123 / 124	EEOS	WEOS	1242	26	LA	EC-WW-022	85.0		AP+PS	2022-07-01	801	806	40	40	PASS	CM
120 / 121	SEOS	NEOS	1245	26	RM	EC-WW-023	32.6		AP+PS	2022-07-01	759	804	40	40	PASS	CM
126 / 127	SEOS	NEOS	1250	26	BA	EC-WW-057	6.8		AP+PS	2022-07-01	830	835	40	40	PASS	CM
125 / 127	EEOS	WEOS	1307	26	RM	EC-WW-023	4.0		AP+PS	2022-07-01	818	823	40	40	PASS	CM
124 / 127	EEOS	WEOS	1309	26	RM	EC-WW-023	102.0		AP+PS	2022-07-01	839	844	40	40	PASS	CM
122 / 124	EEOS	WEOS	1310	26	LA	EC-WW-022	34.5	DS-63	AP+PS	2022-07-01	801	806	40	40	PASS	CM
124 / 126	EEOS	WEOS	1338	26	RM	EC-WW-023	21.0	DS-64	AP+PS	2022-07-01	834	839	40	40	PASS	CM
127 / 129	EEOS	WEOS	1340	26	LA	EC-WW-022	106.0		AP+PS	2022-07-01	821	826	40	40	PASS	CM
130 / 131	SEOS	NEOS	1352	26	BA	EC-WW-057	6.8		AP+PS	2022-07-01	910	915	40	40	PASS	CM
129 / 131	EEOS	WEOS	1358	26	BA	EC-WW-057	13.0		AP+PS	2022-07-01	910	915	40	40	PASS	CM
129 / 130	EEOS	WEOS	1403	26	BA	EC-WW-057	108.0		AP+PS	2022-07-01	845	850	40	40	PASS	CM
126 / 129	EEOS	WEOS	1411	26	LA	EC-WW-022	14.7		AP+PS	2022-07-01	840	845	40	40	PASS	CM
126 / 128	EEOS	WEOS	1415	26	LA	EC-WW-022	19.4	DS-65	AP+PS	2022-07-01	840	845	40	40	PASS	CM
						PAGE TOTAL	669.5									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 24 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-06-30

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
7	EC-WW-022	1530	LA	26	60.0%	460°C	118	139	132	160	141	116	125	130	133	134	134	163	154	157	154	CM	SM/SM
8	EC-WW-057	1530	BA	26	45.0%	460°C	157	154	144	149	150	153	154	134	151	147	163	179	175	167	170	CM	TEX/TEX
9	EC-WW-057	1530	BA	26	60.0%	460°C	136	126	137	134	141	138	119	125	134	129	155	150	154	148	162	CM	SM/SM
10	EC-WW-023	1530	RM	26	60.0%	460°C	129	153	143	129	142	117	127	124	129	127	150	157	149	154	155	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
128 / 130	EEOS	WEOS	1438	26	BA	EC-WW-057	12.0	DS-66	AP+PS	2022-07-01	845	850	40	40	PASS	CM
131 / 135	EEOS	WEOS	1649	26	RM	EC-WW-023	11.6		AP+PS	2022-07-01	825	830	40	40	PASS	CM
132 / 133	SEOS	NEOS	1650	26	BA	EC-WW-057	6.8		AP+PS	2022-07-01	928	933	40	40	PASS	CM
130 / 135	EEOS	WEOS	1652	26	RM	EC-WW-023	15.5		AP+PS	2022-07-01	825	830	40	40	PASS	CM
130 / 132	EEOS	WEOS	1659	26	RM	EC-WW-023	107.0	DS-67	AP+PS	2022-07-01	928	933	40	40	PASS	CM
134 / 135	SEOS	NEOS	1700	26	BA	EC-WW-057	6.8		AP+PS	2022-07-01	937	942	40	40	PASS	CM
133 / 135	EEOS	WEOS	1704	26	LA	EC-WW-022	26.5		AP+PS	2022-07-01	944	949	40	40	PASS	CM
132 / 135	EEOS	WEOS	1712	26	LA	EC-WW-022	20.0		AP+PS	2022-07-01	944	949	40	40	PASS	CM
132 / 134	EEOS	WEOS	1718	26	LA	EC-WW-022	93.5	DS-68	AP+PS	2022-07-01	937	942	40	40	PASS	CM
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/																
PAGE TOTAL							299.7									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-01

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-057	1200	BA	25	45.0%	460°C	121	127	130	145	133	149	154	134	147	134	160	159	127	171	160	CM	TEX/TEX
2	EC-WW-057	1200	BA	25	60.0%	460°C	120	124	117	133	137	117	133	135	137	132	128	148	135	154	145	CM	SM/SM
3	EC-WW-022	1200	LA	25	60.0%	460°C	122	123	127	135	132	125	129	131	129	122	141	159	148	151	136	CM	SM/SM
4	EC-WW-023	1200	LA	25	60.0%	460°C	124	128	142	145	142	117	126	125	136	127	162	170	174	164	172	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
136 / 137	SEOS	NEOS	1225	25	BA	EC-WW-057	6.8		AP+PS	2022-07-01	1637	1642	40	40	PASS	CM
135 / 137	EEOS	WEOS	1228	25	RM	EC-WW-023	46.5		AP+PS	2022-07-01	1635	1640	40	40	PASS	CM
134 / 137	EEOS	WEOS	1245	25	RM	EC-WW-023	27.6		AP+PS	2022-07-01	1635	1640	40	40	PASS	CM
138 / 139	SEOS	NEOS	1245	25	BA	EC-WW-057	6.8		AP+PS	2022-07-01	1657	1702	40	40	PASS	CM
134 / 136	EEOS	WEOS	1253	25	RM	EC-WW-023	67.4	DS-69	AP+PS	2022-07-01	1637	1642	40	40	PASS	CM
137 / 139	EEOS	WEOS	1255	25	LA	EC-WW-022	73.5		AP+PS	2022-07-01	1645	1650	40	40	PASS	CM
136 / 139	EEOS	WEOS	1318	25	LA	EC-WW-022	35.5		AP+PS	2022-07-01	1645	1650	40	40	PASS	CM
140 / 141	SEOS	NEOS	1318	25	BA	EC-WW-057	6.8		AP+PS	2022-07-01	1702	1707	40	40	PASS	CM
141 / 142	SEOS	NEOS	1324	25	RM	EC-WW-023	6.8		AP+PS	2022-07-01	1627	1632	40	40	PASS	CM
136 / 138	EEOS	WEOS	1327	25	LA	EC-WW-022	39.4	DS-70	AP+PS	2022-07-01	1657	1702	40	40	PASS	CM
139 / 142	EEOS	WEOS	1338	25	RM	EC-WW-023	33.3		AP+PS	2022-07-01	1627	1632	40	40	PASS	CM
139 / 141	EEOS	WEOS	1348	25	RM	EC-WW-023	76.0		AP+PS	2022-07-01	1658	1703	40	40	PASS	CM
143 / 144	SEOS	NEOS	1405	25	BA	EC-WW-057	6.8		AP+PS	2022-07-01	1650	1655	40	40	PASS	CM
142 / 144	EEOS	WEOS	1412	25	LA	EC-WW-022	32.7		AP+PS	2022-07-01	1629	1634	40	40	PASS	CM
138 / 141	EEOS	WEOS	1413	25	RM	EC-WW-023	39.4	DS-71	AP+PS	2022-07-01	1658	1703	40	40	PASS	CM
141 / 144	EEOS	WEOS	1422	25	LA	EC-WW-022	53.9		AP+PS	2022-07-01	1629	1634	40	40	PASS	CM
138 / 140	EEOS	WEOS	1428	25	RM	EC-WW-023	0.2		VB	2022-07-01					PASS	CM
141 / 143	EEOS	WEOS	1438	25	LA	EC-WW-022	67.0		AP+PS	2022-07-01	1650	1655	40	40	PASS	CM
140 / 143	EEOS	WEOS	1459	25	LA	EC-WW-022	11.2	DS-72	AP+PS	2022-07-01	1702	1707	40	40	PASS	CM
132 / 1B	NEOS	SEOS	1636	26	EA	EC-EX-034	7.0		VB	2022-07-01					PASS	CM
						PAGE TOTAL	644.6									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 26 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-01

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
130 / 1B	NEOS	SEOS	1636	26	EA	EC-EX-034	7.0		VB	2022-07-01					PASS	CM
128 / 1B	NEOS	SEOS	1636	26	EA	EC-EX-034	7.0		VB	2022-07-01					PASS	CM
126 / 1B	NEOS	SEOS	1636	26	EA	EC-EX-034	7.0		VB	2022-07-01					PASS	CM
124 / 1B	NEOS	SEOS	1636	26	EA	EC-EX-034	7.0		VB	2022-07-01					PASS	CM
122 / 1B	NEOS	SEOS	1636	26	EA	EC-EX-034	7.0		VB	2022-07-01					PASS	CM
120 / 1B	NEOS	SEOS	1710	26	GB	EC-EX-040	7.0		VB	2022-07-01					PASS	CM
118 / 1B	NEOS	SEOS	1710	26	GB	EC-EX-040	7.0		VB	2022-07-01					PASS	CM
116 / 1B	NEOS	SEOS	1710	26	GB	EC-EX-040	7.0		VB	2022-07-01					PASS	CM
114 / 1B	NEOS	SEOS	1737	26	EB	EC-EX-041	7.0		VB	2022-07-01					PASS	CM
112 / 1B	NEOS	SEOS	1737	26	EB	EC-EX-041	7.0		VB	2022-07-01					PASS	CM
110 / 1B	NEOS	SEOS	1737	26	EB	EC-EX-041	7.0		VB	2022-07-01					PASS	CM
/																
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/																
/																
/																
PAGE TOTAL							77.0									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 27 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-02

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-022	1200	LA	25	60.0%	460°C	123	123	122	127	114	115	117	122	119	121	150	139	169	154	144	CM	SM/SM
2	EC-WW-022	1200	LA	25	45.0%	460°C	148	132	147	157	127	130	153	137	149	148	164	157	163	172	163	CM	TEX/TEX
3	EC-WW-023	1200	RM	25	60.0%	460°C	139	140	129	138	124	139	144	132	143	124	143	143	139	151	143	CM	SM/SM
4	EC-WW-023	1200	RM	25	45.0%	460°C	139	142	142	153	143	146	142	135	150	143	162	159	153	169	172	CM	TEX/TEX
5	EC-WW-057	1200	BA	25	60.0%	460°C	120	147	130	122	123	120	133	126	130	119	152	154	151	179	136	CM	SM/SM
6	EC-WW-057	1200	BA	25	45.0%	460°C	167	158	168	155	159	154	175	154	157	139	181	193	172	212	172	CM	TEX/TEX

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
145 / 146	SEOS	NEOS	1215	26	BA	EC-WW-057	6.8		AP+PS	2022-07-03	738	743	40	40	PASS	CM
144 / 146	EEOS	WEOS	1228	26	LA	EC-WW-022	3.5		AP+PS	2022-07-03	1150	1155	40	40	PASS	CM
144 / 146	EEOS	WEOS	1229	26	LA	EC-WW-022	81.0		AP+PS	2022-07-03	1150	1155	40	40	PASS	CM
147 / 148	SEOS	NEOS	1236	26	BA	EC-WW-057	6.8		AP+PS	2022-07-03	805	810	40	40	PASS	CM
149 / 150	SEOS	NEOS	1251	26	BA	EC-WW-057	6.8		AP+PS	2022-07-03	805	810	40	40	PASS	CM
143 / 146	EEOS	WEOS	1254	26	LA	EC-WW-022	9.2		AP+PS	2022-07-03	738	743	40	40	PASS	CM
143 / 145	EEOS	WEOS	1258	26	LA	EC-WW-022	32.4		AP+PS	2022-07-03	738	743	40	40	PASS	CM
146 / 148	EEOS	WEOS	1301	26	RM	EC-WW-074	92.1		AP+PS	2022-07-03	752	757	40	40	PASS	CM
150 / 151	SEOS	NEOS	1301	26	BA	EC-WW-057	6.8		AP+PS	2022-07-03	817	822	40	40	PASS	CM
152 / 153	SEOS	NEOS	1327	26	BA	EC-WW-057	6.8	DS-75	AP+PS	2022-07-03	822	827	40	40	PASS	CM
148 / 151	EEOS	WEOS	1328	26	LA	EC-WW-022	82.0	DS-74	AP+PS	2022-07-03	817	822	40	40	PASS	CM
145 / 148	EEOS	WEOS	1333	26	RM	EC-WW-074	7.5	DS-73	AP+PS	2022-07-03	801	806	40	40	PASS	CM
145 / 147	EEOS	WEOS	1335	26	RM	EC-WW-074	20.8		AP+PS	2022-07-03	801	806	40	40	PASS	CM
151 / 153	EEOS	WEOS	1336	26	BA	EC-WW-057	71.0		AP+PS	2022-07-03	822	827	40	40	PASS	CM
148 / 150	EEOS	WEOS	1353	26	LA	EC-WW-022	15.0		AP+PS	2022-07-03	805	810	40	40	PASS	CM
147 / 150	EEOS	WEOS	1357	26	LA	EC-WW-022	7.0		AP+PS	2022-07-03	805	810	40	40	PASS	CM
147 / 149	EEOS	WEOS	1359	26	LA	EC-WW-022	10.0		AP+PS	2022-07-03	805	810	40	40	PASS	CM
151 / 152	EEOS	WEOS	1403	26	BA	EC-WW-057	10.0		AP+PS	2022-07-03	822	827	40	40	PASS	CM
150 / 152	EEOS	WEOS	1405	26	BA	EC-WW-057	22.0		AP+PS	2022-07-03	812	817	40	40	PASS	CM
149 / 152	EEOS	WEOS	1414	26	BA	EC-WW-057	6.0		AP+PS	2022-07-03	812	817	40	40	PASS	CM
						PAGE TOTAL	503.5									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 28 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-02

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
7	EC-WW-074	1230	RM	26	60.0%	460°C	119	122	102	109	120	126	121	126	112	109	140	151	144	140	141	CM	SM/SM
8	EC-WW-074	1230	RM	26	45.0%	460°C	127	129	116	133	135	135	146	137	119	122	156	163	169	166	170	CM	TEX/TEX
9	EC-WW-057	1600	BA	26	45.0%	460°C	135	136	123	141	126	132	145	121	129	126	135	142	142	146	154	CM	TEX/TEX
10	EC-WW-057	1600	BA	26	60.0%	460°C	140	130	125	127	131	124	141	125	136	134	153	156	147	151	152	CM	SM/SM
11	EC-WW-022	1600	LA	26	60.0%	460°C	122	139	132	131	132	126	126	130	129	127	146	148	153	150	155	CM	SM/SM
12	EC-WW-074	1600	RM	26	60.0%	460°C	132	133	122	136	129	130	124	123	124	122	150	160	144	147	139	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
154 / 155	SEOS	NEOS	1555	26	BA	EC-WW-057	6.8		AP+PS	2022-07-03	932	937	40	40	PASS	CM
153 / 155	EEOS	WEOS	1605	26	RM	EC-WW-074	58.3		AP+PS	2022-07-03	928	933	40	40	PASS	CM
157 / 158	SEOS	NEOS	1620	26	BA	EC-WW-057	6.8		AP+PS	2022-07-03	942	947	40	40	PASS	CM
153 / 154	EEOS	WEOS	1623	26	RM	EC-WW-074	3.8		AP+PS	2022-07-03	928	933	40	40	PASS	CM
155 / 158	EEOS	WEOS	1624	26	LA	EC-WW-022	34.8		AP+PS	2022-07-03	942	947	40	40	PASS	CM
153 / 154	EEOS	WEOS	1635	26	RM	EC-WW-074	10.0		AP+PS	2022-07-03	928	933	40	40	PASS	CM
155 / 157	EEOS	WEOS	1635	26	LA	EC-WW-022	24.5		AP+PS	2022-07-03	932	937	40	40	PASS	CM
152 / 154	EEOS	WEOS	1639	26	RM	EC-WW-074	33.5		AP+PS	2022-07-03	827	832	40	40	PASS	CM
154 / 157	EEOS	WEOS	1643	26	LA	EC-WW-022	38.3	DS-76	AP+PS	2022-07-03	932	937	40	40	PASS	CM
156 / 157	SEOS	NEOS	1645	26	BA	EC-WW-057	6.8	DS-78	AP+PS	2022-07-03	1005	1010	40	40	PASS	CM
159 / 160	SEOS	NEOS	1650	26	BA	EC-WW-057	6.8		AP+PS	2022-07-03	954	959	40	40	PASS	CM
154 / 156	EEOS	WEOS	1655	26	LA	EC-WW-022	5.2		AP+PS	2022-07-03	1005	1010	40	40	PASS	CM
158 / 160	EEOS	WEOS	1658	26	BA	EC-WW-057	11.0		AP+PS	2022-07-03	954	959	40	40	PASS	CM
158 / 160	EEOS	WEOS	1703	26	BA	EC-WW-057	6.3		AP+PS	2022-07-03	958	1003	40	40	PASS	CM
158 / 159	EEOS	WEOS	1705	26	BA	EC-WW-057	18.8		AP+PS	2022-07-03	958	1003	40	40	PASS	CM
157 / 159	EEOS	WEOS	1711	26	BA	EC-WW-057	62.6	DS-77	AP+PS	2022-07-03	947	952	40	40	PASS	CM
156 / 159	EEOS	WEOS	1736	26	BA	EC-WW-057	1.5		AP+PS	2022-07-03	947	952	40	40	PASS	CM
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						PAGE TOTAL	335.8									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 29 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-02

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
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PAGE TOTAL																

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 30 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-03

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-057	930	BA	26	45.0%	460°C	168	170	174	168	149	160	173	163	154	151	199	228	210	189	211	CM	TEX/TEX
2	EC-WW-074	930	RM	26	60.0%	460°C	124	150	150	153	141	149	148	134	155	137	172	188	177	191	177	CM	SM/SM
3	EC-WW-022	1330	BF	26	60.0%	460°C	125	130	121	123	127	120	129	119	132	113	131	139	136	143	149	CM	SM/SM
4	EC-WW-057	1330	BA	26	45.0%	460°C	160	135	141	144	130	145	139	131	145	133	165	163	155	169	163	CM	TEX/TEX
5	EC-WW-057	1330	BA	26	60.0%	460°C	125	137	129	128	131	121	133	126	119	124	156	157	150	155	155	CM	SM/SM
6	EC-WW-022	1330	BF	26	45.0%	460°C	145	148	145	146	152	125	155	138	145	144	157	154	166	156	166	CM	TEX/TEX

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
159 / 161	WEOS	EEOS	940	26	RM	EC-WW-074	78.0		AP+PS	2022-07-03	1006	1011	40	40	PASS	CM
161 / 162	SEOS	NEOS	950	26	BA	EC-WW-057	6.8		AP+PS	2022-07-04	800	805	40	40	PASS	CM
160 / 161	WEOS	EEOS	1007	26	RM	EC-WW-074	22.0		AP+PS	2022-07-04	800	805	40	40	PASS	CM
162 / 163	EEOS	WEOS	1350	26	RM	EC-WW-074	5.1		AP+PS	2022-07-04	803	808	40	40	PASS	CM
161 / 163	EEOS	WEOS	1351	26	RM	EC-WW-074	53.6		AP+PS	2022-07-04	803	808	40	40	PASS	CM
161 / 163	EEOS	WEOS	1410	26	RM	EC-WW-074	44.0	DS-79	AP+PS	2022-07-04	935	940	40	40	PASS	CM
164 / 165	SEOS	NEOS	1415	26	BA	EC-WW-057	6.8		AP+PS	2022-07-04	810	815	40	40	PASS	CM
163 / 164	WEOS	EEOS	1420	26	BF	EC-WW-022	15.6	DS-80	AP+PS	2022-07-04	810	815	40	40	PASS	CM
163 / 165	WEOS	EEOS	1428	26	BF	EC-WW-022	87.4		AP+PS	2022-07-04	810	815	40	40	PASS	CM
164 / 166	WEOS	EEOS	1438	26	BA	EC-WW-057	18.8	DS-81	AP+PS	2022-07-04	812	817	40	40	PASS	CM
165 / 167	WEOS	EEOS	1440	26	BA	EC-WW-057	69.0		AP+PS	2022-07-04	815	820	40	40	PASS	CM
165 / 166	WEOS	EEOS	1442	26	BA	EC-WW-057	24.8		AP+PS	2022-07-04	812	817	40	40	PASS	CM
166 / 167	SEOS	NEOS	1443	26	RM	EC-WW-074	6.8		AP+PS	2022-07-04	815	820	40	40	PASS	CM
168 / 169	SEOS	NEOS	1507	26	RM	EC-WW-074	6.8		AP+PS	2022-07-04	835	840	40	40	PASS	CM
166 / 168	WEOS	EEOS	1515	26	BF	EC-WW-022	29.6	DS-82	AP+PS	2022-07-04	810	825	40	40	PASS	CM
167 / 168	WEOS	EEOS	1523	26	BF	EC-WW-022	20.4		AP+PS	2022-07-04	820	825	40	40	PASS	CM
167 / 169	WEOS	EEOS	1530	26	BF	EC-WW-022	53.7		AP+PS	2022-07-04	835	840	40	40	PASS	CM
168 / 170	WEOS	EEOS	1620	26	BF	EC-WW-022	46.0	DS-83	AP+PS	2022-07-04	845	850	40	40	PASS	CM
170 / 171	SEOS	NEOS	1625	26	RM	EC-WW-074	6.8		AP+PS	2022-07-04	845	857	40	40	PASS	CM
169 / 170	WEOS	EEOS	1634	26	BF	EC-WW-022	21.6		AP+PS	2022-07-04	845	850	40	40	PASS	CM
						PAGE TOTAL	623.6									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-03

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
7	EC-WW-074	1330	RM	26	60.0%	460°C	136	135	137	130	134	130	128	123	125	131	145	146	149	156	155	CM	SM/SM
8	EC-WW-074	1330	RM	26	45.0%	460°C	133	134	130	137	144	127	134	136	136	148	152	179	169	166	161	CM	TEX/TEX
9	EC-WW-057	1730	BA	28	45.0%	460°C	132	133	132	138	137	127	130	134	136	132	158	156	156	150	149	CM	TEX/TEX
10	EC-WW-022	1730	BF	28	60.0%	460°C	128	130	117	117	115	118	114	115	126	130	153	146	139	149	151	CM	SM/SM
11	EC-WW-074	1730	RM	28	60.0%	460°C	116	113	127	127	119	119	122	120	125	116	145	151	163	143	147	CM	SM/SM

WELD SEAMS / QC / AIR PRESSURE TEST (PSI) / VERIFY

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
169 / 171	WEOS	EEOS	1641	26	BF	EC-WW-022	35.0		AP+PS	2022-07-04	852	857	40	40	PASS	CM
170 / 172	WEOS	EEOS	1801	26	RM	EC-WW-074	63.3	DS-84	AP+PS	2022-07-04	852	857	40	40	PASS	CM
172 / 173	SEOS	NEOS	1802	26	BA	EC-WW-057	6.8		AP+PS	2022-07-04	900	905	40	40	PASS	CM
171 / 172	WEOS	EEOS	1823	26	RM	EC-WW-074	20.3		AP+PS	2022-07-04	900	905	40	40	PASS	CM
171 / 173	WEOS	EEOS	1823	26	RM	EC-WW-074	17.0		AP+PS	2022-07-04	910	915	40	40	PASS	CM
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PAGE TOTAL							142.4									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-04

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-057	1200	BA	28	45.0%	460°C	119	126	117	130	139	125	125	127	139	134	145	139	145	146	153	CM	TEX/TEX
2	EC-WW-057	1200	BA	28	60.0%	460°C	113	123	128	123	129	118	120	133	117	131	134	140	124	145	130	CM	SM/SM
3	EC-WW-022	1200	BF	28	60.0%	460°C	124	133	118	117	119	119	128	120	124	123	131	142	116	142	147	CM	SM/SM
4	EC-WW-022	1200	BF	28	45.0%	460°C	143	140	156	151	161	149	145	152	146	151	169	170	178	168	172	CM	TEX/TEX
5	EC-WW-074	1200	RM	28	60.0%	460°C	136	137	134	129	130	127	129	124	129	129	146	142	157	161	152	CM	SM/SM
6	EC-WW-074	1200	RM	28	45.0%	460°C	131	140	133	127	131	125	143	118	136	145	167	157	153	162	158	CM	TEX/TEX

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
172 / 174	WEOS	EEOS	1200	28	RM	EC-WW-074	80.0		AP+PS	2022-07-04	1508	1513	40	40	PASS	CM
176 / 177	SEOS	NEOS	1220	28	BA	EC-WW-057	6.8		AP+PS	2022-07-04	1515	1520	40	40	PASS	CM
174 / 175	EEOS	WEOS	1225	28	BF	EC-WW-022	33.0		AP+PS	2022-07-04	1455	1520	40	40	PASS	CM
173 / 174	WEOS	EEOS	1226	28	RM	EC-WW-074	19.5		AP+PS	2022-07-04	1450	1529	40	40	PASS	CM
174 / 175	EEOS	WEOS	1232	28	BF	EC-WW-022	64.5	DS-85	AP+PS	2022-07-04	1500	1523	40	40	PASS	CM
178 / 179	SEOS	NEOS	1235	28	BA	EC-WW-057	6.8		AP+PS	2022-07-04	1524	1529	40	40	PASS	CM
175 / 177	EEOS	WEOS	1242	28	RM	EC-WW-074	75.0		AP+PS	2022-07-04	1500	1505	40	40	PASS	CM
180 / 181	SEOS	NEOS	1300	28	BA	EC-WW-057	6.8		AP+PS	2022-07-04	1530	1535	40	40	PASS	CM
175 / 176	EEOS	WEOS	1307	28	RM	EC-WW-074	20.0	DS-86	AP+PS	2022-07-04	1515	1520	40	40	PASS	CM
179 / 181	EEOS	WEOS	1310	28	BA	EC-WW-057	17.0		AP+PS	2022-07-04	1531	1536	40	40	PASS	CM
177 / 179	EEOS	WEOS	1316	28	BF	EC-WW-022	50.0		AP+PS	2022-07-04	1529	1534	40	40	PASS	CM
179 / 180	EEOS	WEOS	1318	28	BA	EC-WW-057	32.8		AP+PS	2022-07-04	1526	1531	40	40	PASS	CM
181 / 182	EEOS	WEOS	1329	28	RM	EC-WW-074	18.4		AP+PS	2022-07-04	1535	1540	40	40	PASS	CM
177 / 178	EEOS	WEOS	1331	28	BF	EC-WW-022	27.3		AP+PS	2022-07-04	1518	1523	40	40	PASS	CM
180 / 182	EEOS	WEOS	1334	28	RM	EC-WW-074	68.8	DS-88	AP+PS	2022-07-04	1535	1540	40	40	PASS	CM
176 / 178	EEOS	WEOS	1342	28	BF	EC-WW-022	16.2	DS-87	AP+PS	2022-07-04	1518	1523	40	40	PASS	CM
183 / 184	SEOS	NEOS	1353	28	BA	EC-WW-057	6.8		AP+PS	2022-07-04	1600	1605	40	40	PASS	CM
183 / 185	WEOS	EEOS	1404	28	BA	EC-WW-057	10.3		AP+PS	2022-07-04	1550	1555	40	40	PASS	CM
183 / 184	EEOS	WEOS	1408	28	RM	EC-WW-074	36.2		AP+PS	2022-07-04	1600	1605	40	40	PASS	CM
184 / 186	EEOS	WEOS	1415	28	BF	EC-WW-022	23.4		AP+PS	2022-07-04	1540	1545	40	40	PASS	CM
						PAGE TOTAL	619.6									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH: Glenn Revilla

SUPERVISOR: Chad Messervey

SUBMISSION DATE: 2022-07-17

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-04

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE

WELD SEAMS

PANEL NUMBERS		SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
182	184	EEOS	WEOS	1423	28	RM	EC-WW-074	32.2		AP+PS	2022-07-04	1600	1605	40	40	PASS	CM
182	183	EEOS	WEOS	1434	28	RM	EC-WW-074	14.0	DS-89	AP+PS	2022-07-04	1547	1552	40	40	PASS	CM

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-06

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-057	1100	BA	26	45.0%	460°C	128	130	133	130	134	143	137	129	135	127	161	155	158	162	155	CM	TEX/TEX
2	EC-WW-057	1100	BA	26	60.0%	460°C	130	143	133	127	141	131	129	129	129	140	159	160	160	159	157	CM	SM/SM
3	EC-WW-074	1100	RM	26	60.0%	460°C	156	150	139	143	165	167	147	164	144	142	172	166	143	150	133	CM	SM/SM
4	EC-WW-022	1100	BF	26	60.0%	460°C	136	122	125	140	125	129	133	126	130	137	159	159	155	164	165	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
187 / 188	EEOS	WEOS	1113	26	BA	EC-WW-057	6.8		AP+PS	2022-07-06	1240	1245	40	40	PASS	CM
189 / 190	EEOS	WEOS	1120	26	BA	EC-WW-057	6.8		AP+PS	2022-07-06	1245	1250	40	40	PASS	CM
190 / 191	SEOS	NEOS	1121	26	BF	EC-WW-022	0.5		VB	2022-07-06					PASS	CM
189 / 191	SEOS	NEOS	1122	26	BF	EC-WW-022	43.0		AP+PS	2022-07-06	1255	1300	40	40	PASS	CM
187 / 190	SEOS	NEOS	1125	26	RM	EC-WW-074	7.0		AP+PS	2022-07-06	1245	1250	40	40	PASS	CM
187 / 189	SEOS	NEOS	1127	26	RM	EC-WW-074	27.1		AP+PS	2022-07-06	1240	1245	40	40	PASS	CM
192 / 193	EEOS	WEOS	1130	26	BA	EC-WW-057	6.8		AP+PS	2022-07-06	1307	1312	40	40	PASS	CM
188 / 189	SEOS	NEOS	1136	26	RM	EC-WW-074	19.3	DS-91	AP+PS	2022-07-06	1240	1245	40	40	PASS	CM
194 / 195	EEOS	WEOS	1140	26	BA	EC-WW-057	6.8		AP+PS	2022-07-06	1317	1322	40	40	PASS	CM
193 / 194	SEOS	NEOS	1145	26	RM	EC-WW-074	11.1		AP+PS	2022-07-06	1307	1312	40	40	PASS	CM
196 / 197	EEOS	WEOS	1146	26	BA	EC-WW-074	6.8		AP+PS	2022-07-06	1318	1323	40	40	PASS	CM
191 / 192	SEOS	NEOS	1148	26	BF	EC-WW-022	6.2		AP+PS	2022-07-06	1320	1325	40	40	PASS	CM
191 / 193	SEOS	NEOS	1151	26	BF	EC-WW-022	26.8		AP+PS	2022-07-06	1302	1307	40	40	PASS	CM
193 / 195	SEOS	NEOS	1151	26	RM	EC-WW-074	11.9	DS-90	AP+PS	2022-07-06	1317	1322	40	40	PASS	CM
174 / 187	SWEEOS	NEEOS	1155	26	BA	EC-WW-074	7.6		AP+PS	2022-07-06	1249	1254	40	40	PASS	CM
174 / 187	SWEEOS	NEEOS	1157	26	BA	EC-WW-074	1.5		VB	2022-07-06					PASS	CM
175 / 187	SWEEOS	NEEOS	1158	26	BA	EC-WW-074	6.2		AP+PS	2022-07-06	1250	1255	40	40	PASS	CM
194 / 196	SEOS	NEOS	1200	26	RM	EC-WW-074	4.4		AP+PS	2022-07-06	1310	1315	40	40	PASS	CM
195 / 196	SEOS	NEOS	1201	26	RM	EC-WW-074	3.6		AP+PS	2022-07-06	1312	1317	40	40	PASS	CM
195 / 197	SEOS	NEOS	1202	26	RM	EC-WW-074	4.0		AP+PS	2022-07-06	1318	1323	40	40	PASS	CM
						PAGE TOTAL	214.2									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 35 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-06

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
175 / 190	SWEEOS	NEEOS	1202	26	BA	EC-WW-074	3.3		AP+PS	2022-07-06	1251	1256	40	40	PASS	CM
176 / 190	SWEEOS	NEEOS	1204	26	BA	EC-WW-074	4.6		AP+PS	2022-07-06	1255	1300	40	40	PASS	CM
176 / 191	SWEEOS	NEEOS	1206	26	BA	EC-WW-074	4.9		AP+PS	2022-07-06	1300	1305	40	40	PASS	CM
178 / 191	SWEEOS	NEEOS	1208	26	BA	EC-WW-074	3.0		AP+PS	2022-07-06	1302	1307	40	40	PASS	CM
180 / 192	SWEEOS	NEEOS	1210	26	BA	EC-WW-074	6.0		AP+PS	2022-07-06	1305	1310	40	40	PASS	CM
180 / 192	SWEEOS	NEEOS	1212	26	BA	EC-WW-074	1.5		VB	2022-07-06					PASS	CM
180 / 194	SWEEOS	NEEOS	1213	26	BA	EC-WW-074	7.6		AP+PS	2022-07-06	1308	1313	40	40	PASS	CM
182 / 194	SWEEOS	NEEOS	1215	26	BA	EC-WW-074	0.5		VB	2022-07-06					PASS	CM
183 / 196	SWEEOS	NEEOS	1216	26	BA	EC-WW-074	7.1		AP+PS	2022-07-06	1310	1315	40	40	PASS	CM
185 / 196	SWEEOS	NEEOS	1220	26	BA	EC-WW-074	2.8		AP+PS	2022-07-06	1315	1320	40	40	PASS	CM
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PAGE TOTAL							41.3									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 36 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-07

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-057	930	BA	26	45.0%	460°C	127	147	141	163	143	131	140	137	143	139	167	157	160	148	140	CM	TEX/TEX
2	EC-WW-057	930	BA	26	60.0%	460°C	133	141	126	133	128	143	147	122	137	134	144	161	144	164	159	CM	SM/SM
3	EC-WW-022	930	BF	26	60.0%	460°C	137	148	127	142	133	132	135	129	133	130	153	166	144	169	155	CM	SM/SM
4	EC-WW-022	930	BF	26	45.0%	460°C	155	52	143	154	149	138	154	145	137	143	65	175	168	184	181	CM	TEX/TEX
5	EC-WW-074	930	RM	26	60.0%	460°C	142	159	142	150	147	141	142	139	151	145	162	178	155	177	184	CM	SM/SM
6	EC-WW-057	1330	BA	26	60.0%	460°C	126	119	128	120	127	121	129	129	122	126	141	142	142	149	151	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
187 / 198	SEOS	NEOS	935	26	RM	EC-WW-074	40.6		AP+PS	2022-07-07	1155	1200	40	40	PASS	CM
199 / 200	EEOS	WEOS	939	26	BA	EC-WW-057	6.8		AP+PS	2022-07-07	1145	1150	40	40	PASS	CM
188 / 198	SEOS	NEOS	949	26	RM	EC-WW-074	22.8		AP+PS	2022-07-07	1140	1145	40	40	PASS	CM
198 / 199	SEOS	NEOS	949	26	BF	EC-WW-022	1.2		VB	2022-07-07					PASS	CM
198 / 200	SEOS	NEOS	952	26	BF	EC-WW-022	73.0	DS-92	AP+PS	2022-07-07	1145	1150	40	40	PASS	CM
201 / 202	EEOS	WEOS	955	26	BA	EC-WW-057	6.8		AP+PS	2022-07-07	1200	1205	40	40	PASS	CM
199 / 201	SEOS	NEOS	1006	26	BA	EC-WW-057	84.0		AP+PS	2022-07-07	1157	1202	40	40	PASS	CM
200 / 201	SEOS	NEOS	1009	26	RM	EC-WW-074	29.7		AP+PS	2022-07-07	1157	1202	40	40	PASS	CM
204 / 205	EEOS	WEOS	1013	26	BA	EC-WW-057	6.8		AP+PS	2022-07-07	1215	1220	40	40	PASS	CM
200 / 202	SEOS	NEOS	1019	26	RM	EC-WW-074	46.4		AP+PS	2022-07-07	1200	1205	40	40	PASS	CM
203 / 204	EEOS	WEOS	1029	26	BA	EC-WW-057	6.8		AP+PS	2022-07-07	1205	1210	40	40	PASS	CM
201 / 203	SEOS	NEOS	1039	26	BF	EC-WW-022	1.0		VB	2022-07-07					PASS	CM
201 / 204	SEOS	NEOS	1040	26	BF	EC-WW-022	43.2		AP+PS	2022-07-07	1205	1210	40	40	PASS	CM
202 / 204	SEOS	NEOS	1056	26	BF	EC-WW-022	25.8	DS-93	AP+PS	2022-07-07	1215	1220	40	40	PASS	CM
202 / 205	SEOS	NEOS	1105	26	BF	EC-WW-022	24.0		AP+PS	2022-07-07	1215	1220	40	40	PASS	CM
203 / 206	SEOS	NEOS	1402	26	RM	EC-WW-074	7.7		AP+PS	2022-07-08	805	810	40	40	PASS	CM
206 / 207	EEOS	WEOS	1402	26	BA	EC-WW-057	6.8		AP+PS	2022-07-08	720	725	40	40	PASS	CM
204 / 206	SEOS	NEOS	1405	26	RM	EC-WW-074	68.7		AP+PS	2022-07-08	740	745	40	40	PASS	CM
206 / 208	SEOS	NEOS	1415	26	BF	EC-WW-022	91.8		AP+PS	2022-07-08	720	725	40	40	PASS	CM
208 / 209	EEOS	WEOS	1420	26	BA	EC-WW-057	6.8		AP+PS	2022-07-08	715	720	40	40	PASS	CM
						PAGE TOTAL	600.7									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 37 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-07

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
7	EC-WW-057	1330	BA	26	45.0%	404°C	132	137	126	150	152	130	143	134	165	142	157	163	150	155	157	CM	TEX/TEX
8	EC-WW-022	1330	BF	26	60.0%	460°C	136	122	134	142	140	134	131	134	134	148	148	159	150	155	152	CM	SM/SM
9	EC-WW-022	1330	BF	26	45.0%	460°C	140	141	151	148	133	129	136	147	145	143	161	169	165	179	167	CM	TEX/TEX
10	EC-WW-074	1330	RM	26	60.0%	460°C	149	153	149	149	145	126	123	139	138	130	154	166	161	159	165	CM	SM/SM
11	EC-WW-074	1330	RM	26	45.0%	460°C	141	133	132	141	128	140	132	136	129	126	161	147	150	142	157	CM	TEX/TEX

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
205 / 206	SEOS	NEOS	1428	26	RM	EC-WW-074	8.7		AP+PS	2022-07-08	735	740	40	40	PASS	CM
205 / 207	SEOS	NEOS	1431	26	RM	EC-WW-074	20.0	DS-94	AP+PS	2022-07-08	735	740	40	40	PASS	CM
210 / 211	EEOS	WEOS	1433	26	BA	EC-WW-057	6.8		AP+PS	2022-07-08	735	740	40	40	PASS	CM
207 / 208	SEOS	NEOS	1444	26	BF	EC-WW-022	2.5		AP+PS	2022-07-08	715	720	40	40	PASS	CM
207 / 209	SEOS	NEOS	1445	26	BF	EC-WW-022	23.6	DS-95	AP+PS	2022-07-08	715	720	40	40	PASS	CM
208 / 210	SEOS	NEOS	1452	26	RM	EC-WW-074	91.7		AP+PS	2022-07-08	725	730	40	40	PASS	CM
212 / 213	EEOS	WEOS	1455	26	BA	EC-WW-057	6.8		AP+PS	2022-07-08	734	739	40	40	PASS	CM
210 / 212	SEOS	NEOS	1506	26	BF	EC-WW-022	76.2		AP+PS	2022-07-08	734	739	40	40	PASS	CM
208 / 211	SEOS	NEOS	1522	26	RM	EC-WW-074	8.8		AP+PS	2022-07-08	715	720	40	40	PASS	CM
156 / 212	SWEEOS	NEEOS	1522	26	BA	EC-WW-057	3.0		AP+PS	2022-07-08	745	750	40	40	PASS	CM
209 / 211	SEOS	NEOS	1527	26	RM	EC-WW-074	27.6	DS-96	AP+PS	2022-07-08	715	720	40	40	PASS	CM
210 / 213	SEOS	NEOS	1529	26	BF	EC-WW-022	21.8		AP+PS	2022-07-07	1635	1640	40	40	PASS	CM
211 / 213	SEOS	NEOS	1536	26	BF	EC-WW-022	43.0	DS-97	AP+PS	2022-07-07	1635	1640	40	40	PASS	CM
154 / 212	SWEEOS	NEEOS	1548	26	BA	EC-WW-057	5.8	DS-98	AP+PS	2022-07-08	745	750	40	40	PASS	CM
156 / 210	SWEEOS	NEEOS	1554	26	BA	EC-WW-057	4.7		AP+PS	2022-07-08	750	755	40	40	PASS	CM
159 / 210	SWEEOS	NEEOS	1559	26	BA	EC-WW-057	4.7		AP+PS	2022-07-08	750	755	40	40	PASS	CM
159 / 208	SWEEOS	NEEOS	1600	26	BA	EC-WW-057	3.0		AP+PS	2022-07-08	755	800	40	40	PASS	CM
161 / 208	SWEEOS	NEEOS	1602	26	BA	EC-WW-057	6.2		AP+PS	2022-07-08	755	800	40	40	PASS	CM
161 / 206	SWEEOS	NEEOS	1610	26	BA	EC-WW-057	1.4		AP+PS	2022-07-08	800	805	40	40	PASS	CM
163 / 206	SWEEOS	NEEOS	1611	26	BA	EC-WW-057	7.7		AP+PS	2022-07-08	800	805	40	40	PASS	CM
						PAGE TOTAL	374.0									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 38 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-07

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
164 / 203	SWEEOS	NEEOS	1614	26	BA	EC-WW-057	7.6		AP+PS	2022-07-08	805	810	40	40	PASS	CM
166 / 203	SWEEOS	NEEOS	1616	26	BA	EC-WW-057	2.0		AP+PS	2022-07-08	806	811	40	40	PASS	CM
166 / 201	SWEEOS	NEEOS	1617	26	BA	EC-WW-057	5.6		AP+PS	2022-07-08	806	811	40	40	PASS	CM
168 / 201	SWEEOS	NEEOS	1620	26	BA	EC-WW-057	3.9		AP+PS	2022-07-08	808	813	40	40	PASS	CM
168 / 199	SWEEOS	NEEOS	1623	26	BA	EC-WW-057	3.9		AP+PS	2022-07-08	808	813	40	40	PASS	CM
170 / 199	SWEEOS	NEEOS	1626	26	BA	EC-WW-057	5.6		AP+PS	2022-07-08	810	815	40	40	PASS	CM
170 / 198	SWEEOS	NEEOS	1630	26	BA	EC-WW-057	2.0		AP+PS	2022-07-08	810	815	40	40	PASS	CM
172 / 198	SWEEOS	NEEOS	1631	26	BA	EC-WW-057	7.0		AP+PS	2022-07-08	820	825	40	40	PASS	CM
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PAGE TOTAL							37.6									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 39 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-08

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-057	1000	BF	20	45.0%	460°C	163	136	136	172	167	160	158	147	146	171	175	183	190	196	191	CM	TEX/TEX
2	EC-WW-057	1000	BF	20	60.0%	460°C	125	121	132	16	141	142	148	143	148	133	176	182	169	179	179	CM	SM/SM
3	EC-WW-022	1000	KK	20	60.0%	460°C	149	136	134	149	141	148	141	140	134	145	179	185	172	183	180	CM	SM/SM
4	EC-WW-022	1000	KK	20	45.0%	460°C	133	153	135	144	164	123	153	146	162	174	173	180	174	166	175	CM	TEX/TEX
5	EC-WW-022	1400	KK	22	45.0%	460°C	14	141	143	145	138	132	140	135	143	129	155	163	153	176	167	CM	TEX/TEX
6	EC-WW-022	1400	KK	22	60.0%	460°C	132	139	147	142	145	131	130	136	138	137	159	172	152	167	168	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
214 / 215	EEOS	WEOS	1055	22	KK	EC-WW-022	6.8		AP+PS	2022-07-08	1730	1735	40	40	PASS	CM
212 / 214	SEOS	NEOS	1055	22	BF	EC-WW-057	48.4		AP+PS	2022-07-08	1730	1735	40	40	PASS	CM
212 / 215	SEOS	NEOS	1113	22	BF	EC-WW-057	34.9		AP+PS	2022-07-08	1720	1725	40	40	PASS	CM
213 / 215	SEOS	NEOS	1125	22	BF	EC-WW-057	71.9	DS-99	AP+PS	2022-07-08	1720	1725	40	40	PASS	CM
216 / 217	EEOS	WEOS	1335	22	KK	EC-WW-022	6.8		AP+PS	2022-07-08	1737	1742	40	40	PASS	CM
217 / 218	EEOS	WEOS	1338	22	BF	EC-WW-057	6.8		AP+PS	2022-07-08	1713	1718	40	40	PASS	CM
214 / 216	SEOS	NEOS	1340	22	KK	EC-WW-022	7.9		AP+PS	2022-07-08	1737	1742	40	40	PASS	CM
214 / 217	SEOS	NEOS	1343	22	KK	EC-WW-022	47.7		AP+PS	2022-07-08	1730	1735	40	40	PASS	CM
215 / 217	SEOS	NEOS	1354	22	KK	EC-WW-022	73.5		AP+PS	2022-07-08	1713	1718	40	40	PASS	CM
219 / 220	EEOS	WEOS	1358	22	BF	EC-WW-057	6.8		AP+PS	2022-07-08	1721	1726	40	40	PASS	CM
216 / 216	SEOS	NEOS	1417	22	BF	EC-WW-057	13.3		AP+PS	2022-07-08	1738	1743	40	40	PASS	CM
215 / 218	SEOS	NEOS	1420	22	KK	EC-WW-022	39.0	DS-100	AP+PS	2022-07-08	1705	1710	40	40	PASS	CM
217 / 219	SEOS	NEOS	1421	22	BF	EC-WW-057	60.6		AP+PS	2022-07-08	1721	1726	40	40	PASS	CM
217 / 220	SEOS	NEOS	1439	22	BF	EC-WW-057	61.7		AP+PS	2022-07-08	1714	1719	40	40	PASS	CM
218 / 220	SEOS	NEOS	1456	22	BF	EC-WW-022	44.8	DS-101	AP+PS	2022-07-08	1705	1710	40	40	PASS	CM
221 / 222	EEOS	WEOS	1540	22	KK	EC-WW-022	6.8		AP+PS	2022-07-08	1745	1750	40	40	PASS	CM
219 / 221	SEOS	NEOS	1555	22	KK	EC-WW-022	7.8		AP+PS	2022-07-08	1745	1750	40	40	PASS	CM
219 / 222	SEOS	NEOS	1600	22	KK	EC-WW-022	72.0		AP+PS	2022-07-08	1745	1750	40	40	PASS	CM
143 / 221	SWEEOS	NEEOS	1604	22	BF	EC-WW-057	3.0		AP+PS	2022-07-08	1751	1756	40	40	PASS	CM
145 / 221	SWEEOS	NEEOS	1614	22	BF	EC-WW-057	5.0		AP+PS	2022-07-08	1750	1755	40	40	PASS	CM
						PAGE TOTAL	625.5									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 40 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-08

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
7	EC-WW-057	1400	BF	22	45.0%	460°C	124	141	129	137	142	131	147	130	140	137	158	163	155	168	163	CM	TEX/TEX
8	EC-WW-057	1400	BF	22	60.0%	460°C	145	153	152	133	143	157	142	155	147	154	172	179	166	175	179	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
145 / 219	SWEEOS	NEEOS	1615	22	BF	EC-WW-057	3.8		AP+PS	2022-07-08	1750	1755	40	40	PASS	CM
147 / 219	SWEEOS	NEEOS	1618	22	BF	EC-WW-057	5.4		AP+PS	2022-07-08	1750	1755	40	40	PASS	CM
147 / 216	SWEEOS	NEEOS	1621	22	BF	EC-WW-057	22.0		AP+PS	2022-07-08	1750	1755	40	40	PASS	CM
149 / 216	SWEEOS	NEEOS	1623	22	BF	EC-WW-057	7.2		AP+PS	2022-07-08	1745	1750	40	40	PASS	CM
220 / 222	SEOS	NEOS	1625	22	KK	EC-WW-022	49.5	DS-102	AP+PS	2022-07-08	1755	1800	40	40	PASS	CM
214 / 214	SWEEOS	NEEOS	1627	22	BF	EC-WW-057	0.7		VB	2022-07-11					PASS	CM
152 / 214	SWEEOS	NEEOS	1628	22	BF	EC-WW-057	7.8		AP+PS	2022-07-08	1745	1750	40	40	PASS	CM
154 / 214	SWEEOS	NEEOS	1631	22	BF	EC-WW-057	1.2		VB	2022-07-11					PASS	CM
220 / 223	EEOS	WEOS	1645	22	KK	EC-WW-022	62.8		AP+PS	2022-07-08	1800	1805	40	40	PASS	CM
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PAGE TOTAL							160.4									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-10

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-057	900	BA	18	60.0%	460°C	135	136	131	127	142	149	157	164	161	151	174	179	177	179	179	CM	SM/SM
2	EC-WW-057	900	BA	18	45.0%	460°C	158	171	152	168	164	151	152	143	151	155	178	204	197	204	188	CM	TEX/TEX
3	EC-WW-022	900	KK	18	60.0%	460°C	160	166	162	149	153	157	160	157	156	162	171	196	162	163	172	CM	SM/SM
4	EC-WW-022	900	KK	18	45.0%	460°C	149	149	144	152	166	166	164	137	157	162	203	209	192	197	201	CM	TEX/TEX
5	EC-WW-057	1300	BA	18	45.0%	460°C	140	142	135	148	137	131	145	130	146	147	154	152	162	165	167	CM	TEX/TEX
6	EC-WW-057	1300	BA	18	60.0%	460°C	136	140	134	120	125	125	131	130	124	132	159	153	152	163	155	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
224 / 225	EEOS	WEOS	928	22	BA	EC-WW-057	6.8		AP+PS	2022-07-10	1800	1805	40	40	PASS	CM
221 / 224	SEOS	NEOS	935	22	KK	EC-WW-022	9.7		AP+PS	2022-07-10	1824	1829	40	40	PASS	CM
222 / 224	SEOS	NEOS	939	22	KK	EC-WW-022	43.3		AP+PS	2022-07-10	1805	1810	40	40	PASS	CM
225 / 226	EEOS	WEOS	939	22	BA	EC-WW-057	6.8		AP+PS	2022-07-10	1720	1725	40	40	PASS	CM
222 / 225	SEOS	NEOS	948	22	KK	EC-WW-022	78.9	DS-103	AP+PS	2022-07-10	1805	1810	40	40	PASS	CM
227 / 228	EEOS	WEOS	953	22	BA	EC-WW-057	6.8		AP+PS	2022-07-10	1750	1755	40	40	PASS	CM
224 / 227	SEOS	NEOS	1013	22	BA	EC-WW-057	51.0	DS-105	AP+PS	2022-07-10	1800	1805	40	40	PASS	CM
223 / 226	SEOS	NEOS	1022	22	KK	EC-WW-022	6.0		AP+PS	2022-07-10	1720	1725	40	40	PASS	CM
225 / 227	SEOS	NEOS	1032	22	BA	EC-WW-057	45.9		AP+PS	2022-07-10	1750	1755	40	40	PASS	CM
225 / 228	SEOS	NEOS	1046	22	BA	EC-WW-057	75.7		AP+PS	2022-07-10	1750	1755	40	40	PASS	CM
226 / 228	SEOS	NEOS	1115	26	BA	EC-WW-057	25.0	DS-104	AP+PS	2022-07-10	1725	1730	40	40	PASS	CM
227 / 229	SEOS	NEOS	1205	26	KK	EC-WW-022	20.5		AP+PS	2022-07-10	1810	1815	40	40	PASS	CM
229 / 230	EEOS	WEOS	1206	26	BA	EC-WW-057	6.8		AP+PS	2022-07-10	1810	1815	40	40	PASS	CM
230 / 231	EEOS	WEOS	1214	26	BA	EC-WW-057	6.8		AP+PS	2022-07-10	1727	1732	40	40	PASS	CM
227 / 230	SEOS	NEOS	1215	26	KK	EC-WW-022	73.8	DS-106	AP+PS	2022-07-10	1750	1755	40	40	PASS	CM
228 / 230	SEOS	NEOS	1238	26	KK	EC-WW-022	48.1		AP+PS	2022-07-10	1750	1755	40	40	PASS	CM
228 / 231	SEOS	NEOS	1242	26	KK	EC-WW-022	53.0		AP+PS	2022-07-10	1727	1732	40	40	PASS	CM
232 / 233	EEOS	WEOS	1307	26	BA	EC-WW-057	6.8		AP+PS	2022-07-10	1727	1732	40	40	PASS	CM
229 / 232	SEOS	NEOS	1350	26	KK	EC-WW-022	19.4		AP+PS	2022-07-10	1812	1817	40	40	PASS	CM
230 / 232	SEOS	NEOS	1405	26	KK	EC-WW-022	49.6		AP+PS	2022-07-11	1205	1210	40	40	PASS	CM
						PAGE TOTAL	640.7									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH: Glenn Revilla

SUPERVISOR: Chad Messervey

SUBMISSION DATE: 2022-07-17

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-10

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
7	EC-WW-022	1300	KK	18	60.0%	460°C	125	131	132	141	136	135	142	144	149	129	184	171	167	165	172	CM	SM/SM
8	EC-WW-074	1300	BF	18	60.0%	460°C	132	135	146	135	139	134	147	140	137	130	168	170	165	163	157	CM	SM/SM
9	EC-WW-022	1650	KK	20	60.0%	460°C	123	127	127	124	126	127	121	137	131	128	144	146	147	142	143	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
230 / 233	SEOS	NEOS	1416	26	KK	EC-WW-022	72.3	DS-107	AP+PS	2022-07-10	1729	1734	40	40	PASS	CM
231 / 233	SEOS	NEOS	1435	26	KK	EC-WW-022	50.1		AP+PS	2022-07-10	1729	1734	40	40	PASS	CM
232 / 235	SEOS	NEOS	1444	26	BF	EC-WW-074	57.0		AP+PS	2022-07-10	1812	1817	40	40	PASS	CM
231 / 234	SEOS	NEOS	1451	26	KK	EC-WW-022	2.8		AP+PS	2022-07-10	1730	1735	40	40	PASS	CM
233 / 235	SEOS	NEOS	1507	26	BF	EC-WW-074	51.6		AP+PS	2022-07-10	1747	1752	40	40	PASS	CM
233 / 236	SEOS	NEOS	1525	26	BF	EC-WW-074	71.0	DS-108	AP+PS	2022-07-10	1747	1752	40	40	PASS	CM
234 / 236	SEOS	NEOS	1550	26	BF	EC-WW-074	2.8		AP+PS	2022-07-10	1740	1745	40	40	PASS	CM
223 / 225	SEOS	NEOS	1610	22	KK	EC-WW-022	42.8		AP+PS	2022-07-10	1720	1725	40	40	PASS	CM
235 / 237	SEOS	NEOS	1640	26	KK	EC-WW-022	41.0	DS-109	AP+PS	2022-07-10	1825	1830	40	40	PASS	CM
237 / 238	EEOS	WEOS	1640	26	BA	EC-WW-057	6.8		AP+PS	2022-07-10	1827	1832	40	40	PASS	CM
235 / 236	EEOS	WEOS	1648	26	BA	EC-WW-057	6.8		AP+PS	2022-07-10	1747	1752	40	40	PASS	CM
235 / 238	SEOS	NEOS	1650	26	KK	EC-WW-022	68.7		AP+PS	2022-07-10	1827	1832	40	40	PASS	CM
238 / 239	EEOS	WEOS	1652	26	BA	EC-WW-057	6.8		AP+PS	2022-07-10	1745	1750	40	40	PASS	CM
143 / 224	EEOS	WEOS	1655	26	BA	EC-WW-057	6.8		AP+PS	2022-07-10	1815	1820	40	40	PASS	CM
143 / 227	EEOS	WEOS	1700	26	BA	EC-WW-057	6.8		AP+PS	2022-07-10	1820	1825	40	40	PASS	CM
143 / 229	EEOS	WEOS	1705	26	BA	EC-WW-057	6.8		AP+PS	2022-07-10	1820	1825	40	40	PASS	CM
143 / 232	EEOS	WEOS	1710	26	BA	EC-WW-057	6.8		AP+PS	2022-07-10	1820	1825	40	40	PASS	CM
236 / 238	SEOS	NEOS	1715	26	KK	EC-WW-022	53.8	DS-110	AP+PS	2022-07-10	1745	1750	40	40	PASS	CM
143 / 235	EEOS	WEOS	1715	26	BA	EC-WW-057	6.8		AP+PS	2022-07-10	1820	1825	40	40	PASS	CM
143 / 237	EEOS	WEOS	1720	26	BA	EC-WW-057	6.8		AP+PS	2022-07-12	1645	1650	40	40	PASS	CM
						PAGE TOTAL	575.1									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 43 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-10

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
236 / 239	SEOS	NEOS	1730	26	KK	EC-WW-022	20.0		AP+PS	2022-07-10	1745	1750	40	40	PASS	CM
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PAGE TOTAL							20.0									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 44 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-11

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-022	1000	KK	11	45.0%	460°C	150	160	162	175	171	129	163	173	161	164	193	177	198	176	169	CM	TEX/TEX
2	EC-WW-022	1000	KK	11	60.0%	460°C	140	133	136	149	132	127	141	137	127	141	142	182	175	162	170	CM	SM/SM
3	EC-WW-057	1000	LA	11	60.0%	460°C	140	136	133	155	135	139	133	124	134	141	172	167	164	171	169	CM	SM/SM
4	EC-WW-057	1000	LA	11	45.0%	460°C	153	149	141	138	164	155	165	155	134	149	192	194	191	211	208	CM	TEX/TEX
5	EC-WW-074	1000	BF	11	60.0%	460°C	131	160	149	121	162	140	154	155	142	141	162	178	175	179	175	CM	SM/SM
6	EC-WW-074	1000	BF	11	45.0%	460°C	147	132	140	160	132	118	148	126	165	161	191	201	189	197	194	CM	TEX/TEX

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
240 / 241	EEOS	WEOS	1018	11	LA	EC-WW-057	6.8		AP+PS	2022-07-12	1700	1705	40	40	PASS	CM
143 / 240	SEOS	NEOS	1020	11	KK	EC-WW-022	4.7		VB	2022-07-12					PASS	CM
237 / 240	SEOS	NEOS	1023	11	KK	EC-WW-022	22.0		AP+PS	2022-07-12	1645	1650	40	40	PASS	CM
237 / 240	SEOS	NEOS	1028	11	KK	EC-WW-022	24.3		AP+PS	2022-07-12	1640	1645	40	40	PASS	CM
242 / 243	EEOS	WEOS	1034	11	LA	EC-WW-057	0.8		AP+PS	2022-07-12	1705	1710	40	40	PASS	CM
238 / 240	SEOS	NEOS	1040	11	KK	EC-WW-022	51.2	DS-111	AP+PS	2022-07-12	1640	1645	40	40	PASS	CM
243 / 244	EEOS	WEOS	1048	11	LA	EC-WW-057	6.8		AP+PS	2022-07-12	1650	1655	40	40	PASS	CM
238 / 241	SEOS	NEOS	1055	11	KK	EC-WW-022	71.0		AP+PS	2022-07-12	1600	1605	40	40	PASS	CM
240 / 242	SEOS	NEOS	1055	11	BF	EC-WW-074	32.1		AP+PS	2022-07-12	1705	1710	40	40	PASS	CM
240 / 243	SEOS	NEOS	1108	11	BF	EC-WW-074	68.0		AP+PS	2022-07-12	1700	1705	40	40	PASS	CM
239 / 241	SEOS	NEOS	1115	11	KK	EC-WW-022	20.0		AP+PS	2022-07-12	1600	1605	40	40	PASS	CM
241 / 243	SEOS	NEOS	1130	11	BF	EC-WW-074	54.3		AP+PS	2022-07-12	1650	1655	40	40	PASS	CM
241 / 244	SEOS	NEOS	1148	11	BF	EC-WW-074	35.5		AP+PS	2022-07-12	1650	1655	40	40	PASS	CM
242 / 246	SEOS	NEOS	1240	11	KK	EC-WW-022	31.2		AP+PS	2022-07-12	1710	1715	40	40	PASS	CM
245 / 246	EEOS	WEOS	1242	11	LA	EC-WW-057	6.8		AP+PS	2022-07-12	1725	1730	40	40	PASS	CM
243 / 245	SEOS	NEOS	1250	11	KK	EC-WW-022	55.3		AP+PS	2022-07-12	1655	1700	40	40	PASS	CM
244 / 246	EEOS	WEOS	1304	11	LA	EC-WW-057	6.8		AP+PS	2022-07-12	1730	1735	40	40	PASS	CM
243 / 245	SEOS	NEOS	1307	11	KK	EC-WW-022	66.7		AP+PS	2022-07-12	1730	1735	40	40	PASS	CM
248 / 249	SEOS	NEOS	1315	11	BF	EC-WW-074	20.6		AP+PS	2022-07-12	1730	1735	40	40	PASS	CM
247 / 248	EEOS	WEOS	1318	11	LA	EC-WW-057	6.8		AP+PS	2022-07-12	1730	1735	40	40	PASS	CM
						PAGE TOTAL	591.7									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 45 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-11

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
7	EC-WW-074	1400	BF	11	60.0%	460°C	152	151	156	151	129	151	132	132	148	159	169	173	169	175	170	CM	SM/SM
8	EC-WW-057	1400	LA	11	45.0%	460°C	135	148	140	136	144	136	141	130	122	132	145	162	162	165	179	CM	TEX/TEX
9	EC-WW-022	1400	KK	11	60.0%	460°C	139	150	138	134	139	133	138	139	147	132	156	169	164	168	171	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
245 / 247	SEOS	NEOS	1322	11	BF	EC-WW-074	65.7	DS-114	AP+PS	2022-07-12	1725	1730	40	40	PASS	CM
243 / 246	SEOS	NEOS	1328	11	KK	EC-WW-022	21.7	DS-113	AP+PS	2022-07-12	1720	1725	40	40	PASS	CM
244 / 246	SEOS	NEOS	1333	11	KK	EC-WW-022	12.0		AP+PS	2022-07-12	1720	1725	40	40	PASS	CM
245 / 248	SEOS	NEOS	1344	11	BF	EC-WW-074	56.6		AP+PS	2022-07-12	1655	1700	40	40	PASS	CM
247 / 250	SEOS	NEOS	1353	11	KK	EC-WW-022	22.2		AP+PS	2022-07-12	1805	1810	40	40	PASS	CM
250 / 251	EEOS	WEOS	1400	11	LA	EC-WW-057	6.8		AP+PS	2022-07-12	1750	1755	40	40	PASS	CM
246 / 249	SEOS	NEOS	1402	11	BF	EC-WW-074	44.8		AP+PS	2022-07-12	1720	1725	40	40	PASS	CM
248 / 250	SEOS	NEOS	1404	11	KK	EC-WW-022	57.3	DS-116	AP+PS	2022-07-12	1805	1810	40	40	PASS	CM
248 / 251	SEOS	NEOS	1420	11	KK	EC-WW-022	65.7		AP+PS	2022-07-12	1750	1755	40	40	PASS	CM
249 / 251	SEOS	NEOS	1421	11	BF	EC-WW-074	44.3		AP+PS	2022-07-12	1730	1735	40	40	PASS	CM
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PAGE TOTAL							397.1									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 46 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-12

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-022	930	KK	11	60.0%	460°C	141	160	130	160	158	140	129	141	149	152	188	193	194	188	186	CM	SM/SM
2	EC-WW-022	930	KK	11	45.0%	460°C	166	175	133	181	141	147	161	160	163	166	171	199	207	219	210	CM	TEX/TEX
3	EC-WW-057	930	BF	11	60.0%	460°C	128	161	121	150	147	146	160	159	159	162	157	162	183	176	180	CM	SM/SM
4	EC-WW-054	930	RM	11	45.0%	460°C	130	124	135	151	136	132	137	136	136	134	168	151	167	174	172	CM	TEX/TEX
5	EC-WW-054	930	RM	11	60.0%	460°C	137	136	137	139	129	142	139	144	133	147	162	171	165	175	171	CM	SM/SM
6	EC-WW-054	1330	RM	13	60.0%	460°C	127	134	124	125	131	129	127	121	124	126	157	164	154	162	165	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
252 / 253	EEOS	WEOS	955	11	KK	EC-WW-022	6.8		AP+PS	2022-07-12	1810	1815	40	40	PASS	CM
250 / 252	SEOS	NEOS	1005	11	KK	EC-WW-022	12.0		AP+PS	2022-07-12	1810	1815	40	40	PASS	CM
250 / 253	SEOS	NEOS	1010	11	KK	EC-WW-022	63.8		AP+PS	2022-07-12	1810	1815	40	40	PASS	CM
253 / 254	EEOS	WEOS	1032	11	RM	EC-WW-054	6.8		AP+PS	2022-07-12	1815	1820	40	40	PASS	CM
255 / 257	SEOS	NEOS	1035	11	KK	EC-WW-022	6.6		AP+PS	2022-07-13	955	1000	40	40	PASS	CM
251 / 253	SEOS	NEOS	1037	11	KK	EC-WW-022	58.1	DS-117	AP+PS	2022-07-12	1815	1820	40	40	PASS	CM
255 / 258	SEOS	NEOS	1038	11	KK	EC-WW-022	60.7	DS-119	AP+PS	2022-07-13	955	1000	40	40	PASS	CM
252 / 255	SEOS	NEOS	1041	11	BF	EC-WW-057	11.2		AP+PS	2022-07-13	951	956	40	40	PASS	CM
251 / 254	SEOS	NEOS	1045	11	KK	EC-WW-022	51.3		AP+PS	2022-07-12	1815	1820	40	40	PASS	CM
253 / 255	SEOS	NEOS	1045	11	BF	EC-WW-057	59.6		AP+PS	2022-07-13	945	950	40	40	PASS	CM
255 / 256	EEOS	WEOS	1048	11	RM	EC-WW-054	2.0		AP+PS	2022-07-12	1835	1840	40	40	PASS	CM
255 / 256	EEOS	WEOS	1050	11	RM	EC-WW-054	4.8		AP+PS	2022-07-12	1835	1840	40	40	PASS	CM
253 / 256	SEOS	NEOS	1106	11	BF	EC-WW-057	62.3	DS-118	AP+PS	2022-07-12	1818	1823	40	40	PASS	CM
254 / 256	SEOS	NEOS	1127	11	BF	EC-WW-057	50.8		AP+PS	2022-07-12	1818	1823	40	40	PASS	CM
257 / 258	EEOS	WEOS	1300	11	RM	EC-WW-054	6.8		AP+PS	2022-07-13	955	1000	40	40	PASS	CM
260 / 261	EEOS	WEOS	1318	11	RM	EC-WW-054	6.8		AP+PS	2022-07-13	1002	1007	40	40	PASS	CM
256 / 258	SEOS	NEOS	1325	11	KK	EC-WW-022	61.3		AP+PS	2022-07-13	1012	1017	40	40	PASS	CM
257 / 260	SEOS	NEOS	1331	11	BF	EC-WW-057	2.0		AP+PS	2022-07-13	958	1003	40	40	PASS	CM
258 / 260	SEOS	NEOS	1332	11	BF	EC-WW-057	5.0		AP+PS	2022-07-13	958	1003	40	40	PASS	CM
258 / 259	EEOS	WEOS	1333	11	RM	EC-WW-054	6.8		AP+PS	2022-07-13	1035	1040	40	40	PASS	CM
						PAGE TOTAL	545.5									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH: Glenn Revilla

SUPERVISOR: Chad Messervey

SUBMISSION DATE: 2022-07-17

SHEET NUMBER: 47 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-12

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
7	EC-WW-054	1330	RM	13	45.0%	460°C	154	148	137	149	173	141	162	156	132	152	184	174	182	165	163	CM	TEX/TEX
8	EC-WW-022	1330	KK	13	60.0%	460°C	136	152	149	161	151	165	145	142	143	140	185	171	172	185	188	CM	SM/SM
9	EC-WW-057	1330	BF	13	60.0%	460°C	123	149	156	152	144	137	132	145	140	135	170	171	162	171	180	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
258 / 261	SEOS	NEOS	1334	11	BF	EC-WW-057	69.4		AP+PS	2022-07-13	1002	1007	40	40	PASS	CM
261 / 262	EEOS	WEOI	1341	11	RM	EC-WW-054	6.8		AP+PS	2022-07-13	1020	1025	40	40	PASS	CM
256 / 259	SEOS	NEOS	1345	11	KK	EC-WW-022	52.0	DS-120	AP+PS	2022-07-13	1040	1045	40	40	PASS	CM
258 / 262	SEOS	NEOS	1359	11	BF	EC-WW-057	48.2		AP+PS	2022-07-13	1025	1030	40	40	PASS	CM
259 / 262	SEOS	NEOS	1416	11	BF	EC-WW-057	52.0		AP+PS	2022-07-13	1035	1040	40	40	PASS	CM
263 / 264	EEOS	WEOS	1442	11	RM	EC-WW-054	6.8		AP+PS	2022-07-13	1630	1635	40	40	PASS	CM
261 / 263	SEOS	NEOS	1450	11	KK	EC-WW-022	9.3		AP+PS	2022-07-13	1007	1012	40	40	PASS	CM
262 / 264	SEOS	NEOS	1451	11	BF	EC-WW-057	5.5		AP+PS	2022-07-13	1020	1025	40	40	PASS	CM
261 / 264	SEOS	NEOS	1452	11	KK	EC-WW-022	48.5		AP+PS	2022-07-13	1020	1025	40	40	PASS	CM
261 / 263	SEOS	NEOS	1455	11	KK	EC-WW-022	10.5		AP+PS	2022-07-13	1007	1012	40	40	PASS	CM
262 / 265	SEOS	NEOS	1455	11	RM	EC-WW-054	27.9		AP+PS	2022-07-13	1046	1051	40	40	PASS	CM
262 / 264	SEOS	NEOS	1505	11	KK	EC-WW-022	1.0	DS-122	AP+PS	2022-07-13	1020	1025	40	40	PASS	CM
/																
/																
/																
/																
/																
/																
/																
/																
PAGE TOTAL							337.9									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 48 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-13

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-054	1130	LA	14	45.0%	460°C	138	134	127	133	143	126	141	129	146	140	160	173	162	172	163	CM	TEX/TEX
2	EC-WW-022	1130	KK	14	60.0%	460°C	149	145	135	136	144	139	142	150	158	149	166	177	174	169	175	CM	SM/SM
3	EC-WW-022	1130	KK	14	45.0%	460°C	146	165	149	158	161	146	130	142	158	163	192	184	173	193	192	CM	TEX/TEX
4	EC-WW-023	1130	RM	14	60.0%	460°C	138	149	134	150	146	132	153	128	144	145	174	179	169	171	175	CM	SM/SM
5	EC-WW-023	1130	RM	14	45.0%	460°C	129	139	139	144	140	137	138	126	122	129	167	165	169	171	168	CM	TEX/TEX
6	EC-WW-057	1130	BF	14	60.0%	460°C	138	143	135	143	139	130	137	133	131	133	167	174	167	169	175	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
263 / 266	SEOS	NEOS	1150	14	KK	EC-WW-022	11.0		AP+PS	2022-07-14	1020	1025	40	40	PASS	CM
264 / 266	SEOS	NEOS	1157	14	KK	EC-WW-022	81.8	DS-123	AP+PS	2022-07-14	758	803	40	40	PASS	CM
266 / 267	EEOS	WEOS	1158	14	LA	EC-WW-054	6.8		AP+PS	2022-07-14	758	803	40	40	PASS	CM
266 / 268	SEOS	NEOS	1213	14	RM	EC-WW-023	8.8		AP+PS	2022-07-14	839	844	40	40	PASS	CM
268 / 269	EEOS	WEOS	1214	14	LA	EC-WW-054	6.8		AP+PS	2022-07-14	839	844	40	40	PASS	CM
266 / 269	SEOS	NEOS	1220	14	RM	EC-WW-023	55.7		AP+PS	2022-07-14	808	813	40	40	PASS	CM
264 / 267	SEOS	NEOS	1225	14	KK	EC-WW-022	38.4		AP+PS	2022-07-14	1030	1035	40	40	PASS	CM
269 / 270	EEOS	WEOS	1230	14	LA	EC-WW-054	6.8		AP+PS	2022-07-14	808	813	40	40	PASS	CM
268 / 271	SEOS	NEOS	1234	14	BF	EC-WW-057	1.0		VB	2022-07-15			40	40	PASS	CM
269 / 271	SEOS	NEOS	1235	14	BF	EC-WW-057	17.8		AP+PS	2022-07-14	821	826	40	40	PASS	CM
266 / 270	SEOS	NEOS	1237	14	RM	EC-WW-023	18.1	DS-124	AP+PS	2022-07-14	802	807	40	40	PASS	CM
265 / 267	SEOS	NEOS	1238	14	KK	EC-WW-022	27.1		AP+PS	2022-07-14	1030	1035	40	40	PASS	CM
269 / 271	SEOS	NEOS	1241	14	BF	EC-WW-057	18.2		AP+PS	2022-07-14	821	826	40	40	PASS	CM
267 / 270	SEOS	NEOS	1242	14	RM	EC-WW-023	65.5		AP+PS	2022-07-14	802	807	40	40	PASS	CM
271 / 272	EEOS	WEOS	1242	14	LA	EC-WW-054	6.8		AP+PS	2022-07-14	824	829	40	40	PASS	CM
269 / 272	SEOS	NEOS	1250	14	BF	EC-WW-057	20.0		AP+PS	2022-07-14	816	821	40	40	PASS	CM
270 / 272	SEOS	NEOS	1257	14	BF	EC-WW-057	83.6	DS-125	AP+PS	2022-07-14	820	825	40	40	PASS	CM
273 / 274	EEOS	WEOS	1300	14	LA	EC-WW-054	6.8		AP+PS	2022-07-14	1040	1045	40	40	PASS	CM
274 / 275	EEOS	WEOS	1307	14	LA	EC-WW-054	6.8		AP+PS	2022-07-14	830	835	40	40	PASS	CM
276 / 277	EEOS	WEOS	1313	14	RM	EC-WW-023	6.8		AP+PS	2022-07-14	847	852	40	40	PASS	CM
						PAGE TOTAL	494.6									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH: Glenn Revilla

SUPERVISOR: Chad Messervey

SUBMISSION DATE: 2022-07-17

SHEET NUMBER: 49 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-13

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
7	EC-WW-057	1130	BF	14	45.0%	460°C	156	155	144	160	129	148	146	135	140	143	185	180	193	191	187	CM	TEX/TEX
8	EC-WW-023	1530	RM	14	60.0%	460°C	139	134	141	141	137	136	143	129	140	140	156	158	162	160	155	CM	SM/SM
9	EC-WW-023	1530	RM	14	45.0%	460°C	137	144	152	160	147	159	153	162	144	141	183	185	190	182	167	CM	TEX/TEX
10	EC-WW-057	1530	BF	14	60.0%	460°C	141	134	140	136	126	124	128	134	138	125	160	165	171	162	163	CM	SM/SM
11	EC-WW-057	1530	BF	14	45.0%	460°C	155	150	132	127	149	149	159	136	137	136	183	165	177	167	182	CM	TEX/TEX
12	EC-WW-054	1530	LA	14	60.0%	460°C	152	152	145	134	154	154	146	130	141	142	157	165	163	155	161	CM	SM/SM

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
271 / 273	SEOS	NEOS	1315	14	KK	EC-WW-022	5.3		AP+PS	2022-07-14	1040	1045	40	40	PASS	CM
271 / 274	SEOS	NEOS	1320	14	KK	EC-WW-022	17.8		AP+PS	2022-07-14	830	835	40	40	PASS	CM
273 / 276	SEOS	NEOS	1322	14	RM	EC-WW-023	1.0		VB	2022-07-15					PASS	CM
280 / 281	EEOS	WEOS	1322	14	LA	EC-WW-054	6.8		AP+PS	2022-07-15	930	935	40	40	PASS	CM
274 / 276	SEOS	NEOS	1323	14	RM	EC-WW-023	7.4		AP+PS	2022-07-14	847	852	40	40	PASS	CM
271 / 275	SEOS	NEOS	1325	14	KK	EC-WW-022	8.0		AP+PS	2022-07-14	824	829	40	40	PASS	CM
274 / 277	SEOS	NEOS	1326	14	RM	EC-WW-023	10.7		AP+PS	2022-07-14	845	850	40	40	PASS	CM
272 / 275	SEOS	NEOS	1330	14	KK	EC-WW-022	103.8	DS-126	AP+PS	2022-07-14	824	829	40	40	PASS	CM
275 / 277	SEOS	NEOS	1330	14	RM	EC-WW-023	109.8	DS-127	AP+PS	2022-07-15	845	850	40	40	PASS	CM
279 / 280	EEOS	WEOS	1336	14	BF	EC-WW-057	4.6		AP+PS	2022-07-14	857	902	40	40	PASS	CM
277 / 278	EEOS	WEOS	1338	14	LA	EC-WW-054	6.8		AP+PS	2022-07-15	857	902	40	40	PASS	CM
276 / 279	SEOS	NEOS	1338	14	BF	EC-WW-057	2.3		AP+PS	2022-07-15	858	903	40	40	PASS	CM
276 / 280	SEOS	NEOS	1339	14	BF	EC-WW-057	2.1		AP+PS	2022-07-15	857	902	40	40	PASS	CM
277 / 280	SEOS	NEOS	1340	14	BF	EC-WW-057	116.3	DS-128	AP+PS	2022-07-15	930	935	40	40	PASS	CM
275 / 278	SEOS	NEOS	1403	14	RM	EC-WW-023	2.0		VB	2022-07-15					PASS	CM
277 / 281	SEOS	NEOS	1412	14	BF	EC-WW-057	4.7		AP+PS	2022-07-15	930	935	40	40	PASS	CM
278 / 281	SEOS	NEOS	1414	14	BF	EC-WW-057	2.0		VB	2022-07-15				40	PASS	CM
264 / 265	EEOS	WEOS	1452	14	LA	EC-WW-054	3.8		AP+PS	2022-07-15	1030	1035	40	40	PASS	CM
280 / 282	SEOS	NEOS	1543	14	RM	EC-WW-023	112.8		AP+PS	2022-07-15	938	943	40	40	PASS	CM
280 / 283	SEOS	NEOS	1611	14	RM	EC-WW-023	4.6		AP+PS	2022-07-15	938	943	40	40	PASS	CM
						PAGE TOTAL	532.6									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 50 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-13

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
13	EC-WW-054	1530	LA	14	45.0%	460°C	147	165	151	164	157	146	161	146	156	159	189	175	177	172	169	CM	TEX/TEX

WELD SEAMS

PANEL NUMBERS		SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
281	283	SEOS	NEOS	1612	14	RM	EC-WW-023	6.7		AP+PS	2022-07-15	940	945	40	40	PASS	CM

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-14

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-054	930	LA	14	45.0%	460°C	155	148	151	159	162	152	160	175	156	164	203	192	197	210	200	CM	TEX/TEX
2	EC-WW-054	930	LA	14	60.0%	460°C	138	150	137	150	147	130	145	131	143	149	174	171	179	181	175	CM	SM/SM
3	EC-WW-022	930	KK	14	60.0%	460°C	56	150	125	150	149	142	149	145	154	155	188	175	180	179	159	CM	SM/SM
4	EC-WW-022	930	KK	14	45.0%	460°C	153	162	149	163	145	145	150	150	159	153	199	199	197	204	190	CM	TEX/TEX
5	EC-WW-023	930	RM	14		460°C	121	144	120	142	143	127	156	151	156	150	174	187	181	182	185	CM	SM/SM
6	EC-WW-023	930	RM	14	45.0%	460°C	157	158	138	143	137	154	149	157	156	154	186	214	189	192	202	CM	TEX/TEX

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
282 / 284	SEOS	NEOS	940	14	RM	EC-WW-023	107.8	DS-129	AP+PS	2022-07-15	944	949	40	40	PASS	CM
284 / 285	EEOS	WEOS	952	14	LA	EC-WW-054	6.8		AP+PS	2022-07-15	1158	1203	40	40	PASS	CM
286 / 287	EEOS	WEOS	1000	14	KK	EC-WW-022	6.8		AP+PS	2022-07-15	1040	1045	40	40	PASS	CM
287 / 288	EEOS	NEOS	1001	14	LA	EC-WW-054	6.8		AP+PS	2022-07-15	1152	1157	40	40	PASS	CM
284 / 286	SEOS	NEOS	1010	14	KK	EC-WW-022	1.7		VB	2022-07-15					PASS	CM
284 / 286	SEOS	NEOS	1011	14	KK	EC-WW-022	2.9		VB	2022-07-15					PASS	CM
284 / 287	EEOS	WEOS	1012	14	KK	EC-WW-022	1.6		VB	2022-07-15					PASS	CM
284 / 287	SEOS	NEOS	1013	14	KK	EC-WW-022	99.2	DS-130	AP+PS	2022-07-15	1158	1203	40	40	PASS	CM
283 / 285	SEOS	NEOS	1021	14	RM	EC-WW-023	1.4		VB	2022-07-15				40	PASS	CM
283 / 285	SEOS	NEOS	1022	14	RM	EC-WW-023	11.3		AP+PS	2022-07-15	944	949	40	40	PASS	CM
285 / 287	SEOS	NEOS	1045	14	KK	EC-WW-022	7.1		AP+PS	2022-07-15	1156	1201	40	40	PASS	CM
285 / 288	SEOS	NEOS	1048	14	KK	EC-WW-022	5.7		AP+PS	2022-07-15	1156	1201	40	40	PASS	CM
286 / 289	SEOS	WEOS	1104	14	RM	EC-WW-023	1.0		VB	2022-07-15					PASS	CM
287 / 289	SEOS	NEOS	1105	14	RM	EC-WW-023	108.2	DS-131	AP+PS	2022-07-15	1152	1157	40	40	PASS	CM
289 / 290	EEOS	WEOS	1118	14	LA	EC-WW-054	6.8		AP+PS	2022-07-15	1147	1152	40	40	PASS	CM
291 / 292	EEOS	WEOS	1120	14	KK	EC-WW-022	6.8		AP+PS	2022-07-15	1037	1142	40	40	PASS	CM
289 / 291	SEOS	NEOS	1130	14	KK	EC-WW-022	6.5		AP+PS	2022-07-15	1037	1142	40	40	PASS	CM
289 / 292	SEOS	NEOS	1132	14	KK	EC-WW-022	102.5	DS-132	AP+PS	2022-07-15	1147	1152	40	40	PASS	CM
293 / 294	EEOS	WEOS	1137	14	LA	EC-WW-054	6.8		AP+PS	2022-07-15	1033	1038	40	40	PASS	CM
288 / 289	SEOS	NEOS	1139	14	RM	EC-WW-023	3.8		AP+PS	2022-07-15	1152	1157	40	40	PASS	CM
						PAGE TOTAL	501.5									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 52 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-14

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
7	EC-WW-054	930	LA	14	45.0%	460°C	155	148	151	159	162	152	160	175	156	164	203	192	197	210	200	CM	TEX/TEX
8	EC-WW-054	930	LA	14	60.0%	460°C	138	150	137	150	147	130	145	131	143	148	174	171	179	181	175	CM	SM/SM
9	EC-WW-022	930	KK	14	60.0%	460°C	156	150	125	150	149	142	149	145	154	155	188	175	180	179	159	CM	SM/SM
10	EC-WW-022	930	KK	14	45.0%	460°C	153	162	149	163	145	145	150	150	159	153	199	199	197	204	190	CM	TEX/TEX
11	EC-WW-023	930	RM	14	60.0%	460°C	121	144	120	142	143	127	156	151	156	150	174	187	181	182	185	CM	SM/SM
12	EC-WW-023	930	RM	14	45.0%	460°C	157	158	138	143	137	154	149	157	156	154	186	214	189	192	202	CM	TEX/TEX

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
288 / 290	SEOS	NEOS	1141	14	RM	EC-WW-023	2.0		VB	2022-07-15					PASS	CM
291 / 293	SEOS	NEOS	1145	14	LA	EC-WW-054	1.7		AP+PS	2022-07-15	1031	1036	40	40	PASS	CM
292 / 293	SEOS	NEOS	1146	14	LA	EC-WW-054	11.8		AP+PS	2022-07-15	1031	1036	40	40	PASS	CM
292 / 294	SEOS	NEOS	1152	14	LA	EC-WW-054	93.0	DS-133	AP+PS	2022-07-15	1031	1036	40	40	PASS	CM
290 / 292	SEOS	NEOS	1205	14	KK	EC-WW-022	2.0		VB	2022-07-15					PASS	CM
295 / 296	EEOS	WEOS	1538	14	LA	EC-WW-054	6.8		AP+PS	2022-07-15	1033	1038	40	40	PASS	CM
293 / `295	SEOS	NEOS	1541	14	RM	EC-WW-023	6.7		AP+PS	2022-07-15	1033	1038	40	40	PASS	CM
293 / 296	SEOS	NEOS	1543	14	RM	EC-WW-023	0.4		VB	2022-07-15					PASS	CM
294 / 296	SEOS	NEOS	1544	14	RM	EC-WW-023	27.0		AP+PS	2022-07-15	1026	1031	40	40	PASS	CM
296 / 297	EEOS	WEOS	1548	14	LA	EC-WW-054	6.8		AP+PS	2022-07-15	1016	1021	40	40	PASS	CM
294 / 297	SEOS	NEOS	1551	14	RM	EC-WW-023	66.0	DS-134	AP+PS	2022-07-15	1026	1031	40	40	PASS	CM
296 / 298	SEOS	NEOS	1555	14	KK	EC-WW-022	24.7		AP+PS	2022-07-15	1016	1021	40	40	PASS	CM
298 / 299	EEOS	WEOS	1558	14	LA	EC-WW-054	6.8		AP+PS	2022-07-15	1022	1027	40	40	PASS	CM
297 / 298	SEOS	NEOS	1600	14	KK	EC-WW-022	29.0		AP+PS	2022-07-15	1016	1021	40	40	PASS	CM
300 / 301	EEOS	WEOS	1607	14	LA	EC-WW-054	6.8		AP+PS	2022-07-15	1011	1016	40	40	PASS	CM
297 / 299	SEOS	NEOS	1614	14	KK	EC-WW-022	37.0		AP+PS	2022-07-15	1022	1027	40	40	PASS	CM
298 / 300	SEOS	NEOS	1614	14	LA	EC-WW-054	15.2		AP+PS	2022-07-15	1011	1016	40	40	PASS	CM
298 / 301	SEOS	NEOS	1619	14	LA	EC-WW-054	25.2		AP+PS	2022-07-15	1011	1016	40	40	PASS	CM
302 / 303	EEOS	WEOS	1622	14	RM	EC-WW-023	6.8		AP+PS	2022-07-15	1007	1012	40	40	PASS	CM
299 / 301	SEOS	NEOS	1629	14	LA	EC-WW-054	37.0	DS-135	AP+PS	2022-07-15	1020	1025	40	40	PASS	CM
						PAGE TOTAL	412.7									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 53 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-14

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
13	EC-WW-054	1500	LA	14	60.0%	460°C	150	139	153	152	131	142	151	151	142	144	181	174	169	180	177	CM	SM/SM
14	EC-WW-054	1500	LA	14	45.0%	460°C	184	177	181	177	181	162	182	178	150	163	193	205	190	200	185	CM	TEX/TEX
15	EC-WW-023	1500	RM	14	60.0%	460°C	140	152	126	148	152	127	150	137	141	138	152	173	156	157	172	CM	SM/SM
16	EC-WW-023	1500	RM	14	45.0%	460°C	163	169	125	153	159	152	170	148	169	168	178	191	186	175	190	CM	TEX/TEX
17	EC-WW-022	1500	KK	14	60.0%	460°C	141	149	150	159	159	134	142	141	169	165	161	174	180	175	166	CM	SM/SM
18	EC-WW-022	1500	KK	14	45.0%	460°C	169	180	161	165	138	146	166	165	136	167	199	203	213	202	205	CM	TEX/TEX

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
304 / 305	EEOS	WEOS	1630	14	KK	EC-WW-022	6.8		AP+PS	2022-07-15	1001	1006	40	40	PASS	CM
300 / 302	SEOS	NEOS	1632	14	RM	EC-WW-023	1.7		VB	2022-07-16					PASS	CM
301 / 302	SEOS	NEOS	1633	14	RM	EC-WW-023	19.0		AP+PS	2022-07-15	1007	1012	40	40	PASS	CM
302 / 304	SEOS	NEOS	1635	14	KK	EC-WW-022	6.9		AP+PS	2022-07-15	1005	1010	40	40	PASS	CM
301 / 303	SEOS	NEOS	1638	14	RM	EC-WW-023	43.3		AP+PS	2022-07-15	1007	1012	40	40	PASS	CM
303 / 304	SEOS	NEOS	1638	14	KK	EC-WW-022	7.6	DS-136	AP+PS	2022-07-15	1001	1006	40	40	PASS	CM
303 / 305	SEOS	NEOS	1640	14	KK	EC-WW-022	36.4		AP+PS	2022-07-15	1001	1006	40	40	PASS	CM
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PAGE TOTAL							121.7									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 54 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-15

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE
1	EC-WW-054	800	LA	12	60.0%	460°C	148	161	162	141	136	145	158	140	155	154	191	193	202	189	195	CM	SM/SM
2	EC-WW-054	800	LA	12	45.0%	460°C	132	147	178	159	173	160	146	152	146	169	206	213	207	220	212	CM	TEX/TEX

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
304 / 306	SEOS	NEOS	802	14	LA	EC-WW-054	1.0		VB	2022-07-16					PASS	CM
305 / 306	SEOS	NEOS	803	14	LA	EC-WW-054	10.0		AP+PS	2022-07-15	959	1004	40	40	PASS	CM
305 / 306	SEOS	NEOS	809	14	LA	EC-WW-054	25.0		AP+PS	2022-07-15	959	1004	40	40	PASS	CM
307 / 308	EEOS	WEOS	818	14	LA	EC-WW-054	6.8		AP+PS	2022-07-15	948	953	40	40	PASS	CM
306 / 307	SEOS	NEOS	822	14	LA	EC-WW-054	18.0		AP+PS	2022-07-15	953	958	40	40	PASS	CM
306 / 308	SEOS	NEOS	829	14	LA	EC-WW-054	3.0		AP+PS	2022-07-15	953	958	40	40	PASS	CM
307 / 309	SEOS	NEOS	843	14	LA	EC-WW-054	5.0	DS-137	AP+PS	2022-07-15	948	953	40	40	PASS	CM
308 / 309	SEOS	NEOS	846	14	LA	EC-WW-054	2.0		AP+PS	2022-07-15	948	953	40	40	PASS	CM
134 / 1B	SEOS	NEOS	1230	14	EA	EC-EX-040	12.0		VB	2022-07-16					PASS	CM
136 / 1B	SEOS	NEOS	1230	14	EA	EC-EX-040	12.0		VB	2022-07-16					PASS	CM
138 / 1B	SEOS	NEOS	1230	14	EA	EC-EX-040	12.0		VB	2022-07-16					PASS	CM
140 / 1B	SEOS	NEOS	1230	14	EA	EC-EX-040	6.8		VB	2022-07-16					PASS	CM
143 / 1B	SEOS	NEOS	1230	14	EA	EC-EX-040	6.8		VB	2022-07-16					PASS	CM
240 / 1B	EEOS	WEOS	1230	14	EA	EC-EX-040	6.8		VB	2022-07-16					PASS	CM
242 / 1B	EEOS	WEOS	1230	14	EA	EC-EX-040	6.8		VB	2022-07-16					PASS	CM
245 / 1B	EEOS	WEOS	1230	14	EA	EC-EX-040	6.8		VB	2022-07-16					PASS	CM
247 / 1B	EEOS	WEOS	1230	14	EA	EC-EX-040	6.8		VB	2022-07-16					PASS	CM
250 / 1B	EEOS	WEOS	1230	14	EA	EC-EX-040	6.8		VB	2022-07-16					PASS	CM
252 / 1B	EEOS	WEOS	1230	14	EA	EC-EX-040	6.8		VB	2022-07-16					PASS	CM
255 / 1B	EEOS	WEOS	1230	14	EA	EC-EX-040	12.0		VB	2022-07-16					PASS	CM
						PAGE TOTAL	173.2									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 55 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-15

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
257 / 1B	EEOS	WEOS	1230	14	EA	EC-EX-040	12.0		VB	2022-07-16					PASS	CM
260 / 1B	EEOS	WEOS	1230	14	EA	EC-EX-040	12.0		VB	2022-07-16					PASS	CM
261 / 1B	EEOS	WEOS	1410	14	GB	EC-EX-034	12.0		VB	2022-07-16					PASS	CM
263 / 1B	EEOS	WEOS	1410	14	GB	EC-EX-034	12.0		VB	2022-07-16					PASS	CM
263 / 1B	EEOS	WEOS	1410	14	GB	EC-EX-034	12.0		VB	2022-07-16					PASS	CM
266 / 1B	EEOS	WEOS	1410	14	GB	EC-EX-034	12.0		VB	2022-07-16					PASS	CM
268 / 1B	EEOS	WEOS	1410	14	GB	EC-EX-034	12.0		VB	2022-07-16					PASS	CM
271 / 1B	EEOS	WEOS	1410	14	GB	EC-EX-034	12.0		VB	2022-07-16					PASS	CM
273 / 1B	EEOS	WEOS	1410	14	GB	EC-EX-034	12.0		VB	2022-07-16					PASS	CM
282 / 1B	EEOS	WEOS	1410	14	GB	EC-EX-034	12.0		VB	2022-07-16					PASS	CM
284 / 1B	EEOS	WEOS	1410	14	GB	EC-EX-034	12.0		VB	2022-07-16					PASS	CM
286 / 1B	EEOS	WEOS	1410	14	GB	EC-EX-034	12.0		VB	2022-07-16					PASS	CM
289 / 1B	EEOS	WEOS	1410	14	GB	EC-EX-034	12.0		VB	2022-07-16					PASS	CM
291 / 1B	EEOS	WEOS	1600	14	BA	EC-EX-040	12.0		VB	2022-07-16					PASS	CM
293 / 1B	EEOS	WEOS	1600	14	BA	EC-EX-040	12.0		VB	2022-07-16					PASS	CM
295 / 1B	SEOS	NEOS	1600	14	BA	EC-EX-040	12.0		VB	2022-07-16					PASS	CM
296 / 1B	SEOS	NEOS	1600	14	BA	EC-EX-040	12.0		VB	2022-07-16					PASS	CM
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						PAGE TOTAL	204.0									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 56 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-16

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
309 / 1B	SEOS	NEOS	1015	14	EB	EC-EX-041	12.0		VB	2022-07-16					PASS	CM
307 / 1B	SEOS	NEOS	1015	14	EB	EC-EX-041	12.0		VB	2022-07-16					PASS	CM
306 / 1B	SEOS	NEOS	1015	14	EB	EC-EX-041	12.0		VB	2022-07-16					PASS	CM
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PAGE TOTAL							36.0									

TEST METHOD
AL - AIR LANCE
AP - AIR PRESSURE
PS - POINT STRESS
ST - SPARK TEST
VB - EXTRUDED & VAC BOX

REMARKS:

QC TECH Glenn Revilla
SUPERVISOR Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 57 of 58

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001708 | AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A | SEAM DATE 2022-07-17

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE

WELD SEAMS

PANEL NUMBERS	SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
304 / 1B	SEOS	NEOS	915	11	EB	EC-EX-041	12.0		VB	2022-07-16					PASS	CM
302 / 1B	SEOS	NEOS	915	11	EB	EC-EX-041	12.0		VB	2022-07-16					PASS	CM
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PAGE TOTAL							24.0									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 58 of 58

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-06-20	900	EB	15	260°C	260°C	138	149	166	171	161	198	193	180	194	198	CM	EXT
2	EC-EX-041	2022-06-22	830	EB	15	260°C	260°C	148	157	149	142	140	180	186	189	181	178	CM	EXT
3	EC-EX-041	2022-06-22	900	EB	15	260°C	260°C	148	159	160	181	166	181	185	180	184	186	CM	EXT
4	EC-EX-041	2022-06-22	1230	EB	15	260°C	260°C	120	138	121	142	143	154	170	181	177	180	CM	EXT
5	EC-EX-041	2022-06-22	1600	EB	24	248°C	248°C	180	141	143	135	140	158	160	166	161	162	CM	EXT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
1A	2 / 5	1M W OF EEOS	DS1	P	EC-EX-041	2022-06-20	950	EB	22	2022-06-25	VB	CM
1B	1 / 2	INTERSECTION OF 5	T	G&W	EC-EX-041	2022-06-20	915	EB	22	2022-06-25	VB	CM
1C	4 / 5	INTERSECTION OF 1	T	G&W	EC-EX-041	2022-06-20	920	EB	22	2022-06-25	VB	CM
1D	4 / 5	INTERSECTION OF 7	T	G&W	EC-EX-041	2022-06-20	930	EB	22	2022-06-25	VB	CM
1E	7 / 9	3 M W OF EEOS	DS2&3	P	EC-EX-041	2022-06-20	1015	EB	22	2022-06-25	VB	CM
1F	13 / 15	2M W OF EEOS	DS 4&5	P	EC-EX-041	2022-06-20	1035	EB	22	2022-06-25	VB	CM
1G	15 / 17	2M W OF EEOS	DS7	P	EC-EX-041	2022-06-20	1055	EB	22	2022-06-25	VB	CM
1H	7 / 9	29M W OF EEOS	BO	P	EC-EX-041	2022-06-22	835	EB	18	2022-06-25	VB	CM
1I	6 / 7	INTERSECTION OF 9	T	G&W	EC-EX-041	2022-06-22	904	EB	18	2022-06-25	VB	CM
1J	6 / 7	INTERSECTION OF 4	T	G&W	EC-EX-041	2022-06-22	907	EB	18	2022-06-25	VB	CM
1K	3 / 4	INTERSECTION OF 6	T	G&W	EC-EX-041	2022-06-22	908	EB	18	2022-06-25	VB	CM
1L	3 / 4	INTERSECTION OF 1	T	G&W	EC-EX-041	2022-06-22	909	EB	18	2022-06-25	VB	CM
1M	8 / 9	INTERSECTION OF 6	T	G&W	EC-EX-041	2022-06-22	914	EB	18	2022-06-25	VB	CM
1N	8 / 9	INTERSECTION OF 10	T	G&W	EC-EX-041	2022-06-22	910	EB	18	2022-06-25	VB	CM
1O	10 / 11	INTERSECTION OF 9	T	G&W	EC-EX-041	2022-06-22	900	EB	18	2022-06-25	VB	CM
1P	10 / 11	INTERSECTION OF 12/13	T	G&W	EC-EX-041	2022-06-22	857	EB	18	2022-06-25	VB	CM
1Q	12 / 13	INTERSECTION OF 15	T	G&W	EC-EX-041	2022-06-22	850	EB	18	2022-06-25	VB	CM
1R	14 / 14	INTERSECTION OF 12/13	T	G&W	EC-EX-041	2022-06-22	932	EB	18	2022-06-25	VB	CM
1S	14 / 15	INTERSECTION OF 16	T	G&W	EC-EX-041	2022-06-22	934	EB	18	2022-06-25	VB	CM
1T	16 / 17	INTERSECTION OF 15	T	G&W	EC-EX-041	2022-06-22	936	EB	18	2022-06-25	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 1 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-06-22	830	EB	15	260°C	260°C	148	157	149	142	140	180	186	189	181	178	CM	EXT
2	EC-EX-041	2022-06-22	900	EB	15	260°C	260°C	148	159	160	181	166	181	185	180	184	186	CM	EXT
3	EC-EX-041	2022-06-22	1230	EB	15	260°C	260°C	120	138	121	142	143	154	170	181	177	180	CM	EXT
4	EC-EX-041	2022-06-22	1600	EB	24	248°C	248°C	180	141	143	135	140	158	160	166	161	162	CM	EXT
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
2A	16 / 17	INTERSECTION OF 18	T	G&W	EC-EX-041	2022-06-22	940	EB	18	2022-06-25	VB	CM
2B	16 / 17	SEAM LENGTH	FS	G&W	EC-EX-041	2022-06-22	942	EB	18	2022-06-25	VB	CM
2C	18 / 19	INTERSECTION OF 17	T	G&W	EC-EX-041	2022-06-22	947	EB	18	2022-06-25	VB	CM
2D	18 / 19	INTERSECTION OF 20	T	G&W	EC-EX-041	2022-06-22	1004	EB	18	2022-06-25	VB	CM
2E	20 / 21	3M E 1M N OF WEOS	D	P	EC-EX-041	2022-06-22	1309	EB	18	2022-06-25	VB	CM
2F	20 / 21	INTERSECTION OF 19	T	P	EC-EX-041	2022-06-22	1306	EB	18	2022-06-25	VB	CM
2G	20 / 21	INTERSECTION OF 25	T	G&W	EC-EX-041	2022-06-22	948	EB	20	2022-06-25	VB	CM
2H	21 / 25	1M EAST 0.5M SOUTH OF WEOS	D	P	EC-EX-041	2022-06-22	1008	EB	20	2022-06-25	VB	CM
2I	26 / 27	INTERSECTION OF 21/25	T	G&W	EC-EX-041	2022-06-22	1545	EB	20	2022-06-25	VB	CM
2J	26 / 27	INTERSECTION OF 29	T	G&W	EC-EX-041	2022-06-22	1050	EB	20	2022-06-25	VB	CM
2K	23 / 25	INTERSECTION OF 20	T	G&W	EC-EX-041	2022-06-22	1442	EB	20	2022-06-25	VB	CM
2L	22 / 23	INTERSECTION OF 20	T	G&W	EC-EX-041	2022-06-22	955	EB	20	2022-06-25	VB	CM
2M	24 / 25	INTERSECTION OF 23	T	G&W	EC-EX-041	2022-06-22	1247	EB	20	2022-06-25	VB	CM
2N	24 / 25	INTERSECTION OF 26	T	G&W	EC-EX-041	2022-06-22	1240	EB	20	2022-06-25	VB	CM
2O	28 / 29	INTERSECTION OF 26	T	G&W	EC-EX-041	2022-06-22	1052	EB	20	2022-06-25	VB	CM
2P	28 / 29	INTERSECTION OF 30	T	G&W	EC-EX-041	2022-06-22	1309	EB	20	2022-06-25	VB	CM
2Q	27 / 29	INTERSECTION OF 21	T	G&W	EC-EX-041	2022-06-22	1322	EB	20	2022-06-25	VB	CM
2R	30 / 31	INTERSECTION OF 21/29	T	G&W	EC-EX-041	2022-06-22	1300	EB	20	2022-06-25	VB	CM
2S	30 / 31	INTERSECTION OF 32	T	G&W	EC-EX-041	2022-06-22	1405	EB	20	2022-06-25	VB	CM
2T	31 / 32	INTERSECTION OF 21	T	P	EC-EX-041	2022-06-22	1414	EB	20	2022-06-25	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 2 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-06-22	830	EB	15	260°C	260°C	148	157	149	142	140	180	186	189	181	178	CM	EXT
2	EC-EX-041	2022-06-22	900	EB	15	260°C	260°C	148	159	160	181	166	181	185	180	184	186	CM	EXT
3	EC-EX-041	2022-06-22	1230	EB	15	260°C	260°C	120	138	121	142	143	154	170	181	177	180	CM	EXT
4	EC-EX-041	2022-06-22	1600	EB	24	248°C	248°C	180	141	143	135	140	158	160	166	161	162	CM	EXT
5	EC-EX-041	2022-06-23	1100	EB	15	260°C	260°C	116	120	118	116	132	160	176	170	187	167	CM	EXT
6	EC-EX-041	2022-06-24	800	EB	15	260°C	260°C	144	154	156	128	120	156	175	169	149	167	CM	EXT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
3A	30 / 32	29.3M E OF WEOS	BO	P	EC-EX-041	2022-06-22	1422	EB	20	2022-06-25	VB	CM
3B	33 / 34	INTERSECTION OF 32	T	G&W	EC-EX-041	2022-06-22	1405	EB	20	2022-06-25	VB	CM
3C	33 / 34	INTERSECTION OF 35	T	G&W	EC-EX-041	2022-06-22	1414	EB	20	2022-06-25	VB	CM
3D	35 / 36	INTERSECTION OF 34	T	G&W	EC-EX-041	2022-06-22	1422	EB	20	2022-06-25	VB	CM
3E	35 / 36	INTERSECTION OF 32	T	G&W	EC-EX-041	2022-06-22	1455	EB	20	2022-06-25	VB	CM
3F	35 / 36	SEAM LENGTH	FS	P	EC-EX-041	2022-06-23	1300	EB	20	2022-06-25	VB	CM
3G	35 / 37	16M WEST OF EEOS	BO	P	EC-EX-041	2022-06-23	1257	EB	20	2022-06-25	VB	CM
3H	18 / 20	WEOS	DS9	P	EC-EX-040	2022-06-24	1500	GB	22	2022-06-24	VB	CM
3I	22 / 23	WEOS	DS11	P	EC-EX-040	2022-06-24	1410	GB	22	2022-06-24	VB	CM
3J	28 / 30	WEOS	DS13	P	EC-EX-033	2022-06-24	1419	EA	22	2022-06-24	VB	CM
3K	30 / 32	WEOS	DS14	P	EC-EX-033	2022-06-24	1408	EA	22	2022-06-24	VB	CM
3L	32 / 33	WEOS	DS15	P	EC-EX-033	2022-06-24	1355	EA	22	2022-06-24	VB	CM
3M	33 / 35	WEOS	DS16	P	EC-EX-033	2022-06-24	1345	EA	22	2022-06-24	VB	CM
3N	35 / 37	WEOS	DS17	P	EC-EX-033	2022-06-24	1330	EA	22	2022-06-24	VB	CM
3O	37 / 39	WEOS	DS18	P	EC-EX-033	2022-06-24	1300	EA	22	2022-06-24	VB	CM
3P	37 / 38	INTERSECTION OF 36	T	P	EC-EX-041	2022-06-24	1733	EB	22	2022-06-25	VB	CM
3Q	37 / 38	INTERSECTION OF 39	T	G&W	EC-EX-041	2022-06-24	1725	EB	22	2022-06-25	VB	CM
3R	39 / 40	1M W OF EEOS	BO	P	EC-EX-041	2022-06-24	1733	EB	22	2022-06-25	VB	CM
3S	39 / 40	WEOS	DS19	P	EC-EX-041	2022-06-24	1230	EA	22	2022-06-24	VB	CM
3T	41 / 42	INTERSECTION OF 40	T	G&W	EC-EX-041	2022-06-24	850	EB	22	2022-06-25	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 3 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-033	2022-06-24	800	EA	15	260°C	260°C	134	135	140	132	135	171	175	189	181	179	CM	EXT
2	EC-EX-040	2022-06-24	800	GB	15	260°C	260°C	106	111	113	120	117	138	179	151	152	140	CM	EXT
3	EC-EX-041	2022-06-24	1200	EB	20	248°C	248°C	125	124	133	136	127	155	155	157	161	162	CM	EXT
4	EC-EX-040	2022-06-24	1200	GB	20	248°C	248°C	133	134	139	141	133	127	151	151	143	147	CM	EXT
5	EC-EX-033	2022-06-24	1200	EA	20	260°C	260°C	139	133	134	151	153	150	155	153	159	155	CM	EXT
6	EC-EX-040	2022-06-24	1600	GB	22	254°C	248°C	135	147	145	150	141	174	176	178	171	186	CM	EXT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 4 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-06-24	1600	EA	22	248°C	248°C	123	126	135	123	127	149	145	146	147	151	CM	EXT
2																			
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 5 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-06-24	800	EB	15	260°C	260°C	144	154	156	128	120	156	175	169	149	167	CM	EXT
2	EC-EX-033	2022-06-24	800	EA	15	260°C	260°C	134	135	140	132	135	171	175	189	181	179	CM	EXT
3	EC-EX-040	2022-06-24	800	GB	15	260°C	260°C	106	111	113	120	117	138	179	151	152	140	CM	EXT
4	EC-EX-041	2022-06-24	1200	EB	20	248°C	248°C	125	124	133	136	127	155	155	157	161	162	CM	EXT
5	EC-EX-040	2022-06-24	1200	GB	20	248°C	248°C	133	134	139	141	133	127	151	151	143	147	CM	EXT
6	EC-EX-033	2022-06-24	1200	EA	20	260°C	260°C	139	133	134	151	153	150	155	153	159	155	CM	EXT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
4A	41 / 42	INTERSECTION OF 43	T	G&W	EC-EX-041	2022-06-24	855	EB	22	2022-06-25	VB	CM
4B	43 / 44	INTERSECTION OF 42	T	P	EC-EX-041	2022-06-24	1834	EB	22	2022-06-25	VB	CM
4C	43 / 44	INTERSECTION OF 45	T	G&W	EC-EX-041	2022-06-24	1837	EB	22	2022-06-25	VB	CM
4D	38 / 39	1M W OF EEOS	BO	P	EC-EX-041	2022-06-24	840	EB	22	2022-06-25	VB	CM
4E	47 / 48	INTERSECTION OF 45	T	G&W	EC-EX-041	2022-06-24	1100	EB	22	2022-06-25	VB	CM
4F	46 / 47	INTERSECTION OF 45	T	G&W	EC-EX-041	2022-06-24	1019	EB	22	2022-06-25	VB	CM
4G	46 / 47	INTERSECTION OF 49	T	G&W	EC-EX-041	2022-06-24	1028	EB	22	2022-06-25	VB	CM
4H	47 / 49	9.5M E OF WEOS	IO	G&W	EC-EX-041	2022-06-24	1041	EB	22	2022-06-25	VB	CM
4I	47 / 48	INTERSECTION OF 49	T	G&W	EC-EX-041	2022-06-24	1050	EB	22	2022-06-25	VB	CM
4J	48 / 49	3M E 2M S OF WEOS	EE	P	EC-EX-041	2022-06-24	1148	EB	22	2022-06-25	VB	CM
4K	48 / 49	22.7M W OF EEOS	BO	P	EC-EX-041	2022-06-24	1124	EB	22	2022-06-25	VB	CM
4L	49 / 50	INTERSECTION OF 48	T	G&W	EC-EX-041	2022-06-24	1841	EB	22	2022-06-25	VB	CM
4M	48 / 49	6.5M W 1.5M S OF EEOS	EE	P	EC-EX-041	2022-06-24	1020	EB	22	2022-06-25	VB	CM
4N	49 / 50	INTERSECTION OF 51	T	G&W	EC-EX-041	2022-06-24	1845	EB	22	2022-06-25	VB	CM
4O	45 / 46	WEOS	DS23	P	EC-EX-033	2022-06-24	1035	EA	22	2022-06-24	VB	CM
4P	46 / 49	WEOS	DS24	P	EC-EX-033	2022-06-24	1006	EA	22	2022-06-24	VB	CM
4Q	46 / 49	1M E 1.2M S OF WEOS	EE	P	EC-EX-033	2022-06-24	1020	EA	22	2022-06-25	VB	CM
4R	49 / 51	WEOS	DS25	P	EC-EX-033	2022-06-24	944	EA	22	2022-06-25	VB	CM
4S	52 / 53	4M E OF WEOS	BO	P	EC-EX-041	2022-06-24	1002	EB	22	2022-06-25	VB	CM
4T	52 / 53	23M W OF EEOS	IO	G&W	EC-EX-041	2022-06-24	1100	EB	22	2022-06-25	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 6 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-040	2022-06-24	1600	GB	22	254°C	248°C	135	147	145	150	141	174	176	178	171	186	CM	EXT
2	EC-EX-041	2022-06-24	1600	EA	22	248°C	248°C	123	126	135	123	127	149	145	146	147	151	CM	EXT
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 7 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-06-24	800	EB	15	260°C	260°C	144	154	156	128	120	156	175	169	149	167	CM	EXT
2	EC-EX-033	2022-06-24	800	EA	15	260°C	260°C	134	135	140	132	135	171	175	189	181	179	CM	EXT
3	EC-EX-040	2022-06-24	800	GB	15	260°C	260°C	106	111	113	120	117	138	179	151	152	140	CM	EXT
4	EC-EX-041	2022-06-24	1200	EB	20	248°C	248°C	125	124	133	136	127	155	155	157	161	162	CM	EXT
5	EC-EX-040	2022-06-24	1200	GB	20	248°C	248°C	133	134	139	141	133	127	151	151	143	147	CM	EXT
6	EC-EX-033	2022-06-24	1200	EA	20	260°C	260°C	139	133	134	151	153	150	155	153	159	155	CM	EXT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
5A	53 / 54	INTERSECTION OF 52	T	G&W	EC-EX-041	2022-06-24	1155	EB	22	2022-06-25	VB	CM
5B	53 / 54	INTERSECTION OF 55	T	G&W	EC-EX-041	2022-06-24	1200	EB	22	2022-06-25	VB	CM
5C	54 / 55	9.6M W OF EEOS	IO	G&W	EC-EX-041	2022-06-24	1220	EB	22	2022-06-25	VB	CM
5D	55 / 56	INTERSECTION OF 54	T	G&W	EC-EX-041	2022-06-24	1218	EB	22	2022-06-25	VB	CM
5E	55 / 56	INTERSECTION OF 57	T	G&W	EC-EX-041	2022-06-24	1311	EB	22	2022-06-25	VB	CM
5F	56 / 57	15M W OF EEOS	IO	G&W	EC-EX-041	2022-06-24	1315	EB	22	2022-06-25	VB	CM
5G	57 / 59	0.5M W OF EEOS	BO	P	EC-EX-041	2022-06-24	1333	EB	22	2022-06-25	VB	CM
5H	59 / 61	1M W OF EEOS	BO	P	EC-EX-041	2022-06-24	1335	EB	22	2022-06-25	VB	CM
5I	51 / 52	WEOS	DS26	P	EC-EX-040	2022-06-24	1350	GB	22	2022-06-24	VB	CM
5J	52 / 5P	EXTENSION WEST END OF P52	EXT	CAP	EC-EX-040	2022-06-24	1325	GB	22	2022-06-25	VB	CM
5K	52 / 53	WEOS	DS27	P	EC-EX-040	2022-06-24	1245	GB	22	2022-06-24	VB	CM
5L	53 / 55	WEOS	DS28	P	EC-EX-040	2022-06-24	1155	GB	22	2022-06-24	VB	CM
5M	53 / 55	5M E OF WEOS	BO	P	EC-EX-041	2022-06-24	1152	EB	22	2022-06-25	VB	CM
5N	55 / 57	WEOS	DS29	P	EC-EX-040	2022-06-24	1055	GB	22	2022-06-24	VB	CM
5O	57 / 58	WEOS	DS30	P	EC-EX-040	2022-06-24	1032	GB	22	2022-06-24	VB	CM
5P	58 / 60	WEOS	DS31	P	EC-EX-040	2022-06-24	948	GB	22	2022-06-24	VB	CM
5Q	60 / 61	INTERSECTION OF 58	T	G&W	EC-EX-041	2022-06-24	1022	EB	22	2022-06-25	VB	CM
5R	58 / 59	INTERSECTION OF 57	T	G&W	EC-EX-041	2022-06-24	1408	EB	22	2022-06-25	VB	CM
5S	58 / 59	INTERSECTION OF 61	T	G&W	EC-EX-041	2022-06-24	1400	EB	22	2022-06-25	VB	CM
5T	57 / 58	25M E OF WEOS	BO	P	EC-EX-033	2022-06-24	1435	EA	22	2022-06-25	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 8 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-040	2022-06-24	1600	GB	22	254°C	248°C	135	147	145	150	141	174	176	178	171	186	CM	EXT
2	EC-EX-041	2022-06-24	1600	EA	22	248°C	248°C	123	126	135	123	127	149	145	146	147	151	CM	EXT
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 9 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-06-24	800	EB	15	260°C	260°C	144	154	156	128	120	156	175	169	149	167	CM	EXT
2	EC-EX-033	2022-06-24	800	EA	15	260°C	260°C	134	135	140	132	135	171	175	189	181	179	CM	EXT
3	EC-EX-040	2022-06-24	800	GB	15	260°C	260°C	106	111	113	120	117	138	179	151	152	140	CM	EXT
4	EC-EX-041	2022-06-24	1200	EB	20	248°C	248°C	125	124	133	136	127	155	155	157	161	162	CM	EXT
5	EC-EX-040	2022-06-24	1200	GB	20	248°C	248°C	133	134	139	141	133	127	151	151	143	147	CM	EXT
6	EC-EX-033	2022-06-24	1200	EA	20	260°C	260°C	139	133	134	151	153	150	155	153	159	155	CM	EXT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
6A	30 / 6A	EXTENSION WEST END OF P30	EXT	CAP	EC-EX-033	2022-06-24	1445	EA	22	2022-06-25	VB	CM
6B	60 / 61	INTERSECTION OF 62	T	G&W	EC-EX-041	2022-06-25	1240	EB	24	2022-06-26	VB	CM
6C	63 / 64	INTERSECTION OF 62	T	G&W	EC-EX-041	2022-06-25	1354	EB	24	2022-06-26	VB	CM
6D	63 / 64	INTERSECTION OF 65	T	G&W	EC-EX-041	2022-06-25	1350	EB	24	2022-06-26	VB	CM
6E	65 / 66	INTERSECTION OF 64	T	G&W	EC-EX-041	2022-06-25	1334	EB	24	2022-06-26	VB	CM
6F	65 / 66	INTERSECTION OF 67	T	G&W	EC-EX-041	2022-06-25	1330	EB	24	2022-06-26	VB	CM
6G	68 / 69	INTERSECTION OF 67	T	G&W	EC-EX-041	2022-06-25	1505	EB	24	2022-06-26	VB	CM
6H	68 / 69	INTERSECTION OF 70	T	G&W	EC-EX-041	2022-06-25	1500	EB	24	2022-06-26	VB	CM
6I	67 / 68	7M W OF EEOS	BO	P	EC-EX-041	2022-06-25	1345	EB	24	2022-06-26	VB	CM
6J	67 / 68	10.9M W OF EEOS	IO	G&W	EC-EX-041	2022-06-25	1415	EB	24	2022-06-26	VB	CM
6K	70 / 71	INTERSECTION OF 69	T	G&W	EC-EX-041	2022-06-25	1605	EB	24	2022-06-26	VB	CM
6L	70 / 71	INTERSECTION OF 72	T	G&W	EC-EX-041	2022-06-25	1610	EB	24	2022-06-26	VB	CM
6M	69 / 70	1.5M W OF EEOS	IO	G&W	EC-EX-041	2022-06-25	1600	EB	24	2022-06-26	VB	CM
6N	72 / 74	1M W OF EEOS	BO	P	EC-EX-041	2022-06-25	1800	EB	24	2022-06-26	VB	CM
6O	75 / 76	INTERSECTION OF 74	T	G&W	EC-EX-041	2022-06-26	910	EB	24	2022-06-26	VB	CM
6P	75 / 76	INTERSECTION OF 77	T	G&W	EC-EX-041	2022-06-26	900	EB	24	2022-06-26	VB	CM
6Q	74 / 76	1M E 3M N OF WEOS	EE	P	EC-EX-041	2022-06-26	915	EB	24	2022-06-26	VB	CM
6R	77 / 78	INTERSECTION OF 76	T	G&W	EC-EX-041	2022-06-26	849	EB	24	2022-06-26	VB	CM
6S	73 / 74	INTERSECTION OF 72	T	G&W	EC-EX-041	2022-06-26	1822	EB	26	2022-06-26	VB	CM
6T	73 / 74	INTERSECTION OF 75	T	G&W	EC-EX-041	2022-06-26	1816	EB	26	2022-06-26	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 10 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-040	2022-06-24	1600	GB	22	254°C	248°C	135	147	145	150	141	174	176	178	171	186	CM	EXT
2	EC-EX-041	2022-06-24	1600	EA	22	248°C	248°C	123	126	135	123	127	149	145	146	147	151	CM	EXT
3	EC-EX-041	2022-06-25	1230	EB	20	248°C	248°C	150	153	148	147	140	174	172	179	177	174	CM	EXT
4	EC-EX-041	2022-06-25	1740	EB	24	248°C	248°C	127	131	123	130	128	150	155	160	153	153	CM	EXT
5	EC-EX-041	2022-06-26	830	EB	15	260°C	260°C	139	140	142	145	153	180	180	182	178	169	CM	EXT
6	EC-EX-041	2022-06-26	1330	EB	26	248°C	248°C	160	134	140	139	159	176	190	191	182	179	CM	EXT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 11 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-06-26	1600	EB	26	248°C	248°C	125	124	121	132	119	154	156	158	160	164	CM	EXT
2																			
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 12 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-06-26	830	EB	15	260°C	260°C	139	140	142	145	153	180	180	182	178	169	CM	EXT
2	EC-EX-041	2022-06-26	1330	EB	26	248°C	248°C	160	134	140	139	159	176	190	191	182	179	CM	EXT
3	EC-EX-041	2022-06-26	1600	EB	26	248°C	248°C	125	124	121	132	119	154	156	158	160	164	CM	EXT
4	EC-EX-041	2022-06-27	1030	EB	22	254°C	254°C	117	121	114	135	116	168	155	162	169	171	CM	EXT
5	EC-EX-041	2022-06-27	1600	EB	26	254°C	254°C	150	152	150	151	145	160	177	169	169	170	CM	EXT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
7A	77 / 79	15M E OF WEOS	IO	G&W	EC-EX-041	2022-06-26	1345	EB	26	2022-06-26	VB	CM
7B	77 / 79	32M E OF WEOS	BO	P	EC-EX-041	2022-06-26	1406	EB	26	2022-06-26	VB	CM
7C	77 / 79	24.6M E OF WEOS	IO	G&W	EC-EX-041	2022-06-26	1350	EB	26	2022-06-26	VB	CM
7D	80 / 81	INTERSECTION OF 79	T	G&W	EC-EX-041	2022-06-26	1412	EB	26	2022-06-26	VB	CM
7E	80 / 81	INTERSECTION OF 82	T	G&W	EC-EX-041	2022-06-26	1418	EB	26	2022-06-26	VB	CM
7F	82 / 83	INTERSECTION OF 81	T	G&W	EC-EX-041	2022-06-26	1440	EB	26	2022-06-26	VB	CM
7G	82 / 83	INTERSECTION OF 84	T	G&W	EC-EX-041	2022-06-26	1446	EB	26	2022-06-26	VB	CM
7H	86 / 87	INTERSECTION OF 85	T	G&W	EC-EX-041	2022-06-26	1556	EB	26	2022-06-26	VB	CM
7I	86 / 87	INTERSECTION OF 88	T	G&W	EC-EX-041	2022-06-26	1600	EB	26	2022-06-26	VB	CM
7J	77 / 78	INTERSECTION OF 79	T	G&W	EC-EX-041	2022-06-26	1410	EB	26	2022-06-26	VB	CM
7K	88 / 89	INTERSECTION OF87	T	G&W	EC-EX-041	2022-06-26	1612	EB	26	2022-06-26	VB	CM
7L	88 / 89	INTERSECTION OF 90	T	G&W	EC-EX-041	2022-06-26	1620	EB	26	2022-06-26	VB	CM
7M	90 / 91	INTERSECTION OF 89	T	G&W	EC-EX-041	2022-06-26	1505	EB	26	2022-06-26	VB	CM
7N	90 / 91	INTERSECTION OF 92	T	G&W	EC-EX-041	2022-06-26	1707	EB	26	2022-06-26	VB	CM
7O	94 / 95	INTERSECTION OF 93	T	G&W	EC-EX-041	2022-06-27	1333	EB	26	2022-06-27	VB	CM
7P	94 / 95	INTERSECTION OF 96	T	G&W	EC-EX-041	2022-06-27	1353	EB	26	2022-06-27	VB	CM
7Q	94 / 95	2M S OF NEOS	BO	P	EC-EX-041	2022-06-27	1355	EB	26	2022-06-27	VB	CM
7R	96 / 97	INTERSECTION OF 95	T	G&W	EC-EX-041	2022-06-27	1413	EB	26	2022-06-27	VB	CM
7S	96 / 97	INTERSECTION OF 98	T	G&W	EC-EX-041	2022-06-27	1418	EB	26	2022-06-27	VB	CM
7T	98 / 99	INTERSECTION OF 97	T	G&W	EC-EX-041	2022-06-27	1425	EB	26	2022-06-27	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 13 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-06-27	1030	EB	22	254°C	254°C	117	121	114	135	116	168	155	162	169	171	CM	EXT
2	EC-EX-041	2022-06-27	1600	EB	26	254°C	254°C	150	152	150	151	145	160	177	169	169	170	CM	EXT
3	EC-EX-041	2022-06-28	900	EB	18	254°C	254°C	157	155	134	151	143	184	183	181	186	182	CM	EXT
4	EC-EX-034	2022-06-28	900	EA	18	254°C	254°C	128	132	138	142	125	163	168	168	165	165	CM	EXT
5	EC-EX-040	2022-06-28	900	RF	18	248°C	248°C	135	120	126	130	136	173	172	174	179	179	CM	EXT
6	EC-EX-041	2022-06-28	1300	EB	26	248°C	248°C	144	147	140	136	139	160	159	157	161	158	CM	EXT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
8A	98 / 99	INTERSECTION OF 100	T	G&W	EC-EX-041	2022-06-27	1428	EB	26	2022-06-27	VB	CM
8B	100 / 101	INTERSECTION OF 99	T	G&W	EC-EX-041	2022-06-27	1641	EB	26	2022-06-27	VB	CM
8C	100 / 101	INTERSECTION OF 102	T	G&W	EC-EX-041	2022-06-27	1626	EB	26	2022-06-27	VB	CM
8D	101 / 102	0.5M E 3M S OF WEOS	EE	P	EC-EX-041	2022-06-27	1619	EB	26	2022-06-27	VB	CM
8E	102 / 103	INTERSECTION OF 101	T	G&W	EC-EX-041	2022-06-27	1637	EB	26	2022-06-27	VB	CM
8F	102 / 103	INTERSECTION OF 104	T	G&W	EC-EX-041	2022-06-27	1639	EB	26	2022-06-27	VB	CM
8G	106 / 107	INTERSECTION OF 105	T	G&W	EC-EX-041	2022-06-27	1741	EB	26	2022-06-27	VB	CM
8H	108 / 109	INTERSECTION OF 107	T	G&W	EC-EX-041	2022-06-27	1813	EB	26	2022-06-27	VB	CM
8I	106 / 107	INTERSECTION OF 108	T	G&W	EC-EX-041	2022-06-27	1813	EB	26	2022-06-27	VB	CM
8J	65 / 67	0.5M E OF WEOS	DS32	P	EC-EX-041	2022-06-28	1625	EB	26	2022-06-30	VB	CM
8K	67 / 68	0.5M E OF WEOS	DS33	P	EC-EX-041	2022-06-28	1610	EB	26	2022-06-30	VB	CM
8L	68 / 70	0.5M E OF WEOS	DS34	P	EC-EX-041	2022-06-28	1605	EB	26	2022-06-30	VB	CM
8M	70 / 72	0.5M E OF WEOS	DS35	P	EC-EX-041	2022-06-28	1452	EB	26	2022-06-30	VB	CM
8N	72 / 73	0.5M E OF WEOS	DS36	P	EC-EX-041	2022-06-28	1440	EB	26	2022-06-30	VB	CM
8O	73 / 75	0.5M E OF WEOS	DS37	P	EC-EX-041	2022-06-28	1226	EB	26	2022-06-30	VB	CM
8P	75 / 77	0.5M E OF WEOS	DS38	P	EC-EX-041	2022-06-28	1205	EB	26	2022-06-30	VB	CM
8Q	77 / 79	0.5M E OF WEOS	DS39	P	EC-EX-041	2022-06-28	1100	EB	26	2022-06-30	VB	CM
8R	79 / 80	0.5M E OF WEOS	DS40	P	EC-EX-041	2022-06-28	1026	EB	26	2022-06-30	VB	CM
8S	82 / 84	0.5M E OF WEOS	DS41	P	EC-EX-034	2022-06-28	1650	EA	26	2022-06-30	VB	CM
8T	65 / 86	0.5M E OF WEOS	DS43	P	EC-EX-034	2022-06-28	1630	EA	26	2022-06-30	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 14 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-040	2022-06-28	1300	GB	26	248°C	248°C	141	147	130	135	139	155	160	151	150	147	CM	EXT
2	EC-EX-034	2022-06-28	1300	EA	26	248°C	248°C	150	144	148	140	145	162	162	164	161	163	CM	EXT
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 15 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-06-28	900	EB	18	254°C	254°C	157	155	134	151	143	184	183	181	186	182	CM	EXT
2	EC-EX-034	2022-06-28	900	EA	18	254°C	254°C	128	132	138	142	125	163	168	168	165	165	CM	EXT
3	EC-EX-040	2022-06-28	900	RF	18	248°C	248°C	135	120	126	130	136	173	172	174	179	179	CM	EXT
4	EC-EX-041	2022-06-28	1300	EB	26	248°C	248°C	144	147	140	136	139	160	159	157	161	158	CM	EXT
5	EC-EX-040	2022-06-28	1300	GB	26	248°C	248°C	141	147	130	135	139	155	160	151	150	147	CM	EXT
6	EC-EX-034	2022-06-28	1300	EA	26	248°C	248°C	150	144	148	140	145	162	162	164	161	163	CM	EXT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
9A	86 / 88	0.5M E OF WEOS	DS44	P	EC-EX-034	2022-06-28	1600	EA	26	2022-06-30	VB	CM
9B	88 / 90	0.5M E OF WEOS	DS45	P	EC-EX-034	2022-06-28	1440	EA	26	2022-06-30	VB	CM
9C	90 / 92	0.5M E OF WEOS	DS46	P	EC-EX-034	2022-06-28	1405	EA	26	2022-06-30	VB	CM
9D	93 / 94	0.5M E OF WEOS	DS47	P	EC-EX-034	2022-06-28	1250	EA	26	2022-06-30	VB	CM
9E	94 / 96	0.5M E OF WEOS	DS48	P	EC-EX-034	2022-06-28	1219	EA	26	2022-06-30	VB	CM
9F	96 / 98	0.5M E OF WEOS	DS49	P	EC-EX-034	2022-06-28	1150	EA	26	2022-06-30	VB	CM
9G	98 / 100	0.5M E OF WEOS	DS50	P	EC-EX-034	2022-06-28	1040	EA	26	2022-06-30	VB	CM
9H	100 / 102	0.5M E OF WEOS	DS51	P	EC-EX-034	2022-06-28	1025	EA	26	2022-06-30	VB	CM
9I	102 / 104	0.5M E OF WEOS	DS52	P	EC-EX-040	2022-06-28	1655	GB	26	2022-06-30	VB	CM
9J	104 / 105	0.5M E OF WEOS	DS53	P	EC-EX-040	2022-06-28	1630	GB	26	2022-06-30	VB	CM
9K	105 / 106	0.5M E OF WEOS	DS54	P	EC-EX-040	2022-06-28	1600	GB	26	2022-06-30	VB	CM
9L	106 / 108	0.5M E OF WEOS	DS55	P	EC-EX-040	2022-06-28	1412	GB	26	2022-06-30	VB	CM
9M	84 / 85	0.5M E OF WEOS	DS42	P	EC-EX-040	2022-06-28	1306	GB	26	2022-06-30	VB	CM
9N	108 / 110	0.5M E OF WEOS	DS56	P	EC-EX-040	2022-06-28	1220	GB	26	2022-06-30	VB	CM
9O	110 / 112	0.5M E OF WEOS	DS57	P	EC-EX-040	2022-06-28	1150	GB	26	2022-06-30	VB	CM
9P	112 / 114	0.5M E OF WEOS	DS58	P	EC-EX-040	2022-06-28	1040	GB	26	2022-06-30	VB	CM
9Q	107 / 109	5M W 3M N OF EEOS	SI	P	EC-EX-041	2022-06-29	940	EB	26	2022-06-30	VB	CM
9R	108 / 109	INTERSECTION OF 110	T	G&W	EC-EX-041	2022-06-29	1420	EB	26	2022-06-30	VB	CM
9S	110 / 111	INTERSECTION OF 109	T	G&W	EC-EX-041	2022-06-29	1407	EB	26	2022-06-30	VB	CM
9T	110 / 111	INTERSECTION OF 113	T	G&W	EC-EX-041	2022-06-29	1420	EB	26	2022-06-30	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 16 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-06-29	830	EB	17	254°C	254°C	131	129	142	147	147	179	182	160	190	185	CM	EXT
2	EC-EX-041	2022-06-29	1400	EB	17	254°C	254°C	148	155	151	146	159	174	176	173	180	171	CM	EXT
3	EC-EX-041	2022-06-29	1400	EB	26	254°C	254°C	148	155	151	146	159	174	176	173	180	171	CM	EXT
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 17 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-06-29	830	EB	17	254°C	254°C	131	129	142	147	147	179	182	160	190	185	CM	EXT
2	EC-EX-041	2022-06-29	1400	EB	17	254°C	254°C	148	155	151	146	159	174	176	173	180	171	CM	EXT
3	EC-EX-041	2022-06-29	1400	EB	26	254°C	254°C	148	155	151	146	159	174	176	173	180	171	CM	EXT
4	EC-EX-041	2022-06-30	800	EA	18	254°C	254°C	121	123	120	121	129	156	156	165	168	168	CM	EXT
5	EC-EX-041	2022-06-30	1300	EA	26	251°C	251°C	118	121	122	123	116	143	136	137	140	153	CM	EXT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
10A	112 / 113	INTETSECTION OF 110	T	G&W	EC-EX-041	2022-06-29	1422	EB	26	2022-07-02	VB	CM
10B	112 / 113	INTERSECTION OF 114	T	G&W	EC-EX-041	2022-06-29	1425	EB	26	2022-07-02	VB	CM
10C	114 / 115	INTERSECTION OF 113	T	G&W	EC-EX-041	2022-06-29	1445	EB	26	2022-07-02	VB	CM
10D	114 / 115	INTERSECTION OF 116	T	G&W	EC-EX-041	2022-06-29	1500	EB	26	2022-07-02	VB	CM
10E	116 / 117	INTERSECTION OF 115	T	G&W	EC-EX-041	2022-06-30	1502	EA	26	2022-07-02	VB	CM
10F	116 / 117	INTERSECTION OF 119	T	G&W	EC-EX-041	2022-06-30	823	EA	26	2022-07-02	VB	CM
10G	118 / 119	INTERSECTION OF 116	T	G&W	EC-EX-041	2022-06-30	825	EA	26	2022-07-02	VB	CM
10H	118 / 119	INTERSECTION OF 121	T	G&W	EC-EX-041	2022-06-30	826	EA	26	2022-07-02	VB	CM
10I	120 / 121	INTERSECTION OF 118	D	G&W	EC-EX-041	2022-06-30	830	EA	26	2022-07-02	VB	CM
10J	113 / 115	4M W OF EEOS	D	P	EC-EX-041	2022-06-30	930	EA	26	2022-07-02	VB	CM
10K	115 / 117	1M W OF EEOS	IO	G&W	EC-EX-041	2022-06-30	955	EA	26	2022-07-02	VB	CM
10L	121 / 123	44M W OF EEOS	SI	G&W	EC-EX-041	2022-06-30	1407	EA	26	2022-07-02	VB	CM
10M	120 / 122	3M W 2M S OF EEOS	T	G&W	EC-EX-041	2022-06-30	945	EA	26	2022-07-02	VB	CM
10N	122 / 123	INTERSECTION OF 120	T	G&W	EC-EX-041	2022-06-30	1340	EA	26	2022-07-02	VB	CM
10O	122 / 123	INTERSECTION OF 124	T	G&W	EC-EX-041	2022-06-30	1346	EA	26	2022-07-02	VB	CM
10P	120 / 121	INTERSECTION OF 123	T	G&W	EC-EX-041	2022-06-30	1327	EA	26	2022-07-02	VB	CM
10Q	124 / 125	INTERSECTION OF 123	T	G&W	EC-EX-041	2022-06-30	1430	EA	26	2022-07-02	VB	CM
10R	124 / 125	INTERSECTION OF 127	T	G&W	EC-EX-041	2022-06-30	1437	EA	26	2022-07-02	VB	CM
10S	126 / 127	INTERSECTION OF 124	T	G&W	EC-EX-041	2022-06-30	1550	EA	26	2022-07-02	VB	CM
10T	126 / 127	INTERSECTION OF 129	T	G&W	EC-EX-041	2022-06-30	1655	EA	26	2022-07-02	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 18 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-06-30	800	EA	18	254°C	254°C	121	123	120	121	129	156	156	165	168	168	CM	EXT
2	EC-EX-041	2022-06-30	1300	EA	26	251°C	251°C	118	121	122	123	116	143	136	137	140	153	CM	EXT
3	EC-EX-041	2022-07-01	900	EB	18	254°C	254°C	149	145	145	150	133	173	181	172	181	174	CM	EXT
4	EC-EX-041	2022-07-01	1430	EB	25	248°C	248°C	135	138	130	134	125	160	159	162	155	156	CM	EXT
5	EC-EX-034	2022-07-01	1600	EA	26	248°C	248°C	136	132	127	144	126	138	137	145	145	145	CM	EXT
6	EC-EX-040	2022-07-01	1640	GB	25	248°C	248°C	123	135	135	140	127	145	149	154	164	159	CM	EXT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
11A	128 / 129	INTERSECTION OF 126	T	G&W	EC-EX-041	2022-06-30	1610	EA	26	2022-07-02	VB	CM
11B	128 / 129	INTERSECTION OF 130	T	G&W	EC-EX-041	2022-06-30	1604	EA	26	2022-07-02	VB	CM
11C	130 / 131	INTERSECTION OF 129	T	G&W	EC-EX-041	2022-06-30	1444	EA	26	2022-07-02	VB	CM
11D	130 / 131	INTERSECTION OF 133	T	G&W	EC-EX-041	2022-07-01	931	EB	26	2022-07-02	VB	CM
11E	132 / 133	INTERSECTION OF 130	T	G&W	EC-EX-041	2022-07-01	937	EB	26	2022-07-02	VB	CM
11F	132 / 133	INTERSECTION OF 135	T	G&W	EC-EX-041	2022-07-01	935	EB	26	2022-07-02	VB	CM
11G	134 / 135	INTERSECTION OF 132	T	G&W	EC-EX-041	2022-07-01	940	EB	26	2022-07-02	VB	CM
11H	134 / 135	INTERSECTION OF 137	T	G&W	EC-EX-041	2022-07-01	1451	EB	26	2022-07-02	VB	CM
11I	136 / 137	INTERSECTION OF 134	T	G&W	EC-EX-041	2022-07-01	1614	EB	26	2022-07-02	VB	CM
11J	136 / 137	INTERSECTION OF 139	T	G&W	EC-EX-041	2022-07-01	1611	EB	26	2022-07-02	VB	CM
11K	141 / 142	INTERSECTION OF 139	T	G&W	EC-EX-041	2022-07-01	1556	EB	26	2022-07-02	VB	CM
11L	141 / 142	INTERSECTION OF 144	T	G&W	EC-EX-041	2022-07-01	1551	EB	26	2022-07-02	VB	CM
11M	143 / 144	INTERSECTION OF 141	T	G&W	EC-EX-041	2022-07-01	1626	EB	26	2022-07-02	VB	CM
11N	138 / 139	INTERSECTION OF 136	T	G&W	EC-EX-041	2022-07-01	1630	EB	26	2022-07-02	VB	CM
11O	138 / 139	INTERSECTION OF 141	T	G&W	EC-EX-041	2022-07-01	1636	EB	26	2022-07-02	VB	CM
11P	140 / 141	INTERSECTION OF 138	T	G&W	EC-EX-041	2022-07-01	1649	EB	26	2022-07-02	VB	CM
11Q	140 / 141	INTERSECTION OF 143	T	G&W	EC-EX-041	2022-07-01	1651	EB	26	2022-07-02	VB	CM
11R	132 / 134	5M E 1M S OF WEOS	SI	P	EC-EX-041	2022-07-01	1705	EB	26	2022-07-02	VB	CM
11S	130 / 132	4M E 2M S OF WEOS	SI	P	EC-EX-041	2022-07-01	1717	EB	26	2022-07-02	VB	CM
11T	114 / 116	0.5M E OF WEOS	DS59	P	EC-EX-041	2022-07-01	1820	EB	26	2022-07-02	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 19 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-07-01	900	EB	18	254°C	254°C	149	145	145	150	133	173	181	172	181	174	CM	EXT
2	EC-EX-041	2022-07-01	1430	EB	25	248°C	248°C	135	138	130	134	125	160	159	162	155	156	CM	EXT
3	EC-EX-034	2022-07-01	1600	EA	26	248°C	248°C	136	132	127	144	126	138	137	145	145	145	CM	EXT
4	EC-EX-040	2022-07-01	1640	GB	25	248°C	248°C	123	135	135	140	127	145	149	154	164	159	CM	EXT
5	EC-EX-041	2022-07-02	1130	EB	26	248°C	248°C	121	122	124	126	130	145	145	146	152	157	CM	EXT
6	EC-EX-041	2022-07-02	1400	EB	26	248°C	248°C	114	115	128	132	122	161	163	160	162	161	CM	EXT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
12A	116 / 118	0.5M E OF WEOS	DS60	P	EC-EX-041	2022-07-01	1804	EB	26	2022-07-02	VB	CM
12B	120 / 122	0.5M E OF WEOS	DS62	P	EC-EX-041	2022-07-01	1750	EB	26	2022-07-02	VB	CM
12C	122 / 124	0.5M E OF WEOS	DS63	P	EC-EX-040	2022-07-01	1735	KK	26	2022-07-02	VB	CM
12D	124 / 126	0.5M E OF WEOS	DS64	P	EC-EX-040	2022-07-01	1740	KK	26	2022-07-02	VB	CM
12E	126 / 128	0.5M E OF WEOS	DS65	P	EC-EX-040	2022-07-01	1710	KK	26	2022-07-02	VB	CM
12F	128 / 130	0.5M E OF WEOS	DS66	P	EC-EX-034	2022-07-01	1802	EA	26	2022-07-02	VB	CM
12G	130 / 132	0.5M E OF WEOS	DS67	P	EC-EX-034	2022-07-01	1744	EA	26	2022-07-02	VB	CM
12H	132 / 134	0.5M E OF WEOS	DS68	P	EC-EX-034	2022-07-01	1717	EA	26	2022-07-02	VB	CM
12I	134 / 136	0.5M E OF WEOS	DS69	P	EC-EX-034	2022-07-01	1650	EA	26	2022-07-02	VB	CM
12J	136 / 138	0.5M E OF WEOS	DS70	P	EC-EX-034	2022-07-01	1640	EA	26	2022-07-02	VB	CM
12K	138 / 141	0.5M E OF WEOS	DS71	P	EC-EX-034	2022-07-01	1610	EA	26	2022-07-02	VB	CM
12L	140 / 143	0.5M E OF WEOS	DS72	P	EC-EX-034	2022-07-01	1605	EA	26	2022-07-02	VB	CM
12M	143 / 144	INTERSECTION OF 146	T	G&W	EC-EX-041	2022-07-02	1413	EB	28	2022-07-02	VB	CM
12N	145 / 146	INTERSECTION OF 143	T	G&W	EC-EX-041	2022-07-02	1258	EB	28	2022-07-02	VB	CM
12O	145 / 146	INTERSECTION OF 148	T	G&W	EC-EX-041	2022-07-02	1419	EB	28	2022-07-02	VB	CM
12P	147 / 148	INTERSECTION OF 145	T	G&W	EC-EX-041	2022-07-02	1422	EB	28	2022-07-02	VB	CM
12Q	149 / 148	INTERSECTION OF 150	T	G&W	EC-EX-041	2022-07-02	1424	EB	28	2022-07-02	VB	CM
12R	149 / 150	INTERSECTION OF 147	T	G&W	EC-EX-041	2022-07-02	1428	EB	28	2022-07-02	VB	CM
12S	149 / 150	INTERSECTION OF 152	T	G&W	EC-EX-041	2022-07-02	1414	EB	28	2022-07-02	VB	CM
12T	150 / 151	INTERSECTION OF 148	T	G&W	EC-EX-041	2022-07-02	1353	EB	28	2022-07-02	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 20 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-07-02	1730	EM	26	248°C	248°C	124	119	116	119	121	140	151	157	152	156	CM	EXT
2																			
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 21 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-07-02	1130	EB	26	248°C	248°C	121	122	124	126	130	145	145	146	152	157	CM	EXT
2	EC-EX-041	2022-07-02	1400	EB	26	248°C	248°C	114	115	128	132	122	161	163	160	162	161	CM	EXT
3	EC-EX-041	2022-07-02	1730	EM	26	248°C	248°C	124	119	116	119	121	140	151	157	152	156	CM	EXT
4	EC-EX-041	2022-07-03	1030	EB	26	246°C	246°C	160	135	160	166	167	180	188	181	188	182	CM	EXT
5	EC-EX-041	2022-07-03	1640	EB	26	243°C	243°C	145	143	145	146	152	166	174	166	165	170	CM	EXT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
13A	150 / 151	INTERSECTION OF 152	T	G&W	EC-EX-041	2022-07-02	1405	EB	28	2022-07-02	VB	CM
13B	152 / 153	INTERSECTION OF 151	T	G&W	EC-EX-041	2022-07-02	1403	EB	28	2022-07-02	VB	CM
13C	152 / 153	INTERSECTION OF 154	T	G&W	EC-EX-041	2022-07-02	1657	EB	28	2022-07-02	VB	CM
13D	154 / 155	INTERSECTION OF 153	T	G&W	EC-EX-041	2022-07-02	1710	EB	28	2022-07-02	VB	CM
13E	153 / 154	3.5M W OF EEOS	WS	G&W	EC-EX-041	2022-07-02	1707	EB	28	2022-07-02	VB	CM
13F	154 / 155	INTERSECTION OF 157	T	G&W	EC-EX-041	2022-07-02	1713	EB	28	2022-07-02	VB	CM
13G	156 / 157	INTERSECTION OF 154	T	G&W	EC-EX-041	2022-07-02	1758	EB	28	2022-07-02	VB	CM
13H	156 / 157	INTERSECTION OF 159	T	G&W	EC-EX-041	2022-07-02	1800	EB	28	2022-07-02	VB	CM
13I	157 / 158	INTERSECTION OF 155	T	G&W	EC-EX-041	2022-07-02	1722	EB	28	2022-07-02	VB	CM
13J	157 / 158	INTERSECTION OF 159	T	G&W	EC-EX-041	2022-07-02	1725	EB	28	2022-07-02	VB	CM
13K	159 / 160	INTERSECTION OF 158	T	G&W	EC-EX-041	2022-07-02	1735	EB	28	2022-07-02	VB	CM
13L	158 / 160	6M E OF WEOS	BO	P	EC-EX-041	2022-07-02	1748	EB	28	2022-07-02	VB	CM
13M	144 / 146	3.5M W OF EEOS	WS	P	EC-EX-041	2022-07-02	1600	EB	28	2022-07-02	VB	CM
13N	145 / 148	1M E OF WEOS	DS73	P	EC-EX-041	2022-07-03	1100	EB	28	2022-07-02	VB	CM
13O	148 / 151	26M E OF WEOS	DS74	P	EC-EX-041	2022-07-03	1212	EB	28	2022-07-02	VB	CM
13P	151 / 153	15M W OF EEOS	DS75	P	EC-EX-041	2022-07-03	1240	EB	28	2022-07-02	VB	CM
13Q	154 / 157	1M W OF EEOS	DS76	P	EC-EX-041	2022-07-03	1259	EB	28	2022-07-02	VB	CM
13R	157 / 159	0.5M E OF WEOS	DS77	P	EC-EX-041	2022-07-03	1326	EB	28	2022-07-02	VB	CM
13S	156 / 157	1M S OF NEOS	DS78	P	EC-EX-041	2022-07-03	1338	EB	28	2022-07-02	VB	CM
13T	159 / 160	INTERSECTION OF 161	T	G&W	EC-EX-041	2022-07-03	1820	EB	28	2022-07-02	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 22 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-07-03	1030	EB	26	246°C	246°C	160	135	160	166	167	180	188	181	188	182	CM	EXT
2	EC-EX-041	2022-07-03	1640	EB	26	243°C	243°C	145	143	145	146	152	166	174	166	165	170	CM	EXT
3	EC-EX-041	2022-07-04	830	EB	24	243°C	243°C	127	115	136	125	120	197	192	199	194	197	CM	EXT
4	EC-EX-041	2022-07-04	1430	EB	30	243°C	243°C	130	118	124	110	116	140	141	149	143	147	CM	EXT
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
14A	161 / 162	INTERSECTION OF 163	T	G&W	EC-EX-041	2022-07-03	1750	EB	28	2022-07-04	VB	CM
14B	161 / 163	44M E OF WEOS	BO	P	EC-EX-041	2022-07-03	1730	EB	28	2022-07-04	VB	CM
14C	164 / 165	INTERSECTION OF 166	T	G&W	EC-EX-041	2022-07-03	1804	EB	28	2022-07-04	VB	CM
14D	166 / 167	INTERSECTION OF 165	T	G&W	EC-EX-041	2022-07-03	1835	EB	28	2022-07-04	VB	CM
14E	166 / 167	INTERSECTION OF 168	T	G&W	EC-EX-041	2022-07-03	1840	EB	28	2022-07-04	VB	CM
14F	168 / 169	INTERSECTION OF 167	T	G&W	EC-EX-041	2022-07-04	831	EB	28	2022-07-04	VB	CM
14G	168 / 169	INTERSECTION OF 170	T	G&W	EC-EX-041	2022-07-04	834	EB	28	2022-07-04	VB	CM
14H	170 / 171	INTERSECTION OF 169	T	G&W	EC-EX-041	2022-07-04	847	EB	28	2022-07-04	VB	CM
14I	170 / 171	INTERSECTION OF 172	T	G&W	EC-EX-041	2022-07-04	845	EB	28	2022-07-04	VB	CM
14J	161 / 163	5M E OF WEOS	IO	G&W	EC-EX-041	2022-07-04	923	EB	28	2022-07-04	VB	CM
14K	161 / 163	52M W OF EEOS	DS79	P	EC-EX-041	2022-07-04	1000	EB	28	2022-07-04	VB	CM
14L	172 / 174	38 M E OF WEOS	IO	G&W	EC-EX-041	2022-07-04	1457	EB	30	2022-07-04	VB	CM
14M	172 / 173	INTERSECTION OF 174	T	G&W	EC-EX-041	2022-07-04	1430	EB	30	2022-07-04	VB	CM
14N	174 / 175	33M W OF EEOS	BO	P	EC-EX-041	2022-07-04	1447	EB	30	2022-07-04	VB	CM
14O	176 / 177	INTERSECTION OF 175	T	G&W	EC-EX-041	2022-07-04	1459	EB	30	2022-07-04	VB	CM
14P	176 / 177	INTERSECTION OF 178	T	G&W	EC-EX-041	2022-07-04	1501	EB	30	2022-07-04	VB	CM
14Q	178 / 179	INTERSECTION OF 177	T	G&W	EC-EX-041	2022-07-04	1503	EB	30	2022-07-04	VB	CM
14R	178 / 179	INTERSECTION OF 180	T	G&W	EC-EX-041	2022-07-04	1506	EB	30	2022-07-04	VB	CM
14S	180 / 181	INTERSECTION OF 182	T	G&W	EC-EX-041	2022-07-04	1508	EB	30	2022-07-04	VB	CM
14T	179 / 181	1M W OF EEOS	BO	P	EC-EX-041	2022-07-04	1513	EB	30	2022-07-04	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 23 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-07-04	830	EB	24	243°C	243°C	127	115	136	125	120	197	192	199	194	197	CM	EXT
2	EC-EX-041	2022-07-04	1430	EB	30	243°C	243°C	130	118	124	110	116	140	141	149	143	147	CM	EXT
3	EC-EX-041	2022-07-06	1000	EB	30	243°C	243°C	133	141	150	141	114	167	185	180	180	176	CM	EXT
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
15A	182 / 184	36M W OF EEOS	BO	P	EC-EX-041	2022-07-04	1530	EB	30	2022-07-04	VB	CM
15B	183 / 184	INTERSECTION OF 182	T	G&W	EC-EX-041	2022-07-04	1533	EB	30	2022-07-04	VB	CM
15C	184 / 186	4M W OF EEOS	IO	G&W	EC-EX-041	2022-07-04	1519	EB	30	2022-07-04	VB	CM
15D	184 / 186	5M E OF WEOS	IO	G&W	EC-EX-041	2022-07-04	1526	EB	30	2022-07-04	VB	CM
15E	172 / 173	INTERSECTION OF 171	T	G&W	EC-EX-041	2022-07-04	1433	EB	30	2022-07-04	VB	CM
15F	174 / 175	49 M E OF WEOS	DS85	P	EC-EX-041	2022-07-06	1042	EB	26	2022-07-06	VB	CM
15G	180 / 182	36M E OF WEOS	DS86	P	EC-EX-041	2022-07-06	1057	EB	26	2022-07-06	VB	CM
15H	189 / 190	INTERSECTION OF 187	T	G&W	EC-EX-041	2022-07-06	1148	EB	26	2022-07-06	VB	CM
15I	187 / 188	INTERSECTION OF 189	T	G&W	EC-EX-041	2022-07-06	1157	EB	26	2022-07-06	VB	CM
15J	189 / 190	INTERSECTION OF 191	T	G&W	EC-EX-041	2022-07-06	1146	EB	26	2022-07-06	VB	CM
15K	192 / 193	INTERSECTION OF 191	T	G&W	EC-EX-041	2022-07-06	1205	EB	26	2022-07-06	VB	CM
15L	194 / 195	INTERSECTION OF 193	T	G&W	EC-EX-041	2022-07-06	1210	EB	26	2022-07-06	VB	CM
15M	194 / 195	INTERSECTION OF 196	T	G&W	EC-EX-041	2022-07-06	1216	EB	26	2022-07-06	VB	CM
15N	196 / 197	INTERSECTION OF 195	T	G&W	EC-EX-041	2022-07-06	1219	EB	26	2022-07-06	VB	CM
15O	174 / 175	INTERSECTION OF 187&198	T	G&W	EC-EX-041	2022-07-06	1232	EB	26	2022-07-06	VB	CM
15P	187 / 190	INTERSECTION OF 175	T	G&W	EC-EX-041	2022-07-06	1234	EB	26	2022-07-06	VB	CM
15Q	175 / 176	INTERSECTION OF 190	T	G&W	EC-EX-041	2022-07-06	1235	EB	26	2022-07-06	VB	CM
15R	190 / 191	INTERSECTION OF 176	T	G&W	EC-EX-041	2022-07-06	1237	EB	26	2022-07-06	VB	CM
15S	176 / 178	INTERSECTION OF 191	T	G&W	EC-EX-041	2022-07-06	1239	EB	26	2022-07-06	VB	CM
15T	191 / 192	INTERSECTION OF 180	T	G&W	EC-EX-041	2022-07-06	1241	EB	26	2022-07-06	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 24 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-07-06	1000	EB	30	243°C	243°C	133	141	150	141	114	167	185	180	180	176	CM	EXT
2	EC-EX-041	2022-07-07	1030	EB	26	243°C	243°C	124	142	143	144	151	178	180	177	185	181	CM	EXT
3	EC-EX-041	2022-07-07	1600	EB		243°C	243°C	126	123	132	126	125	162	160	161	167	163	CM	EXT
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
16A	178 / 180	INTERSECTION OF 191	T	G&W	EC-EX-041	2022-07-06	1243	EB	26	2022-07-06	VB	CM
16B	192 / 193	INTERSECTION OF 194&182	T	G&W	EC-EX-041	2022-07-06	1246	EB	26	2022-07-06	VB	CM
16C	180 / 182	INTERSECTION OF 192	T	G&W	EC-EX-041	2022-07-06	1248	EB	26	2022-07-06	VB	CM
16D	182 / 183	INTERSECTION OF 194	T	G&W	EC-EX-041	2022-07-06	1250	EB	26	2022-07-06	VB	CM
16E	194 / 196	INTERSECTION OF 183	T	G&W	EC-EX-041	2022-07-06	1251	EB	26	2022-07-06	VB	CM
16F	183 / 185	INTERSECTION OF 196	T	G&W	EC-EX-041	2022-07-06	1253	EB	26	2022-07-06	VB	CM
16G	188 / 189	2M N 3M W OF SEOS	EE	P	EC-EX-041	2022-07-06	1256	EB	26	2022-07-06	VB	CM
16H	188 / 189	2M N 5M W OF SEOS	EE	P	EC-EX-041	2022-07-06	1259	EB	26	2022-07-06	VB	CM
16I	188 / 189	4M N 3M W OF SEOS	EE	P	EC-EX-041	2022-07-06	1307	EB	26	2022-07-06	VB	CM
16J	188 / 189	4M N 5M W OF SEOS	EE	P	EC-EX-041	2022-07-06	1303	EB	26	2022-07-06	VB	CM
16K	188 / 189	6M N 3M W OF SEOS	EE	P	EC-EX-041	2022-07-06	1310	EB	26	2022-07-06	VB	CM
16L	187 / 188	INTERSECTION OF 198	T	G&W	EC-EX-041	2022-07-07	1135	EB	26	2022-07-07	VB	CM
16M	199 / 200	INTERSECTION OF 198	T	G&W	EC-EX-041	2022-07-07	1051	EB	26	2022-07-07	VB	CM
16N	199 / 200	INTERSECTION OF 201	T	G&W	EC-EX-041	2022-07-07	1053	EB	26	2022-07-07	VB	CM
16O	201 / 202	INTERSECTION OF 200	T	G&W	EC-EX-041	2022-07-07	1151	EB	26	2022-07-07	VB	CM
16P	201 / 202	INTERSECTION OF 204	T	G&W	EC-EX-041	2022-07-07	1200	EB	26	2022-07-07	VB	CM
16Q	202 / 204	0.6M N OF SEOS	DS93	P	EC-EX-041	2022-07-07	1215	EB	26	2022-07-07	VB	CM
16R	203 / 204	INTERSECTION OF 201	T	G&W	EC-EX-041	2022-07-07	1233	EB	26	2022-07-07	VB	CM
16S	188 / 189	2M S OF NEOS	DS91	P	EC-EX-041	2022-07-07	1313	EB	26	2022-07-07	VB	CM
16T	193 / 195	2M S OF NEOS	DS90	P	EC-EX-041	2022-07-07	1341	EB	26	2022-07-07	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 25 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-07-07	1030	EB	26	243°C	243°C	124	142	143	144	151	178	180	177	185	181	CM	EXT
2	EC-EX-041	2022-07-07	1600	EB		243°C	243°C	126	123	132	126	125	162	160	161	167	163	CM	EXT
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
17A	204 / 205	INTERSECTION OF 202	T	G&W	EC-EX-041	2022-07-07	1248	EB	26	2022-07-07	VB	CM
17B	204 / 205	INTERSECTION OF 206	T	G&W	EC-EX-041	2022-07-07	1602	EB	26	2022-07-07	VB	CM
17C	206 / 207	INTERSECTION OF 205	T	G&W	EC-EX-041	2022-07-07	1603	EB	26	2022-07-07	VB	CM
17D	206 / 207	INTERSECTION OF 208	T	G&W	EC-EX-041	2022-07-07	1605	EB	26	2022-07-07	VB	CM
17E	208 / 209	INTERSECTION OF 207	T	G&W	EC-EX-041	2022-07-07	1607	EB	26	2022-07-07	VB	CM
17F	208 / 209	INTERSECTION OF 211	T	G&W	EC-EX-041	2022-07-07	1609	EB	26	2022-07-07	VB	CM
17G	210 / 211	INTERSECTION OF 208	T	G&W	EC-EX-041	2022-07-07	1611	EB	26	2022-07-07	VB	CM
17H	210 / 211	INTERSECTION OF 211	T	G&W	EC-EX-041	2022-07-07	1613	EB	26	2022-07-07	VB	CM
17I	212 / 213	INTERSECTION OF 213	T	G&W	EC-EX-041	2022-07-07	1615	EB	26	2022-07-07	VB	CM
17J	154 / 156	INTERSECTION OF 210	T	G&W	EC-EX-041	2022-07-07	1622	EB	26	2022-07-07	VB	CM
17K	210 / 212	INTERSECTION OF 156	T	G&W	EC-EX-041	2022-07-07	1624	EB	26	2022-07-07	VB	CM
17L	156 / 159	INTERSECTION OF 212	T	G&W	EC-EX-041	2022-07-07	1626	EB	26	2022-07-07	VB	CM
17M	208 / 210	INTERSECTION OF 161	T	G&W	EC-EX-041	2022-07-07	1629	EB	26	2022-07-07	VB	CM
17N	159 / 161	INTERSECTION OF 210	T	G&W	EC-EX-041	2022-07-07	1630	EB	26	2022-07-07	VB	CM
17O	206 / 208	INTERSECTION OF 163	T	G&W	EC-EX-041	2022-07-07	1631	EB	26	2022-07-07	VB	CM
17P	161 / 163	INTERSECTION OF 208	T	G&W	EC-EX-041	2022-07-07	1632	EB	26	2022-07-07	VB	CM
17Q	163 / 164	INTERSECTION OF 206	T	G&W	EC-EX-041	2022-07-07	1634	EB	26	2022-07-07	VB	CM
17R	203 / 204	INTERSECTION OF 206	T	G&W	EC-EX-041	2022-07-07	1635	EB	26	2022-07-07	VB	CM
17S	164 / 166	INTERSECTION OF 203&206	T	G&W	EC-EX-041	2022-07-07	1636	EB	26	2022-07-07	VB	CM
17T	201 / 203	INTERSECTION OF 166	T	G&W	EC-EX-041	2022-07-07	1638	EB	26	2022-07-07	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 26 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-07-08	800	EB	20	246°C	246°C	179	161	167	183	173	193	207	198	193	199	CM	EXT
2	EC-EX-041	2022-07-08	1030	EB	22	243°C	243°C	124	142	143	144	151	178	180	177	185	181	CM	EXT
3	EC-EX-041	2022-07-08	1300	EB	22	243°C	243°C	138	160	152	158	138	177	174	171	183	174	CM	EXT
4	EC-EX-041	2022-07-08	1700	EB	22	243°C	243°C	136	140	139	137	142	179	181	183	179	182	CM	SM/SM
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
18A	166 / 168	INTERSECTION OF 204	T	G&W	EC-EX-041	2022-07-08	802	EB	26	2022-07-07	VB	CM
18B	199 / 201	INTERSECTION OF 170	T	G&W	EC-EX-041	2022-07-08	803	EB	26	2022-07-07	VB	CM
18C	168 / 170	INTERSECTION OF 201	T	G&W	EC-EX-041	2022-07-08	804	EB	26	2022-07-07	VB	CM
18D	198 / 199	INTERSECTION OF 172	T	G&W	EC-EX-041	2022-07-08	806	EB	26	2022-07-07	VB	CM
18E	170 / 172	INTERSECTION OF 199	T	G&W	EC-EX-041	2022-07-08	808	EB	26	2022-07-07	VB	CM
18F	172 / 174	INTERSECTION OF 198	T	G&W	EC-EX-041	2022-07-08	815	EB	26	2022-07-07	VB	CM
18G	214 / 215	INTERSECTION OF 212	T	G&W	EC-EX-041	2022-07-08	1502	EB	22	2022-07-08	VB	CM
18H	214 / 215	INTERSECTION OF 217	T	G&W	EC-EX-041	2022-07-08	1500	EB	22	2022-07-08	VB	CM
18I	154 / 212	1.5M SW OF NEOS	DS98	P	EC-EX-041	2022-07-08	1025	EB	22	2022-07-08	VB	CM
18J	216 / 217	INTERSECTION OF 214	T	G&W	EC-EX-041	2022-07-08	1518	EB	22	2022-07-08	VB	CM
18K	214 / 217	2M N 0.6M W OF SEOS	EE	P	EC-EX-041	2022-07-08	1517	EB	22	2022-07-08	VB	CM
18L	216 / 217	INTERSECTION OF 219	T	G&W	EC-EX-041	2022-07-08	1521	EB	22	2022-07-08	VB	CM
18M	212 / 213	INTERSECTION OF 215	T	G&W	EC-EX-041	2022-07-08	1547	EB	22	2022-07-08	VB	CM
18N	217 / 218	INTERSECTION OF 215	T	G&W	EC-EX-041	2022-07-08	1615	EB	22	2022-07-08	VB	CM
18O	217 / 218	INTERSECTION OF 220	T	G&W	EC-EX-041	2022-07-08	1617	EB	22	2022-07-08	VB	CM
18P	219 / 220	INTERSECTION OF 217	T	G&W	EC-EX-041	2022-07-08	1535	EB	22	2022-07-08	VB	CM
18Q	221 / 222	INTERSECTION OF 219	T	G&W	EC-EX-041	2022-07-08	1626	EB	22	2022-07-08	VB	CM
18R	143 / 145	INTERSECTION OF 224	T	P	EC-EX-041	2022-07-08	1644	EB	22	2022-07-08	VB	CM
18S	219 / 221	INTERSECTION OF 147	T	G&W	EC-EX-041	2022-07-08	1646	EB	22	2022-07-08	VB	CM
18T	145 / 147	INTERSECTION OF 221	T	P	EC-EX-041	2022-07-08	1648	EB	22	2022-07-08	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 27 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-07-08	800	EB	20	246°C	246°C	179	161	167	183	173	193	207	198	193	199	CM	EXT
2	EC-EX-041	2022-07-08	1030	EB	22	243°C	243°C	124	142	143	144	151	178	180	177	185	181	CM	EXT
3	EC-EX-041	2022-07-08	1300	EB	22	243°C	243°C	138	160	152	158	138	177	174	171	183	174	CM	EXT
4	EC-EX-041	2022-07-08	1700	EB	22	243°C	243°C	136	140	139	137	142	179	181	183	179	182	CM	SM/SM
5	EC-EX-041	2022-07-10	1200	EB	18	243°C	243°C	138	152	126	147	150	175	180	173	183	180	CM	EXT
6	EC-EX-041	2022-07-10	1600	EB	18	243°C	243°C	161	164	162	162	145	175	181	172	174	171	CM	EXT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
19A	216 / 219	INTERSECTION OF 149	T	G&W	EC-EX-041	2022-07-08	1657	EB	22	2022-07-08	VB	CM
19B	147 / 149	INTERSECTION OF 219	T	G&W	EC-EX-041	2022-07-08	1659	EB	22	2022-07-08	VB	CM
19C	214 / 216	INTERSECTION OF 152	T	G&W	EC-EX-041	2022-07-08	1700	EB	22	2022-07-08	VB	CM
19D	149 / 152	INTERSECTION OF 216	T	G&W	EC-EX-041	2022-07-08	1702	EB	22	2022-07-08	VB	CM
19E	152 / 154	INTERSECTION OF 214	T	G&W	EC-EX-041	2022-07-08	1703	EB	22	2022-07-08	VB	CM
19F	212 / 214	INTERSECTION OF 154	T	G&W	EC-EX-041	2022-07-08	1705	EB	22	2022-07-08	VB	CM
19G	219 / 220	INTERSECTION OF 222	T	G&W	EC-EX-041	2022-07-08	1716	EB	22	2022-07-08	VB	CM
19H	222 / 223	INTERSECTION OF 220	T	G&W	EC-EX-041	2022-07-08	1720	EB	22	2022-07-08	VB	CM
19I	223 / 226	6M N OF SEOS	IO	P	EC-EX-041	2022-07-10	1300	EB	22	2022-07-10	VB	CM
19J	221 / 222	INTERSECTION OF 224	T	G&W	EC-EX-041	2022-07-10	1353	EB	22	2022-07-10	VB	CM
19K	224 / 225	INTERSECTION OF 222	T	G&W	EC-EX-041	2022-07-10	1500	EB	22	2022-07-10	VB	CM
19L	224 / 225	INTERSECTION OF 227	T	G&W	EC-EX-041	2022-07-10	1453	EB	22	2022-07-10	VB	CM
19M	224 / 227	1M S 5M W OF NEOS	MD	G&W	EC-EX-041	2022-07-10	1450	EB	22	2022-07-10	VB	CM
19N	227 / 228	INTERSECTION OF 225	T	G&W	EC-EX-041	2022-07-10	1551	EB	22	2022-07-10	VB	CM
19O	227 / 228	INTERSECTION OF 230	T	G&W	EC-EX-041	2022-07-10	1539	EB	22	2022-07-10	VB	CM
19P	222 / 223	INTERSECTION OF 225	T	G&W	EC-EX-041	2022-07-10	1556	EB	22	2022-07-10	VB	CM
19Q	225 / 226	INTERSECTION OF 228	T	G&W	EC-EX-041	2022-07-10	1603	EB	22	2022-07-10	VB	CM
19R	225 / 226	INTERSECTION OF 223	T	G&W	EC-EX-041	2022-07-10	1604	EB	22	2022-07-10	VB	CM
19S	230 / 231	INTERSECTION OF 228	T	G&W	EC-EX-041	2022-07-10	1619	EB	22	2022-07-10	VB	CM
19T	230 / 231	INTERSECTION OF 233	T	G&W	EC-EX-041	2022-07-10	1620	EB	22	2022-07-10	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 28 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-07-10	1200	EB	18	243°C	243°C	138	152	126	147	150	175	180	173	183	180	CM	EXT
2	EC-EX-041	2022-07-10	1600	EB	18	243°C	243°C	161	164	162	162	145	175	181	172	174	171	CM	EXT
3	EC-EX-041	2022-07-11	830	EB	18	246°C	246°C	130	151	136	167	140	201	176	192	186	194	CM	EXT
4	EC-EX-041	2022-07-11	1308	EB	18	246°C	246°C	163	143	167	167	156	180	185	181	189	181	CM	EXT
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
20A	229 / 230	INTERSECTION OF 227	T	G&W	EC-EX-041	2022-07-10	1409	EB	22	2022-07-10	VB	CM
20B	229 / 230	INTERSECTION OF 232	T	G&W	EC-EX-041	2022-07-10	1411	EB	22	2022-07-10	VB	CM
20C	232 / 233	INTERSECTION OF 230	T	G&W	EC-EX-041	2022-07-10	1632	EB	22	2022-07-10	VB	CM
20D	232 / 233	INTERSECTION OF 235	T	G&W	EC-EX-041	2022-07-10	1634	EB	22	2022-07-10	VB	CM
20E	235 / 236	INTERSECTION OF 233	T	G&W	EC-EX-041	2022-07-10	1646	EB	22	2022-07-10	VB	CM
20F	235 / 236	INTERSECTION OF 238	T	G&W	EC-EX-041	2022-07-10	1739	EB	22	2022-07-10	VB	CM
20G	238 / 239	INTERSECTION OF 236	T	G&W	EC-EX-041	2022-07-10	1742	EB	22	2022-07-10	VB	CM
20H	233 / 234	INTERSECTION OF 236	T	G&W	EC-EX-041	2022-07-10	1730	EB	22	2022-07-10	VB	CM
20I	233 / 234	INTERSECTION OF 231	T	G&W	EC-EX-041	2022-07-10	1732	EB	22	2022-07-10	VB	CM
20J	233 / 236	3M N 0.1M E OF SEOS	T	G&W	EC-EX-041	2022-07-10	1703	EB	22	2022-07-10	VB	CM
20K	237 / 238	INTERSECTION OF 235	T	G&W	EC-EX-041	2022-07-10	1751	EB	22	2022-07-10	VB	CM
20L	221 / 224	INTERSECTION OF 145	T	G&W	EC-EX-041	2022-07-10	1755	EB	22	2022-07-10	VB	CM
20M	224 / 227	INTERSECTION OF 143	T	G&W	EC-EX-041	2022-07-10	1757	EB	22	2022-07-10	VB	CM
20N	227 / 229	INTERSECTION OF 143	T	G&W	EC-EX-041	2022-07-10	1759	EB	22	2022-07-10	VB	CM
20O	229 / 232	INTERSECTION OF 143	T	G&W	EC-EX-041	2022-07-10	1800	EB	22	2022-07-10	VB	CM
20P	232 / 235	INTERSECTION OF 143	T	G&W	EC-EX-041	2022-07-10	1801	EB	22	2022-07-10	VB	CM
20Q	235 / 237	INTERSECTION OF 143	T	G&W	EC-EX-041	2022-07-10	1803	EB	22	2022-07-10	VB	CM
20R	213 / 215	6M S OF NEOS	DS99	P	EC-EX-041	2022-07-11	839	EB	11	2022-07-11	VB	CM
20S	215 / 218	25M N OF SEOS	DS100	P	EC-EX-041	2022-07-11	904	EB	11	2022-07-11	VB	CM
20T	218 / 220	8M N OF SEOS	DS101	P	EC-EX-041	2022-07-11	931	EB	11	2022-07-11	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 29 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-07-11	830	EB	18	246°C	246°C	130	151	136	167	140	201	176	192	186	194	CM	EXT
2	EC-EX-041	2022-07-11	1308	EB	18	246°C	246°C	163	143	167	167	156	180	185	181	189	181	CM	EXT
3	EC-EX-041	2022-07-12	1230	EB	13	243°C	246°C	162	163	169	167	147	182	181	185	197	180	CM	EXT
4	EC-EX-041	2022-07-12	1630	BF	13	243°C	243°C	138	151	122	161	144	190	172	190	188	186	CM	EXT
5	EC-EX-040	2022-07-12	1630	GB	14	248°C	248°C	104	115	134	109	147	156	136	127	176	142	CM	EXT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
21A	220 / 222	15.6M S OF NEOS	DS102	P	EC-EX-041	2022-07-11	1002	EB	11	2022-07-11	VB	CM
21B	222 / 225	23M S OF NEOS	DS103	P	EC-EX-041	2022-07-11	1022	EB	11	2022-07-11	VB	CM
21C	226 / 228	8M S OF NEOS	DS104	P	EC-EX-041	2022-07-11	1227	EB	11	2022-07-11	VB	CM
21D	224 / 227	6M S OF NEOS	DS105	P	EC-EX-041	2022-07-11	1050	EB	11	2022-07-11	VB	CM
21E	227 / 230	27M S OF NEOS	DS106	P	EC-EX-041	2022-07-11	1154	EB	11	2022-07-11	VB	CM
21F	230 / 233	36M S OF NEOS	DS107	P	EC-EX-041	2022-07-11	1353	EB	11	2022-07-11	VB	CM
21G	233 / 236	13.6M N OF SEOS	DS108	P	EC-EX-041	2022-07-11	1325	EB	11	2022-07-11	VB	CM
21H	235 / 237	16M N OF SEOS	DS109	P	EC-EX-041	2022-07-11	1427	EB	11	2022-07-11	VB	CM
21I	236 / 238	2M S OF NEOS	DS110	P	EC-EX-041	2022-07-12	1256	EB	11	2022-07-11	VB	CM
21J	238 / 239	INTERSECTION OF 241	T	G&W	EC-EX-041	2022-07-12	1254	EB	11	2022-07-12	VB	CM
21K	239 / 241	1M N 2M E OF SEOS	EE	P	EC-EX-041	2022-07-12	1249	EB	11	2022-07-12	VB	CM
21L	244 / 246	12M S OF NEOS	BO	P	EC-EX-041	2022-07-12	1325	EB	11	2022-07-12	VB	CM
21M	243 / 244	INTERSECTION OF 246	T	G&W	EC-EX-041	2022-07-12	1356	EB	11	2022-07-12	VB	CM
21N	243 / 244	INTERSECTION OF 241	T	G&W	EC-EX-041	2022-07-12	1401	EB	11	2022-07-12	VB	CM
21O	240 / 241	INTERSECTION OF 238	T	G&W	EC-EX-041	2022-07-12	1416	EB	11	2022-07-12	VB	CM
21P	240 / 241	INTERSECTION OF 243	T	G&W	EC-EX-041	2022-07-12	1418	EB	11	2022-07-12	VB	CM
21Q	238 / 241	2M N 2M W OF SEOS	EE	P	EC-EX-041	2022-07-12	1420	EB	11	2022-07-12	VB	CM
21R	237 / 238	INTERSECTION OF 240	T	G&W	EC-EX-041	2022-07-12	1615	EB	11	2022-07-12	VB	CM
21S	237 / 240	24M S OF NEOS	BO	P	EC-EX-041	2022-07-12	1625	EB	11	2022-07-12	VB	CM
21T	143 / 237	INTERSECTION OF 240	T	G&W	EC-EX-041	2022-07-12	1635	EB	11	2022-07-12	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 30 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-07-12	1230	EB	13	243°C	246°C	162	163	169	167	147	182	181	185	197	180	CM	EXT
2	EC-EX-041	2022-07-12	1630	BF	13	243°C	243°C	138	151	122	161	144	190	172	190	188	186	CM	EXT
3	EC-EX-040	2022-07-12	1630	GB	14	248°C	248°C	104	115	134	109	147	156	136	127	176	142	CM	EXT
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
22A	143 / 240	SEAM LENGTH	ATL	G&W	EC-EX-041	2022-07-12	1650	EB	11	2022-07-12	VB	CM
22B	242 / 243	INTERSECTION OF 240	T	G&W	EC-EX-041	2022-07-12	1630	EB	11	2022-07-12	VB	CM
22C	242 / 243	INTERSECTION OF 245	T	G&W	EC-EX-041	2022-07-12	1659	EB	11	2022-07-12	VB	CM
22D	245 / 246	INTERSECTION OF 243	T	G&W	EC-EX-041	2022-07-12	1706	EB	11	2022-07-12	VB	CM
22E	248 / 249	INTERSECTION OF 246	T	G&W	EC-EX-041	2022-07-12	1714	EB	11	2022-07-12	VB	CM
22F	245 / 246	INTERSECTION OF 248	T	G&W	EC-EX-041	2022-07-12	1720	EB	11	2022-07-12	VB	CM
22G	248 / 249	INTERSECTION OF 251	T	G&W	EC-EX-041	2022-07-12	1720	EB	11	2022-07-12	VB	CM
22H	247 / 248	INTERSECTION OF 245	T	G&W	EC-EX-041	2022-07-12	1725	EB	11	2022-07-12	VB	CM
22I	248 / 251	14.6M S OF NEOS	IO	G&W	EC-EX-041	2022-07-12	1745	EB	11	2022-07-12	VB	CM
22J	248 / 251	19.4M S OF NEOS	IO	G&W	EC-EX-041	2022-07-12	1750	EB	11	2022-07-12	VB	CM
22K	250 / 251	INTERSECTION OF 248	T	G&W	EC-EX-041	2022-07-12	1755	EB	11	2022-07-12	VB	CM
22L	247 / 248	INTERSECTION OF 250	T	G&W	EC-EX-041	2022-07-12	1800	EB	11	2022-07-12	VB	CM
22M	252 / 253	INTERSECTION OF 250	T	P	EC-EX-041	2022-07-12	1738	EB	11	2022-07-12	VB	CM
22N	250 / 251	INTERSECTION OF 253	T	G&W	EC-EX-041	2022-07-12	1744	EB	11	2022-07-12	VB	CM
22O	253 / 254	INTERSECTION OF 251	T	G&W	EC-EX-041	2022-07-12	1750	EB	11	2022-07-12	VB	CM
22P	251 / 254	2M N 3M W OF SEOS	EE	P	EC-EX-041	2022-07-12	1735	EB	11	2022-07-12	VB	CM
22Q	251 / 251	5M N 3M W OF SEOS	EE	P	EC-EX-041	2022-07-12	1807	EB	11	2022-07-12	VB	CM
22R	253 / 254	INTERSECTION OF 256	T	G&W	EC-EX-041	2022-07-12	1755	EB	11	2022-07-12	VB	CM
22S	255 / 256	INTERSECTION OF 253	T	G&W	EC-EX-041	2022-07-12	1823	EB	11	2022-07-12	VB	CM
22T	255 / 256	2M W OF EEOS	BO	P	EC-EX-041	2022-07-12	1830	EB	11	2022-07-12	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 31 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-07-12	1230	EB	13	243°C	246°C	162	163	169	167	147	182	181	185	197	180	CM	EXT
2	EC-EX-041	2022-07-12	1630	BF	13	243°C	243°C	138	151	122	161	144	190	172	190	188	186	CM	EXT
3	EC-EX-040	2022-07-12	1630	GB	14	248°C	248°C	104	115	134	109	147	156	136	127	176	142	CM	EXT
4	EC-EX-041	2022-07-13	800	EB	14	243°C	243°C	126	144	130	147	133	184	176	181	175	180	CM	EXT
5	EC-EX-041	2022-07-13	1230	EB	14	243°C	243°C	156	160	145	150	143	180	179	181	178	182	CM	EXT
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
23A	252 / 253	INTERSECTION OF 255	T	G&W	EC-EX-041	2022-07-13	835	EB	14	2022-07-16	VB	CM
23B	257 / 258	INTERSECTION OF 255	T	G&W	EC-EX-041	2022-07-13	843	EB	14	2022-07-16	VB	CM
23C	257 / 258	INTERSECTION OF 260	T	G&W	EC-EX-041	2022-07-13	845	EB	14	2022-07-16	VB	CM
23D	257 / 258	3M E 0.2M N OF WEOS	EE	P	EC-EX-041	2022-07-13	857	EB	14	2022-07-16	VB	CM
23E	260 / 261	INTERSECTION OF 258	T	G&W	EC-EX-041	2022-07-13	903	EB	14	2022-07-16	VB	CM
23F	255 / 256	INTERSECTION OF 258	T	G&W	EC-EX-041	2022-07-12	1819	EB	14	2022-07-16	VB	CM
23G	258 / 259	INTERSECTION OF 256	T	G&W	EC-EX-041	2022-07-12	1809	EB	14	2022-07-16	VB	CM
23H	258 / 259	INTERSECTION OF 262	T	G&W	EC-EX-041	2022-07-12	1811	EB	14	2022-07-16	VB	CM
23I	261 / 262	INTERSECTION OF 258	T	G&W	EC-EX-041	2022-07-12	1816	EB	14	2022-07-16	VB	CM
23J	261 / 262	INTERSECTION OF 264	T	G&W	EC-EX-041	2022-07-12	1822	EB	14	2022-07-16	VB	CM
23K	262 / 264	16M N OF SEOS	WS	G&W	EC-EX-041	2022-07-12	1840	EB	14	2022-07-16	VB	CM
23L	263 / 264	INTERSECTION OF 261	T	G&W	EC-EX-041	2022-07-12	1818	EB	14	2022-07-16	VB	CM
23M	261 / 263	10M N OF SEOS	IO	G&W	EC-EX-041	2022-07-12	1820	EB	14	2022-07-16	VB	CM
23N	264 / 265	INTERSECTION OF 262	T	G&W	EC-EX-041	2022-07-13	939	EB	14	2022-07-16	VB	CM
23O	238 / 240	10M N OF SEOS	DS111	P	EC-EX-041	2022-07-13	1011	EB	14	2022-07-16	VB	CM
23P	240 / 243	8.5M S OF NEOS	DS112	P	EC-EX-041	2022-07-13	1051	EB	14	2022-07-16	VB	CM
23Q	243 / 246	15.5M S OF NEOS	DS113	P	EC-EX-041	2022-07-13	1157	EB	14	2022-07-16	VB	CM
23R	245 / 247	7.8M S OF NEOS	DS114	P	EC-EX-041	2022-07-13	1328	EB	14	2022-07-16	VB	CM
23S	246 / 249	19M N OF SEOS	DS115	P	EC-EX-041	2022-07-13	1234	EB	14	2022-07-16	VB	CM
23T	248 / 250	16.4M S OF NEOS	DS116	P	EC-EX-041	2022-07-13	1305	EB	14	2022-07-16	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 32 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-07-13	800	EB	14	243°C	243°C	126	144	130	147	133	184	176	181	175	180	CM	EXT
2	EC-EX-041	2022-07-13	1230	EB	14	243°C	243°C	156	160	145	150	143	180	179	181	178	182	CM	EXT
3	EC-EX-041	2022-07-14	900	EB	14	243°C	243°C	158	138	164	149	151	190	190	179	194	189	CM	EXT
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
24A	264 / 265	3M W OF EEOS	BO	P	EC-EX-041	2022-07-13	1418	EB	14	2022-07-16	VB	CM
24B	264 / 265	INTERSECTION OF 267	T	G&W	EC-EX-041	2022-07-13	1456	EB	14	2022-07-16	VB	CM
24C	266 / 267	INTERSECTION OF 264	T	G&W	EC-EX-041	2022-07-13	1512	EB	14	2022-07-16	VB	CM
24D	266 / 267	INTERSECTION OF 270	T	G&W	EC-EX-041	2022-07-13	1514	EB	14	2022-07-16	VB	CM
24E	269 / 270	INTERSECTION OF 266	T	G&W	EC-EX-041	2022-07-13	1525	EB	14	2022-07-16	VB	CM
24F	269 / 270	INTERSECTION OF 272	T	G&W	EC-EX-041	2022-07-13	1527	EB	14	2022-07-16	VB	CM
24G	268 / 269	INTERSECTION OF 266	T	G&W	EC-EX-041	2022-07-13	1554	EB	14	2022-07-16	VB	CM
24H	268 / 269	INTERSECTION OF 271	T	G&W	EC-EX-041	2022-07-13	1556	EB	14	2022-07-16	VB	CM
24I	271 / 272	INTERSECTION OF 269	T	G&W	EC-EX-041	2022-07-13	1539	EB	14	2022-07-16	VB	CM
24J	271 / 272	INTERSECTION OF 275	T	G&W	EC-EX-041	2022-07-13	1541	EB	14	2022-07-16	VB	CM
24K	274 / 275	INTERSECTION OF 271	T	G&W	EC-EX-041	2022-07-13	1624	EB	14	2022-07-16	VB	CM
24L	274 / 275	INTERSECTION OF 277	T	G&W	EC-EX-041	2022-07-13	1621	EB	14	2022-07-16	VB	CM
24M	274 / 275	3ME 0.3M N OF WEOS	EE	P	EC-EX-041	2022-07-13	1628	EB	14	2022-07-16	VB	CM
24N	273 / 274	INTERSECTION OF 271	T	G&W	EC-EX-041	2022-07-13	1606	EB	14	2022-07-16	VB	CM
24O	273 / 274	INTERSECTION OF 276	T	G&W	EC-EX-041	2022-07-13	1608	EB	14	2022-07-16	VB	CM
24P	276 / 277	INTERSECTION OF 274	T	G&W	EC-EX-041	2022-07-13	1612	EB	14	2022-07-16	VB	CM
24Q	276 / 277	INTERSECTION OF 280	T	G&W	EC-EX-041	2022-07-13	1616	EB	14	2022-07-16	VB	CM
24R	264 / 267	7M N OF SEOS	IO	G&W	EC-EX-041	2022-07-14	1025	EB	14	2022-07-16	VB	CM
24S	277 / 278	INTERSECTION OF 275	T	G&W	EC-EX-041	2022-07-14	959	EB	14	2022-07-16	VB	CM
24T	277 / 278	INTERSECTION OF 281	T	G&W	EC-EX-041	2022-07-14	957	EB	14	2022-07-16	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 33 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-07-14	900	EB	14	243°C	243°C	158	138	164	149	151	190	190	179	194	189	CM	EXT
2	EC-EX-041	2022-07-15	830	EB	12	246°C	246°C	126	128	126	136	124	173	168	197	180	191	CM	EXT
3	EC-EX-040	2022-07-15	1230	BA	14	248°C	248°C	146	149	149	166	147	178	18	181	180	177	CM	EXT
4	EC-EX-041	2022-07-15	1230	EB	14	246°C	246°C	156	154	131	134	159	189	188	181	178	184	CM	EXT
5	EC-EX-034	2022-07-15	1400	GB	14	248°C	248°C	141	142	135	140	141	166	171	168	171	171	CM	EXT
6	EX-EX-040	2022-07-15	1600	BA	14	248°C	248°C	110	123	117	138	124	153	160	146	162	157	CM	EXT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
25A	280 / 281	INTERSECTION OF 277	T	G&W	EC-EX-041	2022-07-14	939	EB	14	2022-07-16	VB	CM
25B	280 / 281	INTERSECTION OF 283	T	G&W	EC-EX-041	2022-07-14	935	EB	14	2022-07-16	VB	CM
25C	282 / 283	INTERSECTION OF 280	T	G&W	EC-EX-041	2022-07-14	930	EB	14	2022-07-16	VB	CM
25D	284 / 285	INTERSECTION OF 282	T	G&W	EC-EX-041	2022-07-14	1130	EB	14	2022-07-16	VB	CM
25E	284 / 285	2M W 0.5M N OF EEOS	EE	P	EC-EX-041	2022-07-15	1051	EB	14	2022-07-16	VB	CM
25F	284 / 285	2M W 2.5M N OF EEOS	EE	P	EC-EX-041	2022-07-15	1054	EB	14	2022-07-16	VB	CM
25G	284 / 285	INTERSECTION OF 287	T	G&W	EC-EX-041	2022-07-15	1050	EB	14	2022-07-16	VB	CM
25H	287 / 288	INTERSECTION OF 285	T	G&W	EC-EX-041	2022-07-15	1056	EB	14	2022-07-16	VB	CM
25I	287 / 288	INTERSECTION OF 289	T	G&W	EC-EX-041	2022-07-15	1058	EB	14	2022-07-16	VB	CM
25J	289 / 290	INTERSECTION OF 288	T	G&W	EC-EX-041	2022-07-15	1102	EB	14	2022-07-16	VB	CM
25K	289 / 290	INTERSECTION OF 292	T	G&W	EC-EX-041	2022-07-15	1100	EB	14	2022-07-16	VB	CM
25L	279 / 280	INTERSECTION OF 276	T	G&W	EC-EX-041	2022-07-15	1618	EB	14	2022-07-16	VB	CM
25M	286 / 287	INTERSECTION OF 284	T	G&W	EC-EX-041	2022-07-15	1026	EB	14	2022-07-16	VB	CM
25N	284 / 287	1M N OF SEOS	BO	P	EC-EX-041	2022-07-15	1022	EB	14	2022-07-16	VB	CM
25O	284 / 286	2.9M S OF NEOS	BO	P	EC-EX-041	2022-07-15	1032	EB	14	2022-07-16	VB	CM
25P	286 / 287	INTERSECTION OF 289	T	G&W	EC-EX-041	2022-07-15	1018	EB	14	2022-07-16	VB	CM
25Q	291 / 292	INTERSECTION OF 289	T	G&W	EC-EX-041	2022-07-15	1000	EB	14	2022-07-16	VB	CM
25R	291 / 292	INTERSECTION OF 293	T	G&W	EC-EX-041	2022-07-15	1058	EB	14	2022-07-16	VB	CM
25S	293 / 294	INTERSECTION OF 292	T	G&W	EC-EX-041	2022-07-15	955	EB	14	2022-07-16	VB	CM
25T	293 / 294	INTERSECTION OF 295&296	T	G&W	EC-EX-041	2022-07-15	954	EB	14	2022-07-16	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 34 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-07-15	1600	EB	14	243°C	243°C	147	135	133	137	137	150	163	164	165	158	CM	EXT
2																			
3																			
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
A	/											
B	/											
C	/											
D	/											
E	/											
F	/											
G	/											
H	/											
I	/											
J	/											
K	/											
L	/											
M	/											
N	/											
O	/											
P	/											
Q	/											
R	/											
S	/											
T	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 35 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-07-15	830	EB	12	246°C	246°C	126	128	126	136	124	173	168	197	180	191	CM	EXT
2	EC-EX-040	2022-07-15	1230	BA	14	248°C	248°C	146	149	149	166	147	178	18	181	180	177	CM	EXT
3	EC-EX-041	2022-07-15	1230	EB	14	246°C	246°C	156	154	131	134	159	189	188	181	178	184	CM	EXT
4	EC-EX-034	2022-07-15	1400	GB	14	248°C	248°C	141	142	135	140	141	166	171	168	171	171	CM	EXT
5	EX-EX-040	2022-07-15	1600	BA	14	248°C	248°C	110	123	117	138	124	153	160	146	162	157	CM	EXT
6	EC-EX-041	2022-07-15	1600	EB	14	243°C	243°C	147	135	133	137	137	150	163	164	165	158	CM	EXT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
26A	296 / 297	INTERSECTION OF 294	T	G&W	EC-EX-041	2022-07-15	949	EB	14	2022-07-17	VB	CM
26B	296 / 297	INTERSECTION OF 298	T	G&W	EC-EX-041	2022-07-15	939	EB	14	2022-07-17	VB	CM
26C	300 / 301	INTERSECTION OF 298	T	G&W	EC-EX-041	2022-07-15	937	EB	14	2022-07-17	VB	CM
26D	300 / 301	INTERSECTION OF 302	T	G&W	EC-EX-041	2022-07-15	933	EB	14	2022-07-17	VB	CM
26E	298 / 299	INTERSECTION OF 297	T	G&W	EC-EX-041	2022-07-15	927	EB	14	2022-07-17	VB	CM
26F	298 / 299	INTERSECTION OF 301	T	G&W	EC-EX-041	2022-07-15	929	EB	14	2022-07-17	VB	CM
26G	302 / 303	INTERSECTION OF 301	T	G&W	EC-EX-041	2022-07-15	922	EB	14	2022-07-17	VB	CM
26H	302 / 303	INTERSECTION OF 304	T	G&W	EC-EX-041	2022-07-15	919	EB	14	2022-07-17	VB	CM
26I	304 / 305	INTERSECTION OF 303	T	G&W	EC-EX-041	2022-07-15	917	EB	14	2022-07-17	VB	CM
26J	304 / 305	INTERSECTION OF 306	T	G&W	EC-EX-041	2022-07-15	908	EB	14	2022-07-17	VB	CM
26K	305 / 306	10M N OF SEOS	WS	G&W	EC-EX-041	2022-07-15	902	EB	14	2022-07-17	VB	CM
26L	307 / 308	INTERSECTION OF 306	T	G&W	EC-EX-041	2022-07-15	844	EB	14	2022-07-17	VB	CM
26M	307 / 308	INTERSECTION OF 309	T	G&W	EC-EX-041	2022-07-15	846	EB	14	2022-07-17	VB	CM
26N	251 / 253	14.6M N OF SEOS	DS117	P	EC-EX-041	2022-07-15	1157	EB	14	2022-07-17	VB	CM
26O	253 / 256	4.4M S OF NEOS	DS118	P	EC-EX-041	2022-07-15	1150	EB	14	2022-07-17	VB	CM
26P	255 / 258	12M N OF SEOS	DS119	P	EC-EX-041	2022-07-15	1236	EB	14	2022-07-17	VB	CM
26Q	256 / 259	13M S OF NEOS	DS120	P	EC-EX-041	2022-07-15	1208	EB	14	2022-07-17	VB	CM
26R	258 / 261	33.3M S OF NEOS	DS121	P	EC-EX-041	2022-07-15	1225	EB	14	2022-07-17	VB	CM
26S	262 / 264	34M S OF NEOS	DS122	P	EC-EX-041	2022-07-15	1250	EB	14	2022-07-17	VB	CM
26T	264 / 266	21.7M S OF NEOS	DS123	P	EC-EX-041	2022-07-15	1257	EB	14	2022-07-17	VB	CM

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 36 of 37

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001708 AREA / LAYER Primary Containment

PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	EC-EX-041	2022-07-15	830	EB	12	246°C	246°C	126	128	126	136	124	173	168	197	180	191	CM	EXT
2	EC-EX-040	2022-07-15	1230	BA	14	248°C	248°C	146	149	149	166	147	178	18	181	180	177	CM	EXT
3	EC-EX-041	2022-07-15	1230	EB	14	246°C	246°C	156	154	131	134	159	189	188	181	178	184	CM	EXT
4	EC-EX-034	2022-07-15	1400	GB	14	248°C	248°C	141	142	135	140	141	166	171	168	171	171	CM	EXT
5	EX-EX-040	2022-07-15	1600	BA	14	248°C	248°C	110	123	117	138	124	153	160	146	162	157	CM	EXT
6	EC-EX-041	2022-07-15	1600	EB	14	243°C	243°C	147	135	133	137	137	150	163	164	165	158	CM	EXT

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
27A	266 / 270	3.4M S OF NEOS	DS124	P	EC-EX-041	2022-07-15	1304	EB	14	2022-07-17	VB	CM
27B	270 / 272	13.8M N OF SEOS	DS125	P	EC-EX-041	2022-07-15	1312	EB	14	2022-07-17	VB	CM
27C	272 / 275	46.5M N OF SEOS	DS126	P	EC-EX-041	2022-07-15	1321	EB	14	2022-07-17	VB	CM
27D	275 / 277	17.5M N OF SEOS	DS127	P	EC-EX-041	2022-07-15	1331	EB	14	2022-07-17	VB	CM
27E	277 / 280	12M S OF NEOS	DS128	P	EC-EX-041	2022-07-15	1341	EB	14	2022-07-17	VB	CM
27F	282 / 284	6.3M N OF SEOS	DS129	P	EC-EX-041	2022-07-15	1356	EB	14	2022-07-17	VB	CM
27G	284 / 287	23.2M S OF NEOS	DS130	P	EC-EX-041	2022-07-15	1418	EB	14	2022-07-17	VB	CM
27H	287 / 289	41.2M S OF NEOS	DS131	P	EC-EX-041	2022-07-15	1549	EB	14	2022-07-17	VB	CM
27I	289 / 292	8M N OF SEOS	DS132	P	EC-EX-041	2022-07-15	1605	EB	14	2022-07-17	VB	CM
27J	292 / 294	50M S OF NEOS	DS133	P	EC-EX-041	2022-07-15	1619	EB	14	2022-07-17	VB	CM
27K	294 / 297	8M S OF NEOS	DS134	P	EC-EX-041	2022-07-15	1632	EB	14	2022-07-17	VB	CM
27L	299 / 301	5.4M N OF SEOS	DS135	P	EC-EX-041	2022-07-15	1343	EB	14	2022-07-17	VB	CM
27M	303 / 304	5M N OF SEOS	DS136	P	EC-EX-041	2022-07-15	1348	EB	14	2022-07-17	VB	CM
27N	307 / 309	0.5M S OF NEOS	DS137	P	EC-EX-041	2022-07-15	1712	EB	14	2022-07-17	VB	CM
27O	257 / E	SEAM LENGTH	IO	P	EC-EX-041	2022-07-15	1230	EB	14	2022-07-17	VB	CM
27P	260 / E	SEAM LENGTH	IO	P	EC-EX-041	2022-07-15	1500	EB	14	2022-07-17	VB	CM
27Q	280 / 281	INTERSECTION OF 227	T	G&W	EC-EX-041	2022-07-15	1515	EB	14	2022-07-17	VB	CM
27R	263 / 264	INTERSECTION OF 266	T	G&W	EC-EX-041	2022-07-15	1510	EB	14	2022-07-17	VB	CM
	/											
	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

QC TECH Glenn Revilla

SUPERVISOR Chad Messervey

SUBMISSION DATE 2022-07-17

SHEET NUMBER 37 of 37

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER: Primary Containment
3RD PARTY: TETRATECH
ARCHIVE: LAYFIELD ☐ OWNER ☐ ENGINEER ☑

Tensiometer 1	EC-TN-019		
Load Cell 1	689305	Load Cell 2	670955

Tensiometer 2			
Load Cell 1		Load Cell 2	

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAR PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-1	SPF	5/7	2022-06-20	20	JS	PASS		125	153	154	136	162	144	142	142	145	151	179	175	188	179	179
1MW OF EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-2	SPF	2/5	2022-06-20	20	JS	PASS		138	144	153	140	156	153	152	144	148	132	176	169	180	169	183
1M W OF EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-3	SPF	7/9	2022-06-20	20	JS	PASS		160	157	141	150	159	134	152	136	129	125	187	175	189	186	187
1M W OF EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-4	SPF	11/13	2022-06-20	20	JS	PASS		133	166	154	147	143	106	104	107	107	109	183	187	176	186	188
1M W OF EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-5	SPF	13/15	2022-06-20	20	JS	PASS		166	142	126	142	156	151	151	154	170	161	206	203	200	205	204
1M W OF EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-6	SPF	9/11	2022-06-20	20	JS	PASS		164	161	138	154	147	135	137	137	143	144	180	182	184	171	182
EEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-7	SPF	17/15	2022-06-20	20	JS	PASS		141	172	165	161	165	145	131	153	143	151	181	174	169	171	172
1M W OF EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-8	SPF	28/30	2022-06-22	20	JS	PASS		152	148	111	138	119	110	106	103	109	107	127	159	167	155	158
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH: Glenn Revilla
SUBMITTED BY: Chad Messervey
SUBMISSION DATE: 2022-07-17
SHEET NUMBER: 1 of 18

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER: Primary Containment
3RD PARTY: TETRATECH
ARCHIVE: LAYFIELD ☐ OWNER ☐ ENGINEER ☑

Tensiometer 1	EC-TN-019		
Load Cell 1	689305	Load Cell 2	670955

Tensiometer 2			
Load Cell 1		Load Cell 2	

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-9	SPF	16/18	2022-06-22	20	JS	PASS		149	156	110	148	157	149	136	122	150	144	148	172	136	166	172
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-10	SPF	22/23	2022-06-22	20	JS	PASS		155	120	161	148	123	148	136	128	118	127	163	169	158	139	174
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-11	SPF	30/32	2022-06-22	20	JS	PASS		134	134	123	135	131	129	105	107	119	140	150	155	155	147	138
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-12	SPF	32/33	2022-06-22	20	JS	PASS		124	142	123	170	140	138	137	144	140	142	160	123	150	146	142
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-13	SPF	18/20	2022-06-22	20	JS	PASS		136	139	117	139	132	143	147	107	144	141	163	175	161	177	175
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-14	SPF	20/22	2022-06-22	20	JS	PASS		116	145	154	137	130	112	139	125	136	127	175	138	158	150	127
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-15	SPF	24/26	2022-06-22	20	JS	PASS		135	158	116	122	127	131	134	133	141	127	127	150	139	159	144
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-16	SPF	33/35	2022-06-22	20	JS	PASS		124	133	118	136	128	131	140	123	144	139	149	162	155	123	139
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH: Glenn Revilla
SUBMITTED BY: Chad Messervey
SUBMISSION DATE: 2022-07-17
SHEET NUMBER: 2 of 18

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER: Primary Containment
3RD PARTY: TETRATECH
ARCHIVE: LAYFIELD ☐ OWNER ☐ ENGINEER ☑

Tensiometer 1	EC-TN-019		
Load Cell 1	689305	Load Cell 2	670955

Tensiometer 2			
Load Cell 1		Load Cell 2	

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-17	SPF	49/51	2022-06-22	20	JS	PASS		131	138	148	138	124	131	133	112	147	141	146	156	127	154	132
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-18	SPF	46/49	2022-06-22	20	JS	PASS		146	141	123	146	120	144	138	127	158	114	160	166	165	133	150
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-19	SPF	45/46	2022-06-22	20	JS	PASS		140	143	123	145	137	130	134	101	151	137	165	162	165	168	166
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-20	SPF	43/45	2022-06-22	20	JS	PASS		111	135	115	138	122	114	117	116	120	126	130	156	159	166	153
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-21	SPF	41/43	2022-06-22	20	JS	PASS		113	123	113	103	110	136	121	104	101	153	160	190	155	153	157
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-22	SPF	37/39	2022-06-22	20	JS	PASS		115	133	136	138	120	102	132	111	135	107	152	151	155	162	157
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-23	SPF	39/40	2022-06-22	20	JS	PASS		107	128	105	136	102	137	121	125	125	126	160	138	161	168	168
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-24	SPF	40/41	2022-06-22	20	JS	PASS		155	137	140	158	148	125	132	127	130	141	142	164	110	150	161
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH: Glenn Revilla
SUBMITTED BY: Chad Messervey
SUBMISSION DATE: 2022-07-17
SHEET NUMBER: 3 of 18

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER: Primary Containment
3RD PARTY: TETRATECH
ARCHIVE: LAYFIELD ☐ OWNER ☐ ENGINEER ☑

Tensiometer 1	EC-TN-019		
Load Cell 1	689305	Load Cell 2	670955

Tensiometer 2			
Load Cell 1		Load Cell 2	

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAR PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-25	SPF	35/37	2022-06-23	20	JS	PASS		105	125	114	118	130	127	108	131	122	116	126	154	129	165	162
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-26	SPF	51/52	2022-06-23	20	JS	PASS		126	144	141	153	149	128	129	161	152	140	172	168	159	141	149
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-27	SPF	53/55	2022-06-24	20	JS	PASS		119	146	127	137	115	102	141	144	121	145	177	180	171	175	129
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-28	SPF	52/53	2022-06-24	20	JS	PASS		126	143	127	144	137	151	129	166	154	150	130	178	148	135	179
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-29	SPF	57/58	2022-06-24	20	JS	PASS		126	150	134	157	106	151	140	111	148	153	182	128	155	137	166
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-30	SPF	58/60	2022-06-24	20	JS	PASS		129	113	118	145	113	109	142	126	132	136	172	177	163	129	134
WEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-31	SPF	62/63	2022-06-26	20	JS	PASS		103	119	105	101	106	115	109	135	122	134	137	125	149	167	165
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-32	SPF	65/67	2022-06-26	20	JS	PASS		119	128	138	120	137	109	143	147	142	110	144	168	148	151	156
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH: Glenn Revilla
SUBMITTED BY: Chad Messervey
SUBMISSION DATE: 2022-07-17
SHEET NUMBER: 4 of 18

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER: Primary Containment
3RD PARTY: TETRATECH
ARCHIVE: LAYFIELD ☐ OWNER ☐ ENGINEER ☑

Tensiometer 1	EC-TN-019		
Load Cell 1	689305	Load Cell 2	670955

Tensiometer 2			
Load Cell 1		Load Cell 2	

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAR PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-33	SPF	67/68	2022-06-26	20	JS	PASS		126	135	140	116	125	120	128	119	134	117	120	161	131	161	134
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-34	SPF	68/70	2022-06-26	20	JS	PASS		144	131	121	150	127	133	140	144	109	140	163	166	129	165	153
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-35	SPF	70/72	2022-06-26	20	JS	PASS		125	123	116	118	127	148	135	158	128	151	123	170	171	173	167
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-36	SPF	72/73	2022-06-26	20	JS	PASS		138	165	124	120	116	145	146	135	140	126	171	179	150	169	154
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-37	SPF	73/75	2022-06-26	20	JS	PASS		125	145	149	148	123	145	143	116	147	119	168	137	166	174	167
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-38	SPF	75/77	2022-06-26	20	JS	PASS		141	130	125	133	136	150	133	111	149	117	156	130	151	146	142
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-39	SPF	77/79	2022-06-27	20	JS	PASS		125	145	157	145	141	132	125	123	133	130	152	137	154	152	150
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-40	SPF	79/80	2022-06-27	20	JS	PASS		135	135	139	134	135	129	128	129	129	127	154	167	159	140	142
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH: Glenn Revilla
SUBMITTED BY: Chad Messervey
SUBMISSION DATE: 2022-07-17
SHEET NUMBER: 5 of 18

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER: Primary Containment
3RD PARTY: TETRATECH
ARCHIVE: LAYFIELD ☐ OWNER ☐ ENGINEER ☑

Tensiometer 1	EC-TN-019		
Load Cell 1	689305	Load Cell 2	670955

Tensiometer 2			
Load Cell 1		Load Cell 2	

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAR PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-41	SPF	82/84	2022-06-27	20	JS	PASS		140	140	140	142	148	113	137	108	143	154	170	150	170	126	169
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-42	SPF	84/85	2022-06-27	20	JS	PASS		118	137	133	150	147	137	141	143	144	139	138	145	168	128	139
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-43	SPF	85/86	2022-06-27	20	JS	PASS		128	138	124	129	130	128	133	116	121	123	151	128	155	141	144
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-44	SPF	86/88	2022-06-27	20	JS	PASS		135	146	117	146	126	136	132	143	150	150	123	169	143	127	132
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-45	SPF	88/90	2022-06-27	20	JS	PASS		143	124	131	151	130	136	141	121	124	120	155	134	157	149	147
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-46	SPF	90/92	2022-06-27	20	JS	PASS		126	129	135	144	150	130	145	137	114	142	125	154	132	167	148
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-47	SPF	93/94	2022-06-28	20	JS	PASS		126	102	102	136	135	118	145	103	134	118	125	163	143	143	156
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-48	SPF	94/96	2022-06-28	20	JS	PASS		123	140	116	137	127	142	144	134	134	132	164	176	168	157	150
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH: Glenn Revilla
SUBMITTED BY: Chad Messervey
SUBMISSION DATE: 2022-07-17
SHEET NUMBER: 6 of 18

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER: Primary Containment
3RD PARTY: TETRATECH
ARCHIVE: LAYFIELD ☐ OWNER ☐ ENGINEER ☑

Tensiometer 1	EC-TN-019		
Load Cell 1	689305	Load Cell 2	670955

Tensiometer 2			
Load Cell 1		Load Cell 2	

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAR PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-49	SPF	96/98	2022-06-28	20	JS	PASS		143	137	145	142	147	132	135	117	137	134	152	175	155	160	138
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-50	SPF	98/100	2022-06-28	20	JS	PASS		118	134	130	136	146	115	136	117	129	121	133	159	163	169	143
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-51	SPF	100/102	2022-06-28	20	JS	PASS		128	158	114	132	133	128	118	135	133	130	166	152	162	167	163
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-52	SPF	102/104	2022-06-28	20	JS	PASS		127	123	136	114	130	127	145	143	152	142	153	167	153	155	152
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-53	SPF	104/105	2022-06-28	20	JS	PASS		118	123	128	135	130	128	122	138	132	130	125	122	138	137	136
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-54	SPF	105/106	2022-06-28	20	JS	PASS		134	149	146	133	114	117	135	115	119	135	113	143	148	171	160
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-55	SPF	106/108	2022-06-28	20	JS	PASS		125	119	127	123	123	135	131	113	120	122	138	168	146	170	123
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-56	SPF	108/110	2022-06-30	20	JS	PASS		134	118	140	129	120	128	130	130	130	131	149	159	127	154	145
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH: Glenn Revilla
SUBMITTED BY: Chad Messervey
SUBMISSION DATE: 2022-07-17
SHEET NUMBER: 7 of 18

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

AREA / LAYER Primary Containment
3RD PARTY TETRATECH
ARCHIVE LAYFIELD ☐ OWNER ☐ ENGINEER ☑

Tensiometer 1	EC-TN-019		
Load Cell 1	689305	Load Cell 2	670955

Tensiometer 2			
Load Cell 1		Load Cell 2	

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAR PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-57	SPF	110/112	2022-06-30	20	JM	PASS		143	155	147	123	132	142	138	132	144	130	133	154	138	159	161
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-58	SPF	112/114	2022-06-30	20	JM	PASS		137	139	163	138	129	123	150	131	147	163	177	175	137	157	170
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-59	SPF	114/116	2022-06-30	20	JM	PASS		127	155	147	161	118	137	146	133	148	155	128	160	160	136	145
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-60	SPF	116/118	2022-06-30	20	JM	PASS		128	136	134	145	142	115	126	128	130	130	128	160	160	136	145
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-61	SPF	118/120	2022-06-30	20	JM	PASS		122	153	136	136	153	153	148	127	148	133	136	145	147	153	168
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-62	SPF	120/122	2022-07-01	20	JM	PASS		123	131	122	141	123	115	118	120	135	107	130	153	153	168	144
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-63	SPF	122/124	2022-07-01	20	JM	PASS		132	149	118	146	124	113	138	101	136	122	165	166	164	170	168
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-64	SPF	124/126	2022-07-01	20	JM	PASS		126	124	129	140	143	129	117	152	119	145	126	126	158	147	153
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Glenn Revilla
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 8 of 18

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER: Primary Containment
3RD PARTY: TETRATECH
ARCHIVE: LAYFIELD ☐ OWNER ☐ ENGINEER ☑

Tensiometer 1	EC-TN-019		
Load Cell 1	689305	Load Cell 2	670955

Tensiometer 2			
Load Cell 1		Load Cell 2	

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAR PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-65	SPF	126/128	2022-07-01	20	JM	PASS		124	108	130	130	139	122	139	127	138	129	161	148	157	133	152
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-66	SPF	130/128	2022-07-01	20	JM	PASS		122	120	112	109	135	106	145	145	152	126	162	142	157	157	159
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-67	SPF	130/132	2022-07-01	20	JM	PASS		125	132	120	136	130	127	137	112	125	120	158	127	163	164	163
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-68	SPF	132/134	2022-07-01	20	JM	PASS		120	122	130	142	146	113	116	108	117	126	159	159	174	157	141
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-69	SPF	134/136	2022-07-02	20	JM	PASS		127	123	127	120	140	138	134	128	130	125	149	152	153	158	163
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-70	SPF	136/138	2022-07-02	20	JM	PASS		128	142	129	139	150	146	147	134	159	126	167	176	158	175	166
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-71	SPF	138/141	2022-07-02	20	JM	PASS		138	135	154	148	148	149	150	151	145	143	167	130	136	170	153
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-72	SPF	140/143	2022-07-02	20	JM	PASS		112	118	103	139	141	110	134	135	141	145	155	141	153	137	164
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH: Glenn Revilla
SUBMITTED BY: Chad Messervey
SUBMISSION DATE: 2022-07-17
SHEET NUMBER: 9 of 18

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

AREA / LAYER Primary Containment
3RD PARTY TETRATECH
ARCHIVE LAYFIELD ☐ OWNER ☐ ENGINEER ☑

Tensiometer 1	EC-TN-019		
Load Cell 1	689305	Load Cell 2	670955

Tensiometer 2			
Load Cell 1		Load Cell 2	

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAB PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-73	SPF	145/148	2022-07-03	20	JM	PASS		147	144	138	142	150	141	144	140	129	135	146	161	158	154	164
1M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-74	SPF	148/151	2022-07-03	20	JM	PASS		147	150	140	146	149	131	125	127	138	132	156	168	163	164	129
26M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-75	SPF	152/153	2022-07-03	20	JM	PASS		170	157	146	143	126	126	120	126	119	136	155	157	162	151	163
15M W OF EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-76	SPF	154/157	2022-07-03	20	JM	PASS		122	140	142	150	146	148	126	124	131	140	162	133	166	152	132
1M W OF EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-77	SPF	157/159	2022-07-03	20	JM	PASS		141	166	158	132	151	122	101	143	133	112	162	125	163	138	136
0.5M E OF WEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-78	SPF	156/157	2022-07-03	20	JM	PASS		161	154	143	156	158	153	154	139	156	163	137	160	167	177	169
3.5M N OF SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-79	SPF	161/163	2022-07-04	20	JM	PASS		141	138	129	138	134	107	127	135	115	139	147	133	150	157	151
52M W OF EEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-80	SPF	163/164	2022-07-04	20	JM	PASS		133	141	124	142	106	104	139	122	140	131	147	139	123	143	141
WEOS CUT OFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Glenn Revilla
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 10 of 18

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER: Primary Containment
3RD PARTY: TETRATECH
ARCHIVE: LAYFIELD ☐ OWNER ☐ ENGINEER ☑

Tensiometer 1	EC-TN-019		
Load Cell 1	689305	Load Cell 2	670955

Tensiometer 2			
Load Cell 1		Load Cell 2	

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAR PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-81	SPF	164/166	2022-07-04	20	JM	PASS		137	145	147	136	143	120	117	145	152	144	138	121	150	154	151
WEOS CUT OFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-82	SPF	166/168	2022-07-04	20	JM	PASS		121	131	108	117	152	119	128	101	126	130	136	141	143	158	143
WEOS CUT OFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-83	SPF	168/170	2022-07-04	20	JM	PASS		131	120	118	136	141	117	125	115	130	134	141	164	158	150	161
WEOS CUT OFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-84	SPF	170/172	2022-07-04	20	JM	PASS		120	153	130	135	126	131	140	129	124	104	143	151	163	158	142
WEOS CUT OFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-85	SPF	174/175	2022-07-06	20	JM	PASS		114	133	118	123	118	109	121	108	105	128	165	167	165	164	130
WEOS CUT OFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-86	SPF	175/176	2022-07-06	20	JM	PASS		119	133	124	140	150	149	121	121	157	150	154	166	129	168	159
WEOS CUT OFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-87	SPF	176/178	2022-07-06	20	JM	PASS		105	114	104	145	134	122	121	115	122	123	155	149	141	162	143
WEOS CUT OFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-88	SPF	180/182	2022-07-06	20	JM	PASS		122	146	133	145	148	148	139	140	138	116	125	130	134	126	157
WEOS CUT OFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH: Glenn Revilla
SUBMITTED BY: Chad Messervey
SUBMISSION DATE: 2022-07-17
SHEET NUMBER: 11 of 18

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

AREA / LAYER Primary Containment
3RD PARTY TETRATECH
ARCHIVE LAYFIELD ☐ OWNER ☐ ENGINEER ☑

Tensiometer 1	EC-TN-019		
Load Cell 1	689305	Load Cell 2	670955

Tensiometer 2			
Load Cell 1		Load Cell 2	

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAR PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-89	SPF	182/183	2022-07-06	20	JM	PASS		109	145	107	113	143	137	126	126	128	144	150	142	122	158	140
WEOS CUT OFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-90	SPF	193/195	2022-07-07	20	JM	PASS		140	150	155	140	147	132	139	133	149	150	122	128	144	169	153
2M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-91	SPF	188/189	2022-07-07	20	JM	PASS		125	132	127	126	143	121	143	146	150	165	150	171	125	170	170
2M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-92	SPF	198/200	2022-07-07	20	JM	PASS		134	123	111	129	111	127	111	121	147	111	171	134	170	166	156
SEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-93	SPF	202/204	2022-07-07	20	JM	PASS		143	135	114	135	107	106	138	143	115	110	124	142	162	168	163
0.6M N OF SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-94	SPF	205/207	2022-07-08	20	JM	PASS		148	137	141	148	151	137	149	134	139	140	154	173	171	148	157
SEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-95	SPF	207/209	2022-07-08	20	JM	PASS		130	141	143	142	148	142	138	120	118	126	135	171	175	124	170
SEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-96	SPF	209/211	2022-07-08	20	JM	PASS		149	108	153	143	155	145	139	114	132	140	168	176	160	174	178
SEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Glenn Revilla
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 12 of 18

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER: Primary Containment
3RD PARTY: TETRATECH
ARCHIVE: LAYFIELD ☐ OWNER ☐ ENGINEER ☑

Tensiometer 1	EC-TN-019		
Load Cell 1	689305	Load Cell 2	670955

Tensiometer 2			
Load Cell 1		Load Cell 2	

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAR PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-97	SPF	211/213	2022-07-08	20	JM	PASS		130	139	139	143	129	141	123	146	126	137	147	174	171	173	175
SEOS CUTOFF								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-98	SPF	154/212	2022-07-08	20	JM	PASS		151	157	115	146	128	122	142	123	112	156	178	175	122	167	177
1.5M SW OF NEEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-99	SPF	213/215	2022-07-11	20	JM	PASS		126	123	142	152	143	119	158	126	149	154	165	158	168	166	177
6M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-100	SPF	215/218	2022-07-11	20	JM	PASS		147	147	152	129	154	150	147	125	154	142	150	182	162	184	178
25M N OF SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-101	SPF	218/220	2022-07-11	20	JM	PASS		143	164	172	160	155	160	143	139	155	149	153	183	170	184	168
8M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-102	SPF	220/222	2022-07-11	20	JM	PASS		116	157	124	114	108	109	124	118	146	163	173	183	165	159	172
15.6M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-103	SPF	222/225	2022-07-11	20	JM	PASS		134	128	119	142	134	113	152	117	150	134	161	168	142	166	170
23M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-104	SPF	226/228	2022-07-11	20	JM	PASS		147	151	150	154	142	148	174	162	171	152	155	171	160	175	159
8M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH: Glenn Revilla
SUBMITTED BY: Chad Messervey
SUBMISSION DATE: 2022-07-17
SHEET NUMBER: 13 of 18

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER: Primary Containment
3RD PARTY: TETRATECH
ARCHIVE: LAYFIELD ☐ OWNER ☐ ENGINEER ☑

Tensiometer 1	EC-TN-019		
Load Cell 1	689305	Load Cell 2	670955

Tensiometer 2			
Load Cell 1		Load Cell 2	

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAR PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-105	SPF	224/227	2022-07-11	20	JM	PASS		144	160	144	161	157	143	143	128	152	161	168	177	169	170	170
6M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-106	SPF	227/230	2022-07-11	20	JM	PASS		152	121	146	153	144	146	150	118	161	125	167	175	147	173	176
27M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-107	SPF	230/233	2022-07-11	20	JM	PASS		142	157	117	146	145	134	156	139	150	145	141	172	156	174	140
36M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-108	SPF	233/236	2022-07-11	20	JM	PASS		106	143	116	121	131	132	159	149	121	161	174	123	174	168	165
13.6M N OF SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-109	SPF	235/237	2022-07-11	20	JM	PASS		138	146	123	144	137	126	145	118	149	153	176	172	166	171	171
16M N OF SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-110	SPF	236/238	2022-07-11	20	JM	PASS		128	160	150	139	148	124	138	149	147	144	157	166	152	165	161
2M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-111	SPF	238/240	2022-07-13	20	JM	PASS		136	146	137	151	138	134	149	125	156	142	142	138	162	166	153
10M N OF SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-112	SPF	248/243	2022-07-13	20	JM	PASS		136	122	137	153	147	135	144	128	128	155	123	161	160	163	161
8.5M S ON NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH: Glenn Revilla
SUBMITTED BY: Chad Messervey
SUBMISSION DATE: 2022-07-17
SHEET NUMBER: 14 of 18

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER: Primary Containment
3RD PARTY: TETRATECH
ARCHIVE: LAYFIELD ☐ OWNER ☐ ENGINEER ☑

Tensiometer 1	EC-TN-019		
Load Cell 1	689305	Load Cell 2	670955

Tensiometer 2			
Load Cell 1		Load Cell 2	

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAB PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-113	SPF	243/246	2022-07-13	20	JM	PASS		156	147	147	150	158	157	139	161	118	139	159	153	145	161	161
15.5M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-114	SPF	245/247	2022-07-13	20	JM	PASS		132	136	146	148	155	129	150	150	154	143	162	170	174	139	169
7.8M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-115	SPF	246/299	2022-07-13	20	JM	PASS		139	137	123	138	128	143	142	149	147	119	169	174	172	171	165
19M N OF SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-116	SPF	248/250	2022-07-13	20	JM	PASS		110	155	144	158	137	137	141	147	145	138	160	168	151	175	160
16.4M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-117	SPF	251/253	2022-07-16	20	JM	PASS		137	147	168	159	156	169	165	144	146	154	189	195	188	193	195
14.6M N OF SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-118	SPF	253/256	2022-07-16	20	JM	PASS		160	174	163	157	161	162	161	145	157	157	194	190	191	192	190
4.4M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-119	SPF	255/258	2022-07-16	20	JM	PASS		164	162	156	156	157	147	143	141	136	143	161	188	188	184	191
12M N OF SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-120	SPF	256/259	2022-07-16	20	JM	PASS		170	167	156	152	158	108	156	134	120	115	155	186	185	181	188
13M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM:
SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH: Glenn Revilla
SUBMITTED BY: Chad Messervey
SUBMISSION DATE: 2022-07-17
SHEET NUMBER: 15 of 18

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER: CT001708
PROJECT TITLE: Eagle Gold Mine Heap Leach Pad Phase 2 A
AREA / LAYER: Primary Containment
3RD PARTY: TETRATECH
ARCHIVE: LAYFIELD ☐ OWNER ☐ ENGINEER ☑

Tensiometer 1	EC-TN-019		
Load Cell 1	689305	Load Cell 2	670955

Tensiometer 2			
Load Cell 1		Load Cell 2	

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAR PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-121	SPF	259/261	2022-07-16	20	JM	PASS		166	159	139	162	150	128	150	141	141	154	167	167	201	197	198
33.3M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-122	SPF	262/264	2022-07-16	20	JM	PASS		177	165	149	165	144	131	151	153	152	148	192	196	185	195	186
34M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-123	SPF	264/266	2022-07-16	20	JM	PASS		161	167	142	173	164	149	159	146	163	152	183	187	179	189	186
21.7M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-124	SPF	266/270	2022-07-16	20	JM	PASS		122	133	182	120	165	125	146	142	153	152	170	189	191	188	187
3.4M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-125	SPF	270/272	2022-07-16	20	JM	PASS		135	142	159	146	141	154	144	154	156	157	185	191	192	187	202
13.8M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-126	SPF	272/275	2022-07-16	20	JM	PASS		168	183	155	166	171	145	153	149	157	125	182	187	162	189	193
46.5M N OF SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-127	SPF	275/277	2022-07-16	20	JM	PASS		143	175	151	158	152	152	157	146	160	153	186	190	168	192	186
17.5M N OF SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-128	SPF	277/280	2022-07-16	20	JM	PASS		156	161	147	166	156	143	153	162	143	152	187	195	193	199	179
12M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH: Glenn Revilla
SUBMITTED BY: Chad Messervey
SUBMISSION DATE: 2022-07-17
SHEET NUMBER: 16 of 18

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

AREA / LAYER Primary Containment
3RD PARTY TETRATECH
ARCHIVE LAYFIELD ☐ OWNER ☐ ENGINEER ☑

Tensiometer 1	EC-TN-019		
Load Cell 1	689305	Load Cell 2	670955

Tensiometer 2			
Load Cell 1		Load Cell 2	

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS			INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION					3RD PARTY PRESENT	LAYFIELD PASS	3RD PARTY LAR PASS	LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-129	SPF	282/284	2022-07-16	20	JM	PASS		136	160	161	169	137	139	135	134	139	171	188	192	178	191	191
6.3M N OF SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-130	SPF	284/287	2022-07-16	20	JM	PASS		144	148	139	151	139	120	140	148	144	150	184	189	176	191	188
23.3M NOF SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-131	SPF	287/289	2022-07-16	20	JM	PASS		153	157	149	158	158	157	151	139	152	153	185	193	183	192	197
41.2M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-132	SPF	289/292	2022-07-16	20	JM	PASS		160	158	142	163	157	149	151	160	152	149	181	195	190	186	192
8M N OF SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-133	SPF	292/294	2022-07-16	20	JM	PASS		170	176	107	161	166	129	107	139	128	138	186	185	189	177	188
50M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-134	SPF	294/297	2022-07-16	20	JM	PASS		147	174	164	175	172	139	158	150	141	127	182	181	175	184	182
8M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-135	SPF	299/301	2022-07-16	20	JM	PASS		144	156	163	154	146	149	151	148	159	137	181	189	179	189	185
5.4M N OF SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-136	SPF	303/304	2022-07-16	20	JM	PASS		136	162	158	134	145	141	141	157	140	134	151	194	173	183	146
5M N OF SEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Glenn Revilla
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 17 of 18

GEOMEMBRANE DESTRUCT LOG

PROJECT NUMBER CT001708
PROJECT TITLE Eagle Gold Mine Heap Leach Pad Phase 2 A

AREA / LAYER Primary Containment
3RD PARTY TETRATECH
ARCHIVE LAYFIELD ☐ OWNER ☐ ENGINEER ☑

Tensiometer 1	EC-TN-019		
Load Cell 1	689305	Load Cell 2	670955

Tensiometer 2			
Load Cell 1		Load Cell 2	

DESTRUCT SAMPLE NUMBER	TYPE OF SEAM	PANEL NUMBERS	TEST DATE YYYY-MM-DD	TEST TEMP °C	INITIALS 3RD PARTY PRESENT	INITIALS LAYFIELD PASS	INITIALS 3RD PARTY LAR PASS	INSIDE PEEL STRENGTH (PPI)					OUTSIDE PEEL STRENGTH (PPI)					SHEAR STRENGTH (PPI)				
SAMPLE LOCATION								LOCUS OF BREAK					LOCUS OF BREAK					LOCUS OF BREAK				
DS-137	SPF	307/309	2022-07-16	20	JM	PASS		130	148	156	165	133	132	147	135	141	147	182	195	182	193	189
0.5M S OF NEOS								SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	SE1	BRK	BRK	BRK	BRK	BRK
DS-																						
DS-																						
DS-																						
DS-																						
DS-																						
DS-																						
DS-																						

TYPE OF SEAM: SPF - SPLIT FUSION SOF - SOLID FUSION SLV - SOLVENT
EXT - EXTRUSION HAF - HOT AIR FUSION

QC TECH Glenn Revilla
SUBMITTED BY Chad Messervey
SUBMISSION DATE 2022-07-17
SHEET NUMBER 18 of 18

GOLD EAGLE PHASE 2A - AS-BUILT

LEGEND

- △ LINER FIELD SEAM PATCH
- P101 PANEL NUMBER
- R101 REPAIR NUMBER
- DS101 DESTRUCT LOCATION

NOTES

REV.	RECORD OF CHANGES	DATE	BY
0	NONE	MM/DD/YY	XY

LAYFIELD

EAGLE GOLD PHASE 2A
LLDPE 80MIL TEX-2

VICTORIA GOLD CORP.
YUKON, CANADA

DWG. NUMBER
CT001708-ASBUILT-001

Quote No.	PROJECT No.
P10654C	CT001708
DWG : 1 OF 1	**SCALE :** N.T.S.
DWN: CM	**CHKD:** JW	**APP'D:**
DATE: 07/26/22	**REVISION:** A

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF FINAL INSPECTION AND ACCEPTANCE

PROJECT NAME: Eagle Gold Phase 2A
PROJECT NUMBER: CT001708 **DATE:** 06/29/22
OWNER: Victoria Gold
LOCATION: Dublin Gulch YT

Scope of Installation(s): **THE WORK**
Area/Layer: Primary Containment Area Inspected: ☑ Partial or ☐ Complete
Dimensions: 38968 sqm.
Layfield has completed 38968 sqm of containment liner on Phase 2A, area has been inspected and is complete

Part 1 – LAYFIELD CANADA LTD.

I, Chad Messervey, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the installations (as outlined above), and have found the Work to be complete and free of defects and declare that the Work was completed in accordance with the project specifications, Layfield's QC program and the terms and conditions of the contract.

Layfield Representative:

Name: Chad Messervey
Title: Project Supervisor
Date: 06/29/22 **Signature:**

Part 2 – OWNER (or Representative)

I, Josh McKenzie, a duly appointed representative of Tetra Tech, do hereby take over and accept the installation(s) described above, and confirm that the work has been completed in accordance with the project specifications and the terms of the conditions of the contract.

I have evaluated and measured the work together with the Layfield representative, and agree that the measurements shown are both true and correct, and that the installation has met our approval.

Owners Representative:

Name: Josh McKenzie
Title: Geotechnical Technician
Company: Tetra Tech
Date: July. 10/22 **Signature:**

Comments:

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF FINAL INSPECTION AND ACCEPTANCE

PROJECT NAME: Eagle Gold Phase 2A
PROJECT NUMBER: CT00 1708 **DATE:** 07/17/22
OWNER: Victoria Gold /SDS
LOCATION: Dublin Gultch PT

Scope of Installation(s): **THE WORK**
Area/Layer: Primary Containment Area Inspected: ☐ Partial or ☑ Complete
Dimensions: Approx 116093sqm.
Layfield has completed installation of GCL and 80mil LLDPE containment liner in Phase 2A

Part 1 – LAYFIELD CANADA LTD.

I, Chad Messervey, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the installations (as outlined above), and have found the Work to be complete and free of defects and declare that the Work was completed in accordance with the project specifications, Layfield's QC program and the terms and conditions of the contract.

Layfield Representative:

Name: Chad Messervey
Title: Project Supervisor
Date: 07/17/22 **Signature:**

Part 2 – OWNER (or Representative)

I, Josh McKenzie, a duly appointed representative of Tetra Tech, , do hereby take over and accept the installation(s) described above, and confirm that the work has been completed in accordance with the project specifications and the terms of the conditions of the contract.

I have evaluated and measured the work together with the Layfield representative, and agree that the measurements shown are both true and correct, and that the installation has met our approval.

Owners Representative:

Name: Josh McKenzie
Title: ~~Tetra Tech~~ Geotechnical Technician
Company: Tetra Tech
Date: July. 17/22 **Signature:**

Comments: The above area includes previously signed off Phase 2A liner installation

LIST OF GEOMEMBRANE ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003761

PROJECT NAME : EAGLE GOLD PROJECT

ROLL NUMBER	RESIN LOT NUMBER	MANUFACT. DATE	RESIN MELT INDEX 190/2.16 g/10 min D1238	RESIN DENSITY g/cc D1505	OIT min D3895	HPOIT min D5885	ESCR SP-NCTL hours D5397
Product Code : 1007064							
LLDPE 2.00 mm Black RT			**1.0**	**< 0.926**	**100**		**N/A**
1001-156119	DPA810710	2022-03-24	0.35	0.919	120.00		N/A
1001-156120	DPA810710	2022-03-24	0.35	0.919	120.00		N/A
1001-156121	DPA810710	2022-03-24	0.35	0.919	120.00		N/A
1001-156122	DPA810710	2022-03-24	0.35	0.919	120.00		N/A
1001-156124	DPA810710	2022-03-24	0.35	0.919	120.00		N/A
1001-156125	DPA810710	2022-03-24	0.35	0.919	120.00		N/A
1001-156129	DPA810710	2022-03-24	0.35	0.919	120.00		N/A
1001-156130	DPA810710	2022-03-24	0.35	0.919	120.00		N/A
1001-156131	DPA810710	2022-03-24	0.35	0.919	120.00		N/A
1001-156132	DPA810710	2022-03-24	0.35	0.919	120.00		N/A
1001-156133	DPA810710	2022-03-24	0.35	0.919	120.00		N/A
1001-156134	DPA810710	2022-03-25	0.35	0.919	120.00		N/A
1001-156135	DPA810710	2022-03-25	0.35	0.919	120.00		N/A
1001-156136	DPA810710	2022-03-25	0.35	0.919	120.00		N/A
1001-156137	DPA810710	2022-03-25	0.35	0.919	120.00		N/A

Solmax is not a design professional and has not performed any design services to determine if Solmax's goods comply with any project plans or specifications, or with the application or use of Solmax's goods to any particular system, project, purpose, installation or specification.

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LIST OF GEOMEMBRANE ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003761

PROJECT NAME : EAGLE GOLD PROJECT

1001-156138	DPA810710	2022-03-25	0.35	0.919	120.00		N/A
1001-156139	DPA810710	2022-03-25	0.35	0.919	120.00		N/A
1001-156141	DPA810710	2022-03-25	0.35	0.919	120.00		N/A

QUANTITY (ROLLS): 18

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SOLMAX.COM

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003761

PROJECT NAME : EAGLE GOLD PROJECT

PRODUCT: 1007064
LLDPE 2.00 mm Black RT

CE Certificate = LL-80-TT-BB

Properties	Thickness ave/min.	GeoM Density	Carbon Black Content	Carbon Black Dispersion	Tensile Yield Strength	Tensile Yield Elong.	Tensile Break Strength	Tensile Break Elong.	Tear Resist.	Puncture Resist.	Dimension Stability	Asperity Height In/Out
Unit	mm	g/cc	%	Cat 1 and 2	kN/m	%	kN/m	%	N	N	%	mm
Test Method	D5994	D792	D4218	D5596	D6693				D1004	D4833	D1204	D7466
Frequency	Each roll	Every 10 rolls	Every 2 rolls	Every 10 rolls	Every 2 rolls				Every 5 rolls	Every 5 rolls		Every roll
Specification	1.90 / 1.70	≤ 0.939	2.0 - 3.0	Cat. 1 / Cat. 2			31	400	220	500		0.50 / 0.50
1001-156119 MD	2.02 / 1.77	0.937	2.68	10/10 views			44.0	546	263	694		0.66 / 1.16
XD							35.9	429	270			
1001-156120 MD	1.94 / 1.86	0.937	2.60	10/10 views			42.0	543	263	694		0.63 / 0.62
XD							38.9	512	270			
1001-156121 MD	1.90 / 1.82	0.937	2.60	10/10 views			42.0	543	263	694		0.58 / 0.56
XD							38.9	512	270			
1001-156122 MD	1.90 / 1.79	0.937	2.56	10/10 views			41.9	548	263	694		0.57 / 0.54
XD							41.5	558	270			
1001-156124 MD	1.96 / 1.86	0.937	2.62	10/10 views			43.3	550	263	694		0.53 / 0.56
XD							40.1	518	270			
1001-156125 MD	1.92 / 1.82	0.937	2.62	10/10 views			43.3	550	263	694		0.54 / 0.54
XD							40.1	518	270			
1001-156129 MD	1.90 / 1.81	0.937	2.76	10/10 views			42.0	560	275	663		0.57 / 0.64
XD							38.2	510	275			
1001-156130 MD	1.90 / 1.83	0.937	2.76	10/10 views			42.0	560	275	663		0.57 / 0.59
XD							38.2	510	275			
1001-156131 MD	1.90 / 1.79	0.937	2.55	10/10 views			42.6	562	275	663		0.54 / 0.56
XD							41.9	551	275			
1001-156132 MD	1.94 / 1.82	0.937	2.55	10/10 views			42.6	562	275	663		0.54 / 0.60
XD							41.9	551	275			
1001-156133 MD	1.90 / 1.82	0.937	2.44	10/10 views			42.9	566	275	663		0.65 / 0.56
XD							37.8	516	275			
1001-156134 MD	2.00 / 1.93	0.935	2.44	10/10 views			42.9	566	270	623		0.59 / 0.58
XD							37.8	516	261			
1001-156135 MD	1.98 / 1.86	0.935	2.61	10/10 views			41.2	513	270	623		0.55 / 0.54
XD							43.4	550	261			
1001-156136 MD	1.97 / 1.87	0.935	2.61	10/10 views			41.2	513	270	623		0.53 / 0.53
XD							43.4	550	261			

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003761

PROJECT NAME : EAGLE GOLD PROJECT

1001-156137	**MD**	1.97 / 1.84	0.935	2.66	10/10 views			44.1	556	270	623		0.54 / 0.53
	XD							44.3	564	261			
1001-156138	**MD**	2.00 / 1.89	0.935	2.66	10/10 views			44.1	556	270	623		0.54 / 0.55
	XD							44.3	564	261			
1001-156139	**MD**	1.97 / 1.87	0.936	2.61	10/10 views			44.3	551	286	654		0.56 / 0.53
	XD							41.3	533	282			
1001-156141	**MD**	1.94 / 1.81	0.936	2.61	10/10 views			44.3	551	286	654		0.53 / 0.56
	XD							41.3	533	282			

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Solmax International Inc.

2801 MARIE-VICTORIN,, VARENNES, QC, CANADA, J3X 0J4

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CoA Date: 02/16/2022

Certificate of Analysis

Shipped To: SOLMAX
2801 BOUL MARIE-VICTORIN
VARENNES QC J3X 1P7
CANADA

Recipient: Marcotte
Fax:

Delivery #: 80616065
PO #: PO-002406
Weight: 188850.000 LB
Ship Date: 02/16/2022
Package: BULK
Mode: Hopper Car
Car #: CEFX053981
Seal No: 275633

Product:
MARLEX 7104 POLYETHYLENE in Bulk
Additive levels have been tested and meet minimum the specification for this lot.
As a result, Standard OIT (by ASTM D 3895) is greater than 120 minutes (nominal value, not tested on every lot).

Lot Number: DPA810710

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.35	g/10min
Density	D1505	0.919	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

AMANDA ROBY
QUALITY ASSURANCE SUPERINTENDENT

For CoA questions contact Leslie Dziamara at +1-832-813-4806

LIST OF GEOMEMBRANE ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003762

PROJECT NAME : EAGLE GOLD PROJECT

ROLL NUMBER	RESIN LOT NUMBER	MANUFACT. DATE	RESIN MELT INDEX 190/2.16 g/10 min D1238	RESIN DENSITY g/cc D1505	OIT min D3895	HPOIT min D5885	ESCR SP-NCTL hours D5397
Product Code : 1007064							
LLDPE 2.00 mm Black RT			**1.0**	**< 0.926**	**100**		**N/A**
1001-156166	DPA810710	2022-03-26	0.35	0.919	120.00		N/A
1001-156167	DPA810710	2022-03-26	0.35	0.919	120.00		N/A
1001-156168	DPA810710	2022-03-26	0.35	0.919	120.00		N/A
1001-156169	DPA810710	2022-03-26	0.35	0.919	120.00		N/A
1001-156170	DPA810710	2022-03-26	0.35	0.919	120.00		N/A
1001-156171	DPA810710	2022-03-27	0.35	0.919	120.00		N/A
1001-156174	DPA810710	2022-03-27	0.35	0.919	120.00		N/A
1001-156175	DPA810710	2022-03-27	0.35	0.919	120.00		N/A
1001-156176	DPA810710	2022-03-27	0.35	0.919	120.00		N/A
1001-156178	DNM810230	2022-03-27	0.35	0.919	120.00		N/A
1001-156179	DNM810230	2022-03-27	0.35	0.919	120.00		N/A
1001-156182	DNM810230	2022-03-27	0.35	0.919	120.00		N/A
1001-156183	DNM810230	2022-03-27	0.35	0.919	120.00		N/A
1001-156184	DNM810230	2022-03-27	0.35	0.919	120.00		N/A
1001-156190	DNM810230	2022-03-28	0.35	0.919	120.00		N/A

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Solmax International Inc.
2801 MARIE-VICTORIN,, VARENNES, QC, CANADA, J3X 0J4

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LIST OF GEOMEMBRANE ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003762

PROJECT NAME : EAGLE GOLD PROJECT

1001-156191	DNM810230	2022-03-28	0.35	0.919	120.00		N/A
1001-156193	DNM810230	2022-03-28	0.35	0.919	120.00		N/A
1001-156194	DNM810230	2022-03-28	0.35	0.919	120.00		N/A

QUANTITY (ROLLS): 18

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Solmax International Inc.
2801 MARIE-VICTORIN,, VARENNES, QC, CANADA, J3X 0J4

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003762

PROJECT NAME : EAGLE GOLD PROJECT

PRODUCT: 1007064
LLDPE 2.00 mm Black RT

CE Certificate = LL-80-TT-BB

Properties	Thickness ave/min.	GeoM Density	Carbon Black Content	Carbon Black Dispersion	Tensile Yield Strength	Tensile Yield Elong.	Tensile Break Strength	Tensile Break Elong.	Tear Resist.	Puncture Resist.	Dimension Stability	Asperity Height In/Out
Unit	mm	g/cc	%	Cat 1 and 2	kN/m	%	kN/m	%	N	N	%	mm
Test Method	D5994	D792	D4218	D5596	D6693				D1004	D4833	D1204	D7466
Frequency	Each roll	Every 10 rolls	Every 2 rolls	Every 10 rolls	Every 2 rolls				Every 5 rolls	Every 5 rolls		Every roll
Specification	1.90 / 1.70	≤ 0.939	2.0 - 3.0	Cat. 1 / Cat. 2			31	400	220	500		0.50 / 0.50
1001-156166 MD	1.90 / 1.82	0.938	2.74	10/10 views			42.0	556	264	676		0.54 / 0.57
XD							38.4	506	267			
1001-156167 MD	1.90 / 1.78	0.938	2.74	10/10 views			42.0	556	264	676		0.54 / 0.56
XD							38.4	506	267			
1001-156168 MD	1.93 / 1.76	0.938	2.39	10/10 views			41.9	554	264	676		0.55 / 0.57
XD							39.9	525	267			
1001-156169 MD	1.90 / 1.79	0.938	2.39	10/10 views			41.9	554	264	676		0.56 / 0.60
XD							39.9	525	267			
1001-156170 MD	1.94 / 1.85	0.935	2.30	10/10 views			40.6	527	275	636		0.54 / 0.56
XD							36.6	474	289			
1001-156171 MD	1.91 / 1.78	0.935	2.30	10/10 views			40.6	527	275	636		0.56 / 0.57
XD							36.6	474	289			
1001-156174 MD	1.91 / 1.80	0.935	2.49	10/10 views			43.1	555	275	636		0.57 / 0.58
XD							41.2	541	289			
1001-156175 MD	1.90 / 1.72	0.936	2.49	10/10 views			43.1	555	272	654		0.56 / 0.56
XD							41.2	541	285			
1001-156176 MD	1.94 / 1.83	0.936	2.69	10/10 views			42.7	543	272	654		0.56 / 0.57
XD							35.6	464	285			
1001-156178 MD	1.93 / 1.83	0.936	2.44	10/10 views			41.3	519	272	654		0.53 / 0.57
XD							37.0	479	285			
1001-156179 MD	1.93 / 1.84	0.936	2.44	10/10 views			41.3	519	272	654		0.53 / 0.58
XD							37.0	479	285			
1001-156182 MD	1.94 / 1.79	0.937	2.70	10/10 views			40.8	522	264	672		0.54 / 0.54
XD							40.6	528	265			
1001-156183 MD	1.92 / 1.82	0.937	2.59	10/10 views			41.9	543	264	672		0.54 / 0.58
XD							40.3	521	265			
1001-156184 MD	1.94 / 1.74	0.937	2.59	10/10 views			41.9	543	264	672		0.54 / 0.58
XD							40.3	521	265			

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003762

PROJECT NAME : EAGLE GOLD PROJECT

1001-156190	**MD**	1.92 / 1.71	0.936	2.37	10/10 views			42.6	548	277	676		0.55 / 0.55
	XD							38.7	515	272			
1001-156191	**MD**	1.92 / 1.80	0.937	2.58	10/10 views			42.7	538	274	654		0.55 / 0.58
	XD							43.8	565	280			
1001-156193	**MD**	1.92 / 1.83	0.937	2.63	10/10 views			41.0	517	274	654		0.55 / 0.58
	XD							41.7	539	280			
1001-156194	**MD**	1.90 / 1.73	0.937	2.63	10/10 views			41.0	517	274	654		0.56 / 0.58
	XD							41.7	539	280			

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CoA Date: 02/23/2022

Certificate of Analysis

Shipped To: SOLMAX
2801 BOUL MARIE-VICTORIN
VARENNES QC J3X 1P7
CANADA

Recipient: Marcotte
Fax:

Delivery #: 80620395
PO #: PO-002406
Weight: 188950.000 LB
Ship Date: 02/23/2022
Package: BULK
Mode: Hopper Car
Car #: PSPX008175
Seal No: 273865

Product:
MARLEX 7104 POLYETHYLENE in Bulk
Additive levels have been tested and meet minimum the specification for this lot.
As a result, Standard OIT (by ASTM D 3895) is greater than 120 minutes (nominal value, not tested on every lot).

Lot Number: DNM810230

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.35	g/10min
Density	D1505	0.919	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

AMANDA ROBY
QUALITY ASSURANCE SUPERINTENDENT

For CoA questions contact Leslie Dziamara at +1-832-813-4806

CoA Date: 02/16/2022

Certificate of Analysis

Shipped To: SOLMAX
2801 BOUL MARIE-VICTORIN
VARENNES QC J3X 1P7
CANADA

Recipient: Marcotte
Fax:

Delivery #: 80616065
PO #: PO-002406
Weight: 188850.000 LB
Ship Date: 02/16/2022
Package: BULK
Mode: Hopper Car
Car #: CEFX053981
Seal No: 275633

Product:
MARLEX 7104 POLYETHYLENE in Bulk
Additive levels have been tested and meet minimum the specification for this lot.
As a result, Standard OIT (by ASTM D 3895) is greater than 120 minutes (nominal value, not tested on every lot).

Lot Number: DPA810710

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.35	g/10min
Density	D1505	0.919	g/cm3

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LIST OF GEOMEMBRANE ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003755

PROJECT NAME : EAGLE GOLD PROJECT

ROLL NUMBER	RESIN LOT NUMBER	MANUFACT. DATE	RESIN MELT INDEX 190/2.16 g/10 min D1238	RESIN DENSITY g/cc D1505	OIT min D3895	HPOIT min D5885	ESCR SP-NCTL hours D5397
Product Code : 1007064							
LLDPE 2.00 mm Black RT			**1.0**	**< 0.926**	**100**		**N/A**
1001-156020	DPA810700	2022-03-18	0.34	0.919	120.00		N/A
1001-156048	DPA810700	2022-03-20	0.34	0.919	120.00		N/A
1001-156050	DPA810700	2022-03-20	0.34	0.919	120.00		N/A
1001-156051	DPA810700	2022-03-20	0.34	0.919	120.00		N/A
1001-156052	DPA810700	2022-03-20	0.34	0.919	120.00		N/A
1001-156054	DPA810700	2022-03-20	0.34	0.919	120.00		N/A
1001-156056	DPA810700	2022-03-20	0.34	0.919	120.00		N/A
1001-156058	DPA810700	2022-03-20	0.34	0.919	120.00		N/A
1001-156059	DPA810700	2022-03-20	0.34	0.919	120.00		N/A
1001-156060	DPA810700	2022-03-20	0.34	0.919	120.00		N/A
1001-156061	DPA810700	2022-03-20	0.34	0.919	120.00		N/A
1001-156062	DPA810700	2022-03-20	0.34	0.919	120.00		N/A
1001-156101	DPA810710	2022-03-23	0.35	0.919	120.00		N/A
1001-156102	DPA810710	2022-03-23	0.35	0.919	120.00		N/A
1001-156103	DPA810710	2022-03-23	0.35	0.919	120.00		N/A

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LIST OF GEOMEMBRANE ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003755

PROJECT NAME : EAGLE GOLD PROJECT

1001-156104	DPA810710	2022-03-23	0.35	0.919	120.00		N/A
1001-156105	DPA810710	2022-03-23	0.35	0.919	120.00		N/A
1001-156107	DPA810710	2022-03-23	0.35	0.919	120.00		N/A

QUANTITY (ROLLS): 18

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003755

PROJECT NAME : EAGLE GOLD PROJECT

PRODUCT: 1007064
LLDPE 2.00 mm Black RT

CE Certificate = LL-80-TT-BB

Properties	Thickness ave/min.	GeoM Density	Carbon Black Content	Carbon Black Dispersion	Tensile Yield Strength	Tensile Yield Elong.	Tensile Break Strength	Tensile Break Elong.	Tear Resist.	Puncture Resist.	Dimension Stability	Asperity Height In/Out
Unit	mm	g/cc	%	Cat 1 and 2	kN/m	%	kN/m	%	N	N	%	mm
Test Method	D5994	D792	D4218	D5596	D6693				D1004	D4833	D1204	D7466
Frequency	Each roll	Every 10 rolls	Every 2 rolls	Every 10 rolls	Every 2 rolls				Every 5 rolls	Every 5 rolls		Every roll
Specification	1.90 / 1.70	≤ 0.939	2.0 - 3.0	Cat. 1 / Cat. 2			31	400	220	500		0.50 / 0.50
1001-156020 MD	1.90 / 1.72	0.937	2.38	10/10 views			40.5	554	264	618		0.58 / 0.60
XD							39.6	544	260			
1001-156048 MD	1.92 / 1.76	0.939	2.88	10/10 views			39.4	524	281	649		0.55 / 0.58
XD							44.1	567	270			
1001-156050 MD	1.96 / 1.89	0.939	2.47	10/10 views			40.6	540	281	649		0.63 / 0.58
XD							39.8	527	270			
1001-156051 MD	1.97 / 1.85	0.939	2.47	10/10 views			40.6	540	281	649		0.59 / 0.57
XD							39.8	527	270			
1001-156052 MD	1.94 / 1.79	0.939	2.52	10/10 views			39.8	521	281	649		0.55 / 0.56
XD							39.4	533	270			
1001-156054 MD	1.90 / 1.82	0.934	2.81	10/10 views			43.6	578	274	663		0.65 / 0.59
XD							39.6	532	276			
1001-156056 MD	1.93 / 1.76	0.934	2.81	10/10 views			43.6	578	274	663		0.64 / 0.58
XD							39.6	532	276			
1001-156058 MD	1.95 / 1.82	0.934	2.55	10/10 views			46.1	589	274	663		0.60 / 0.57
XD							42.0	540	276			
1001-156059 MD	1.97 / 1.82	0.934	2.55	10/10 views			46.1	589	274	663		0.57 / 0.55
XD							42.0	540	276			
1001-156060 MD	1.97 / 1.85	0.935	2.57	10/10 views			42.7	539	276	645		0.57 / 0.59
XD							43.4	560	282			
1001-156061 MD	1.96 / 1.84	0.935	2.57	10/10 views			42.7	539	276	645		0.58 / 0.58
XD							43.4	560	282			
1001-156062 MD	1.97 / 1.87	0.935	2.59	10/10 views			40.6	517	276	645		0.53 / 0.55
XD							41.7	542	282			
1001-156101 MD	1.90 / 1.82	0.936	2.39	10/10 views			39.2	513	263	685		0.55 / 0.62
XD							39.8	526	263			
1001-156102 MD	1.92 / 1.80	0.936	2.49	10/10 views			39.8	533	263	685		0.54 / 0.56
XD							38.4	521	263			

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003755

PROJECT NAME : EAGLE GOLD PROJECT

1001-156103	**MD**	1.98 / 1.84	0.936	2.49	10/10 views			39.8	533	263	685		0.55 / 0.55
	XD							38.4	521	263			
1001-156104	**MD**	1.90 / 1.82	0.936	2.61	10/10 views			42.4	547	263	685		0.55 / 0.59
	XD							40.5	530	263			
1001-156105	**MD**	1.91 / 1.80	0.937	2.61	10/10 views			42.4	547	250	658		0.57 / 0.55
	XD							40.5	530	253			
1001-156107	**MD**	1.91 / 1.83	0.937	2.61	10/10 views			41.9	540	250	658		0.55 / 0.60
	XD							42.4	554	253			

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Solmax International Inc.

2801 MARIE-VICTORIN,, VARENNES, QC, CANADA, J3X 0J4

SOLMAX.COM

CoA Date: 02/16/2022

Certificate of Analysis

Shipped To: SOLMAX
2801 BOUL MARIE-VICTORIN
VARENNES QC J3X 1P7
CANADA

Recipient: Marcotte
Fax:

Delivery #: 80616066
PO #: PO-002406
Weight: 186750.000 LB
Ship Date: 02/16/2022
Package: BULK
Mode: Hopper Car
Car #: PSPX006981
Seal No: 275210

Product:
MARLEX 7104 POLYETHYLENE in Bulk
Additive levels have been tested and meet minimum the specification for this lot.
As a result, Standard OIT (by ASTM D 3895) is greater than 120 minutes (nominal value, not tested on every lot).

Lot Number: DPA810700

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.34	g/10min
Density	D1505	0.919	g/cm3

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However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

AMANDA ROBY
QUALITY ASSURANCE SUPERINTENDENT

For CoA questions contact Leslie Dziamara at +1-832-813-4806

CoA Date: 02/16/2022

Certificate of Analysis

Shipped To: SOLMAX
2801 BOUL MARIE-VICTORIN
VARENNES QC J3X 1P7
CANADA

Recipient: Marcotte
Fax:

Delivery #: 80616065
PO #: PO-002406
Weight: 188850.000 LB
Ship Date: 02/16/2022
Package: BULK
Mode: Hopper Car
Car #: CEFX053981
Seal No: 275633

Product:
MARLEX 7104 POLYETHYLENE in Bulk
Additive levels have been tested and meet minimum the specification for this lot.
As a result, Standard OIT (by ASTM D 3895) is greater than 120 minutes (nominal value, not tested on every lot).

Lot Number: DPA810710

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.35	g/10min
Density	D1505	0.919	g/cm3

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However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

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QUALITY ASSURANCE SUPERINTENDENT

For CoA questions contact Leslie Dziamara at +1-832-813-4806

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROD

PROJECT NUMBER : E32821

REFERENCE NUMBER : SO-001902

PACKING SLIP NUMBER : VS-000003755

PROJECT NAME : EAGLE GOLD PROJECT

PRODUCT CODE	SPOOL NO.	TYPE	RESIN LOT	DENSITY (G/CC)	CARBON BLACK CONTENT (%)
ROD-LL-5-B	10-051898A	LLDPE	DNH810800	0.925	2.31
ROD-LL-5-B	10-051898B	LLDPE	DNH810800	0.925	2.31
ROD-LL-5-B	10-051898C	LLDPE	DNH810800	0.925	2.31
ROD-LL-5-B	10-051898D	LLDPE	DNH810800	0.925	2.31
ROD-LL-5-B	10-051899A	LLDPE	DNH810800	0.925	2.31
ROD-LL-5-B	10-051899B	LLDPE	DNH810800	0.925	2.31
ROD-LL-5-B	10-051899C	LLDPE	DNH810800	0.925	2.31
ROD-LL-5-B	10-051899D	LLDPE	DNH810800	0.925	2.31
ROD-LL-5-B	10-051900A	LLDPE	DNH810800	0.926	2.41
ROD-LL-5-B	10-051900B	LLDPE	DNH810800	0.926	2.41
ROD-LL-5-B	10-051900C	LLDPE	DNH810800	0.926	2.41
ROD-LL-5-B	10-051900D	LLDPE	DNH810800	0.926	2.41
ROD-LL-5-B	10-051901A	LLDPE	DNH810800	0.926	2.41
ROD-LL-5-B	10-051901B	LLDPE	DNH810800	0.926	2.41
ROD-LL-5-B	10-051901C	LLDPE	DNH810800	0.926	2.41
ROD-LL-5-B	10-051901D	LLDPE	DNH810800	0.926	2.41
ROD-LL-5-B	10-051902A	LLDPE	DNH810800	0.926	2.23
ROD-LL-5-B	10-051902B	LLDPE	DNH810800	0.926	2.23
ROD-LL-5-B	10-051902C	LLDPE	DNH810800	0.926	2.23
ROD-LL-5-B	10-051902D	LLDPE	DNH810800	0.926	2.23
ROD-LL-5-B	10-051903A	LLDPE	DNH810800	0.926	2.23
ROD-LL-5-B	10-051903B	LLDPE	DNH810800	0.926	2.23
ROD-LL-5-B	10-051903C	LLDPE	DNH810800	0.926	2.23
ROD-LL-5-B	10-051903D	LLDPE	DNH810800	0.926	2.23

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROD

PROJECT NUMBER : E32821

REFERENCE NUMBER : SO-001902

PACKING SLIP NUMBER : VS-000003755

PRODUCT CODE	SPOOL NO.	TYPE	RESIN LOT	DENSITY (G/CC)	CARBON BLACK CONTENT (%)
ROD-LL-5-B	10-051904A	LLDPE	DNH810800	0.925	2.46
ROD-LL-5-B	10-051904B	LLDPE	DNH810800	0.925	2.46
ROD-LL-5-B	10-051904C	LLDPE	DNH810800	0.925	2.46
ROD-LL-5-B	10-051904D	LLDPE	DNH810800	0.925	2.46
ROD-LL-5-B	10-051905A	LLDPE	DNH810800	0.925	2.46
ROD-LL-5-B	10-051905B	LLDPE	DNH810800	0.925	2.46
ROD-LL-5-B	10-051905C	LLDPE	DNH810800	0.925	2.46
ROD-LL-5-B	10-051905D	LLDPE	DNH810800	0.925	2.46
ROD-LL-5-B	10-051906A	LLDPE	DNH810800	0.925	2.19
ROD-LL-5-B	10-051906B	LLDPE	DNH810800	0.925	2.19
ROD-LL-5-B	10-051906C	LLDPE	DNH810800	0.925	2.19
ROD-LL-5-B	10-051906D	LLDPE	DNH810800	0.925	2.19
ROD-LL-5-B	10-051907A	LLDPE	DNH810800	0.925	2.19
ROD-LL-5-B	10-051907B	LLDPE	DNH810800	0.925	2.19
ROD-LL-5-B	10-051907C	LLDPE	DNH810800	0.925	2.19
ROD-LL-5-B	10-051907D	LLDPE	DNH810800	0.925	2.19
ROD-LL-5-B	10-051908A	LLDPE	DNH810800	0.925	2.22
ROD-LL-5-B	10-051908B	LLDPE	DNH810800	0.925	2.22

QUANTITY (SPOOLS): 42

Solmax is not a design professional and has not performed any design services to determine if Solmax's goods comply with any project plans or specifications, or with the application or use of Solmax's goods to any particular system, project, purpose, installation or specification.

CoA Date: 09/16/2021

Certificate of Analysis

Shipped To: SOLMAX
2801 BOUL MARIE-VICTORIN
VARENNES QC J3X 1P7
CANADA

Recipient: Marcotte
Fax:

Delivery #: 80516114
PO #: PO-001989
Weight: 187500.000 LB
Ship Date: 09/16/2021
Package: BULK
Mode: Hopper Car
Car #: CPCX817266
Seal No: 262062

Product:
MARLEX 7104 POLYETHYLENE in Bulk
Additive levels have been tested and meet minimum the specification for this lot.
As a result, Standard OIT (by ASTM D 3895) is greater than 120 minutes (nominal value, not tested on every lot).

Lot Number: DNH810800

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.34	g/10min
Density	D1505	0.919	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

AMANDA ROBY
QUALITY ASSURANCE SUPERINTENDENT

For CoA questions contact Leslie Dziamara at +1-832-813-4806

LIST OF GEOMEMBRANE ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003757

PROJECT NAME : EAGLE GOLD PROJECT

ROLL NUMBER	RESIN LOT NUMBER	MANUFACT. DATE	RESIN MELT INDEX 190/2.16 g/10 min D1238	RESIN DENSITY g/cc D1505	OIT min D3895	HPOIT min D5885	ESCR SP-NCTL hours D5397
Product Code : 1007064							
LLDPE 2.00 mm Black RT			**1.0**	**< 0.926**	**100**		**N/A**
1001-156113	DPA810710	2022-03-23	0.35	0.919	120.00		N/A
1001-156115	DPA810710	2022-03-23	0.35	0.919	120.00		N/A
1001-156116	DPA810710	2022-03-23	0.35	0.919	120.00		N/A
1001-156144	DPA810710	2022-03-25	0.35	0.919	120.00		N/A
1001-156145	DPA810710	2022-03-25	0.35	0.919	120.00		N/A
1001-156146	DPA810710	2022-03-25	0.35	0.919	120.00		N/A
1001-156147	DPA810710	2022-03-25	0.35	0.919	120.00		N/A
1001-156148	DPA810710	2022-03-25	0.35	0.919	120.00		N/A
1001-156151	DPA810710	2022-03-25	0.35	0.919	120.00		N/A
1001-156152	DPA810710	2022-03-25	0.35	0.919	120.00		N/A
1001-156153	DPA810710	2022-03-26	0.35	0.919	120.00		N/A
1001-156154	DPA810710	2022-03-26	0.35	0.919	120.00		N/A
1001-156156	DPA810710	2022-03-26	0.35	0.919	120.00		N/A
1001-156157	DPA810710	2022-03-26	0.35	0.919	120.00		N/A
1001-156158	DPA810710	2022-03-26	0.35	0.919	120.00		N/A

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LIST OF GEOMEMBRANE ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003757

PROJECT NAME : EAGLE GOLD PROJECT

1001-156159	DPA810710	2022-03-26	0.35	0.919	120.00		N/A
1001-156160	DPA810710	2022-03-26	0.35	0.919	120.00		N/A
1001-156161	DPA810710	2022-03-26	0.35	0.919	120.00		N/A

QUANTITY (ROLLS): 18

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Solmax International Inc.
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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003757

PROJECT NAME : EAGLE GOLD PROJECT

PRODUCT: 1007064
LLDPE 2.00 mm Black RT

CE Certificate = LL-80-TT-BB

Properties	Thickness ave/min.	GeoM Density	Carbon Black Content	Carbon Black Dispersion	Tensile Yield Strength	Tensile Yield Elong.	Tensile Break Strength	Tensile Break Elong.	Tear Resist.	Puncture Resist.	Dimension Stability	Asperity Height In/Out
Unit	mm	g/cc	%	Cat 1 and 2	kN/m	%	kN/m	%	N	N	%	mm
Test Method	D5994	D792	D4218	D5596	D6693				D1004	D4833	D1204	D7466
Frequency	Each roll	Every 10 rolls	Every 2 rolls	Every 10 rolls	Every 2 rolls				Every 5 rolls	Every 5 rolls		Every roll
Specification	1.90 / 1.70	≤ 0.939	2.0 - 3.0	Cat. 1 / Cat. 2			31	400	220	500		0.50 / 0.50
1001-156113 MD	1.91 / 1.80	0.935	2.70	10/10 views			41.5	528	254	667		0.57 / 0.78
XD							40.3	518	266			
1001-156115 MD	1.90 / 1.80	0.935	2.84	10/10 views			42.4	547	254	667		0.61 / 0.62
XD							37.1	491	266			
1001-156116 MD	1.90 / 1.71	0.935	2.70	10/10 views			39.6	514	254	667		0.55 / 0.67
XD							37.3	488	266			
1001-156144 MD	1.92 / 1.82	0.936	2.33	10/10 views			44.1	544	286	654		0.53 / 0.62
XD							41.9	525	282			
1001-156145 MD	1.91 / 1.80	0.937	2.33	10/10 views			44.1	544	270	694		0.53 / 0.62
XD							41.9	525	270			
1001-156146 MD	1.90 / 1.84	0.937	2.30	10/10 views			41.2	548	270	694		0.56 / 0.58
XD							38.7	513	270			
1001-156147 MD	1.90 / 1.81	0.937	2.30	10/10 views			41.2	548	270	694		0.54 / 0.61
XD							38.7	513	270			
1001-156148 MD	1.91 / 1.84	0.936	2.46	10/10 views			41.9	545	257	658		0.54 / 0.62
XD							39.1	519	260			
1001-156151 MD	1.93 / 1.80	0.936	2.48	10/10 views			41.2	545	257	658		0.58 / 0.60
XD							37.7	498	260			
1001-156152 MD	1.92 / 1.80	0.936	2.48	10/10 views			41.2	545	257	658		0.56 / 0.61
XD							37.7	498	260			
1001-156153 MD	1.90 / 1.79	0.936	2.61	10/10 views			40.5	534	257	658		0.57 / 0.61
XD							38.5	508	260			
1001-156154 MD	1.90 / 1.77	0.935	2.61	10/10 views			40.5	534	272	627		0.57 / 0.62
XD							38.5	508	283			
1001-156156 MD	1.94 / 1.81	0.936	2.61	10/10 views			41.9	558	281	627		0.57 / 0.57
XD							38.0	500	277			
1001-156157 MD	1.96 / 1.80	0.936	2.75	10/10 views			42.9	545	281	627		0.57 / 0.57
XD							41.5	535	277			

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003757

PROJECT NAME : EAGLE GOLD PROJECT

1001-156158	**MD**	1.96 / 1.85	0.936	2.75	10/10 views			42.9	545	281	627		0.57 / 0.57
	XD							41.5	535	277			
1001-156159	**MD**	1.94 / 1.78	0.936	2.67	10/10 views			43.3	538	281	627		0.56 / 0.57
	XD							41.3	520	277			
1001-156160	**MD**	1.93 / 1.77	0.937	2.67	10/10 views			43.3	538	270	685		0.54 / 0.56
	XD							41.3	520	264			
1001-156161	**MD**	1.93 / 1.87	0.937	2.38	10/10 views			40.8	524	270	685		0.54 / 0.56
	XD							39.2	520	264			

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Solmax International Inc.

2801 MARIE-VICTORIN,, VARENNES, QC, CANADA, J3X 0J4

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CoA Date: 02/16/2022

Certificate of Analysis

Shipped To: SOLMAX
2801 BOUL MARIE-VICTORIN
VARENNES QC J3X 1P7
CANADA

Recipient: Marcotte
Fax:

Delivery #: 80616065
PO #: PO-002406
Weight: 188850.000 LB
Ship Date: 02/16/2022
Package: BULK
Mode: Hopper Car
Car #: CEFX053981
Seal No: 275633

Product:
MARLEX 7104 POLYETHYLENE in Bulk
Additive levels have been tested and meet minimum the specification for this lot.
As a result, Standard OIT (by ASTM D 3895) is greater than 120 minutes (nominal value, not tested on every lot).

Lot Number: DPA810710

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.35	g/10min
Density	D1505	0.919	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

AMANDA ROBY
QUALITY ASSURANCE SUPERINTENDENT

For CoA questions contact Leslie Dziamara at +1-832-813-4806

LIST OF GEOMEMBRANE ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003756

PROJECT NAME : EAGLE GOLD PROJECT

ROLL NUMBER	RESIN LOT NUMBER	MANUFACT. DATE	RESIN MELT INDEX 190/2.16 g/10 min D1238	RESIN DENSITY g/cc D1505	OIT min D3895	HPOIT min D5885	ESCR SP-NCTL hours D5397
Product Code : 1007064							
LLDPE 2.00 mm Black RT			**1.0**	**< 0.926**	**100**		**N/A**
1001-156010	DPA810700	2022-03-17	0.34	0.919	120.00		N/A
1001-156011	DPA810700	2022-03-17	0.34	0.919	120.00		N/A
1001-156012	DPA810700	2022-03-17	0.34	0.919	120.00		N/A
1001-156016	DPA810700	2022-03-18	0.34	0.919	120.00		N/A
1001-156017	DPA810700	2022-03-18	0.34	0.919	120.00		N/A
1001-156018	DPA810700	2022-03-18	0.34	0.919	120.00		N/A
1001-156021	DPA810700	2022-03-18	0.34	0.919	120.00		N/A
1001-156026	DPA810700	2022-03-18	0.34	0.919	120.00		N/A
1001-156030	DPA810700	2022-03-18	0.34	0.919	120.00		N/A
1001-156041	DPA810700	2022-03-19	0.34	0.919	120.00		N/A
1001-156042	DPA810700	2022-03-19	0.34	0.919	120.00		N/A
1001-156043	DPA810700	2022-03-19	0.34	0.919	120.00		N/A
1001-156044	DPA810700	2022-03-19	0.34	0.919	120.00		N/A
1001-156045	DPA810700	2022-03-19	0.34	0.919	120.00		N/A
1001-156046	DPA810700	2022-03-19	0.34	0.919	120.00		N/A

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Solmax International Inc.
2801 MARIE-VICTORIN,, VARENNES, QC, CANADA, J3X 0J4

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LIST OF GEOMEMBRANE ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003756

PROJECT NAME : EAGLE GOLD PROJECT

1001-156047	DPA810700	2022-03-20	0.34	0.919	120.00		N/A
1001-156049	DPA810700	2022-03-20	0.34	0.919	120.00		N/A
1001-156053	DPA810700	2022-03-20	0.34	0.919	120.00		N/A

QUANTITY (ROLLS): 18

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Solmax International Inc.
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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003756

PROJECT NAME : EAGLE GOLD PROJECT

PRODUCT: 1007064
LLDPE 2.00 mm Black RT

CE Certificate = LL-80-TT-BB

Properties	Thickness ave/min.	GeoM Density	Carbon Black Content	Carbon Black Dispersion	Tensile Yield Strength	Tensile Yield Elong.	Tensile Break Strength	Tensile Break Elong.	Tear Resist.	Puncture Resist.	Dimension Stability	Asperity Height In/Out
Unit	mm	g/cc	%	Cat 1 and 2	kN/m	%	kN/m	%	N	N	%	mm
Test Method	D5994	D792	D4218	D5596	D6693				D1004	D4833	D1204	D7466
Frequency	Each roll	Every 10 rolls	Every 2 rolls	Every 10 rolls	Every 2 rolls				Every 5 rolls	Every 5 rolls		Every roll
Specification	1.90 / 1.70	≤ 0.939	2.0 - 3.0	Cat. 1 / Cat. 2			31	400	220	500		0.50 / 0.50
1001-156010 MD	2.47 / 2.23	0.938	2.68	10/10 views			41.0	536	274	641		0.54 / 0.61
XD							38.4	502	259			
1001-156011 MD	1.97 / 1.85	0.938	2.59	10/10 views			45.7	510	274	641		0.59 / 0.59
XD							45.9	511	259			
1001-156012 MD	1.95 / 1.82	0.938	2.59	10/10 views			45.7	510	274	641		0.56 / 0.60
XD							45.9	511	259			
1001-156016 MD	1.90 / 1.81	0.938	2.64	10/10 views			38.4	530	262	609		0.57 / 0.57
XD							38.9	548	268			
1001-156017 MD	1.92 / 1.79	0.937	2.60	10/10 views			41.0	563	264	618		0.59 / 0.55
XD							38.9	545	260			
1001-156018 MD	1.93 / 1.86	0.937	2.60	10/10 views			41.0	563	264	618		0.56 / 0.55
XD							38.9	545	260			
1001-156021 MD	1.91 / 1.74	0.937	2.38	10/10 views			40.5	554	264	618		0.57 / 0.57
XD							39.6	544	260			
1001-156026 MD	1.91 / 1.85	0.937	2.53	10/10 views			43.4	569	257	632		0.66 / 0.61
XD							40.1	543	265			
1001-156030 MD	1.90 / 1.81	0.935	2.43	10/10 views			44.0	582	265	618		0.58 / 0.59
XD							42.9	571	272			
1001-156041 MD	1.93 / 1.83	0.936	2.44	10/10 views			43.1	554	259	641		0.60 / 0.62
XD							41.9	539	257			
1001-156042 MD	1.93 / 1.84	0.936	2.70	10/10 views			43.6	568	259	641		0.57 / 0.56
XD							42.0	553	257			
1001-156043 MD	1.96 / 1.77	0.936	2.70	10/10 views			43.6	568	274	641		0.62 / 0.56
XD							42.0	553	278			
1001-156044 MD	1.95 / 1.86	0.936	2.49	10/10 views			43.1	548	274	641		0.55 / 0.54
XD							38.9	501	278			
1001-156045 MD	1.94 / 1.86	0.936	2.49	10/10 views			43.1	548	274	641		0.63 / 0.58
XD							38.9	501	278			

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Solmax International Inc.
2801 MARIE-VICTORIN,, VARENNES, QC, CANADA, J3X 0J4

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003756

PROJECT NAME : EAGLE GOLD PROJECT

1001-156046	**MD**	1.95 / 1.81	0.936	2.53	10/10 views			42.9	566	274	641		0.54 / 0.60
	XD							41.7	551	278			
1001-156047	**MD**	1.90 / 1.76	0.936	2.53	10/10 views			42.9	566	274	641		0.57 / 0.55
	XD							41.7	551	278			
1001-156049	**MD**	1.94 / 1.76	0.939	2.88	10/10 views			39.4	524	281	649		0.57 / 0.63
	XD							44.1	567	270			
1001-156053	**MD**	1.91 / 1.86	0.934	2.52	10/10 views			39.8	521	274	663		0.55 / 0.61
	XD							39.4	533	276			

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Solmax International Inc.

2801 MARIE-VICTORIN,, VARENNES, QC, CANADA, J3X 0J4

SOLMAX.COM

CoA Date: 02/16/2022

Certificate of Analysis

Shipped To: SOLMAX
2801 BOUL MARIE-VICTORIN
VARENNES QC J3X 1P7
CANADA

Recipient: Marcotte
Fax:

Delivery #: 80616066
PO #: PO-002406
Weight: 186750.000 LB
Ship Date: 02/16/2022
Package: BULK
Mode: Hopper Car
Car #: PSPX006981
Seal No: 275210

Product:
MARLEX 7104 POLYETHYLENE in Bulk
Additive levels have been tested and meet minimum the specification for this lot.
As a result, Standard OIT (by ASTM D 3895) is greater than 120 minutes (nominal value, not tested on every lot).

Lot Number: DPA810700

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.34	g/10min
Density	D1505	0.919	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

AMANDA ROBY
QUALITY ASSURANCE SUPERINTENDENT

For CoA questions contact Leslie Dziamara at +1-832-813-4806

LIST OF GEOMEMBRANE ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003758

PROJECT NAME : EAGLE GOLD PROJECT

ROLL NUMBER	RESIN LOT NUMBER	MANUFACT. DATE	RESIN MELT INDEX 190/2.16 g/10 min D1238	RESIN DENSITY g/cc D1505	OIT min D3895	HPOIT min D5885	ESCR SP-NCTL hours D5397
Product Code : 1007064							
LLDPE 2.00 mm Black RT			**1.0**	**< 0.926**	**100**		**N/A**
1001-156013	DPA810700	2022-03-17	0.34	0.919	120.00		N/A
1001-156015	DPA810700	2022-03-18	0.34	0.919	120.00		N/A
1001-156022	DPA810700	2022-03-18	0.34	0.919	120.00		N/A
1001-156023	DPA810700	2022-03-18	0.34	0.919	120.00		N/A
1001-156024	DPA810700	2022-03-18	0.34	0.919	120.00		N/A
1001-156025	DPA810700	2022-03-18	0.34	0.919	120.00		N/A
1001-156028	DPA810700	2022-03-18	0.34	0.919	120.00		N/A
1001-156029	DPA810700	2022-03-18	0.34	0.919	120.00		N/A
1001-156031	DPA810700	2022-03-18	0.34	0.919	120.00		N/A
1001-156032	DPA810700	2022-03-19	0.34	0.919	120.00		N/A
1001-156033	DPA810700	2022-03-19	0.34	0.919	120.00		N/A
1001-156034	DPA810700	2022-03-19	0.34	0.919	120.00		N/A
1001-156035	DPA810700	2022-03-19	0.34	0.919	120.00		N/A
1001-156036	DPA810700	2022-03-19	0.34	0.919	120.00		N/A
1001-156037	DPA810700	2022-03-19	0.34	0.919	120.00		N/A

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Solmax International Inc.
2801 MARIE-VICTORIN,, VARENNES, QC, CANADA, J3X 0J4

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LIST OF GEOMEMBRANE ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003758

PROJECT NAME : EAGLE GOLD PROJECT

1001-156038	DPA810700	2022-03-19	0.34	0.919	120.00		N/A
1001-156039	DPA810700	2022-03-19	0.34	0.919	120.00		N/A
1001-156123	DPA810710	2022-03-24	0.35	0.919	120.00		N/A

QUANTITY (ROLLS): 18

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Solmax International Inc.
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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003758

PROJECT NAME : EAGLE GOLD PROJECT

PRODUCT: 1007064
LLDPE 2.00 mm Black RT

CE Certificate = LL-80-TT-BB

Properties	Thickness ave/min.	GeoM Density	Carbon Black Content	Carbon Black Dispersion	Tensile Yield Strength	Tensile Yield Elong.	Tensile Break Strength	Tensile Break Elong.	Tear Resist.	Puncture Resist.	Dimension Stability	Asperity Height In/Out
Unit	mm	g/cc	%	Cat 1 and 2	kN/m	%	kN/m	%	N	N	%	mm
Test Method	D5994	D792	D4218	D5596	D6693				D1004	D4833	D1204	D7466
Frequency	Each roll	Every 10 rolls	Every 2 rolls	Every 10 rolls	Every 2 rolls				Every 5 rolls	Every 5 rolls		Every roll
Specification	1.90 / 1.70	≤ 0.939	2.0 - 3.0	Cat. 1 / Cat. 2			31	400	220	500		0.50 / 0.50
1001-156013 MD	1.92 / 1.84	0.938	2.49	10/10 views			41.0	555	274	641		0.53 / 0.55
XD							38.7	547	259			
1001-156015 MD	1.91 / 1.82	0.938	2.49	10/10 views			41.0	555	262	609		0.58 / 0.65
XD							38.7	547	268			
1001-156022 MD	1.93 / 1.79	0.937	2.70	10/10 views			42.2	553	264	618		0.65 / 0.57
XD							40.5	548	260			
1001-156023 MD	1.95 / 1.79	0.937	2.70	10/10 views			42.2	553	257	632		0.62 / 0.58
XD							40.5	548	265			
1001-156024 MD	1.90 / 1.84	0.937	2.31	10/10 views			41.2	563	257	632		0.66 / 0.58
XD							40.8	565	265			
1001-156025 MD	1.91 / 1.83	0.937	2.31	10/10 views			41.2	563	257	632		0.65 / 0.61
XD							40.8	565	265			
1001-156028 MD	1.92 / 1.82	0.937	2.53	10/10 views			43.4	569	257	632		0.61 / 0.62
XD							40.1	543	265			
1001-156029 MD	1.93 / 1.81	0.935	2.43	10/10 views			44.0	582	265	618		0.62 / 0.59
XD							42.9	571	272			
1001-156031 MD	1.90 / 1.72	0.935	2.63	10/10 views			40.5	536	265	618		0.55 / 0.57
XD							37.0	504	272			
1001-156032 MD	1.91 / 1.78	0.935	2.63	10/10 views			40.5	536	265	618		0.56 / 0.55
XD							37.0	504	272			
1001-156033 MD	1.91 / 1.75	0.935	2.46	10/10 views			36.8	487	265	618		0.57 / 0.57
XD							39.4	536	272			
1001-156034 MD	1.92 / 1.79	0.936	2.46	10/10 views			36.8	487	274	641		0.58 / 0.58
XD							39.4	536	262			
1001-156035 MD	1.90 / 1.73	0.936	2.57	10/10 views			41.5	557	274	641		0.59 / 0.61
XD							41.7	563	262			
1001-156036 MD	1.92 / 1.71	0.936	2.57	10/10 views			41.5	557	274	641		0.58 / 0.58
XD							41.7	563	262			

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Solmax International Inc.
2801 MARIE-VICTORIN,, VARENNES, QC, CANADA, J3X 0J4

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003758

PROJECT NAME : EAGLE GOLD PROJECT

1001-156037	**MD**	1.90 / 1.78	0.936	2.69	10/10 views			35.4	551	259	641		0.53 / 0.56
	XD							41.0	518	257			
1001-156038	**MD**	1.90 / 1.80	0.936	2.69	10/10 views			35.4	551	259	641		0.63 / 0.65
	XD							41.0	518	257			
1001-156039	**MD**	1.98 / 1.85	0.936	2.44	10/10 views			43.1	554	259	641		0.57 / 0.60
	XD							41.9	539	257			
1001-156123	**MD**	2.04 / 1.96	0.935	2.56	10/10 views			41.9	548	274	645		0.56 / 0.55
	XD							41.5	558	274			

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Solmax International Inc.

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CoA Date: 02/16/2022

Certificate of Analysis

Shipped To: SOLMAX
2801 BOUL MARIE-VICTORIN
VARENNES QC J3X 1P7
CANADA

Recipient: Marcotte
Fax:

Delivery #: 80616066
PO #: PO-002406
Weight: 186750.000 LB
Ship Date: 02/16/2022
Package: BULK
Mode: Hopper Car
Car #: PSPX006981
Seal No: 275210

Product:
MARLEX 7104 POLYETHYLENE in Bulk
Additive levels have been tested and meet minimum the specification for this lot.
As a result, Standard OIT (by ASTM D 3895) is greater than 120 minutes (nominal value, not tested on every lot).

Lot Number: DPA810700

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.34	g/10min
Density	D1505	0.919	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

AMANDA ROBY
QUALITY ASSURANCE SUPERINTENDENT

For CoA questions contact Leslie Dziamara at +1-832-813-4806

CoA Date: 02/16/2022

Certificate of Analysis

Shipped To: SOLMAX
2801 BOUL MARIE-VICTORIN
VARENNES QC J3X 1P7
CANADA

Recipient: Marcotte
Fax:

Delivery #: 80616065
PO #: PO-002406
Weight: 188850.000 LB
Ship Date: 02/16/2022
Package: BULK
Mode: Hopper Car
Car #: CEFX053981
Seal No: 275633

Product:
MARLEX 7104 POLYETHYLENE in Bulk
Additive levels have been tested and meet minimum the specification for this lot.
As a result, Standard OIT (by ASTM D 3895) is greater than 120 minutes (nominal value, not tested on every lot).

Lot Number: DPA810710

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.35	g/10min
Density	D1505	0.919	g/cm3

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QUALITY ASSURANCE SUPERINTENDENT

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LIST OF GEOMEMBRANE ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003759

PROJECT NAME : EAGLE GOLD PROJECT

ROLL NUMBER	RESIN LOT NUMBER	MANUFACT. DATE	RESIN MELT INDEX 190/2.16 g/10 min D1238	RESIN DENSITY g/cc D1505	OIT min D3895	HPOIT min D5885	ESCR SP-NCTL hours D5397
Product Code : 1007064							
LLDPE 2.00 mm Black RT			**1.0**	**< 0.926**	**100**		**N/A**
1001-156108	DPA810710	2022-03-23	0.35	0.919	120.00		N/A
1001-156109	DPA810710	2022-03-23	0.35	0.919	120.00		N/A
1001-156110	DPA810710	2022-03-23	0.35	0.919	120.00		N/A
1001-156112	DPA810710	2022-03-23	0.35	0.919	120.00		N/A
1001-156114	DPA810710	2022-03-23	0.35	0.919	120.00		N/A
1001-156126	DPA810710	2022-03-24	0.35	0.919	120.00		N/A
1001-156127	DPA810710	2022-03-24	0.35	0.919	120.00		N/A
1001-156142	DPA810710	2022-03-25	0.35	0.919	120.00		N/A
1001-156143	DPA810710	2022-03-25	0.35	0.919	120.00		N/A
1001-156150	DPA810710	2022-03-25	0.35	0.919	120.00		N/A
1001-156155	DPA810710	2022-03-26	0.35	0.919	120.00		N/A
1001-156162	DPA810710	2022-03-26	0.35	0.919	120.00		N/A
1001-156163	DPA810710	2022-03-26	0.35	0.919	120.00		N/A
1001-156165	DPA810710	2022-03-26	0.35	0.919	120.00		N/A
1001-156172	DPA810710	2022-03-27	0.35	0.919	120.00		N/A

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LIST OF GEOMEMBRANE ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003759

PROJECT NAME : EAGLE GOLD PROJECT

1001-156173	DPA810710	2022-03-27	0.35	0.919	120.00		N/A
1001-156177	DPA810710	2022-03-27	0.35	0.919	120.00		N/A
1001-156180	DNM810230	2022-03-27	0.35	0.919	120.00		N/A

QUANTITY (ROLLS): 18

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003759

PROJECT NAME : EAGLE GOLD PROJECT

PRODUCT: 1007064
LLDPE 2.00 mm Black RT

CE Certificate = LL-80-TT-BB

Properties	Thickness ave/min.	GeoM Density	Carbon Black Content	Carbon Black Dispersion	Tensile Yield Strength	Tensile Yield Elong.	Tensile Break Strength	Tensile Break Elong.	Tear Resist.	Puncture Resist.	Dimension Stability	Asperity Height In/Out
Unit	mm	g/cc	%	Cat 1 and 2	kN/m	%	kN/m	%	N	N	%	mm
Test Method	D5994	D792	D4218	D5596	D6693				D1004	D4833	D1204	D7466
Frequency	Each roll	Every 10 rolls	Every 2 rolls	Every 10 rolls	Every 2 rolls				Every 5 rolls	Every 5 rolls		Every roll
Specification	1.90 / 1.70	≤ 0.939	2.0 - 3.0	Cat. 1 / Cat. 2			31	400	220	500		0.50 / 0.50
1001-156108 MD	1.90 / 1.83	0.937	2.61	10/10 views			41.9	540	250	658		0.58 / 0.66
XD							42.4	554	253			
1001-156109 MD	1.90 / 1.80	0.937	2.80	10/10 views			42.0	554	250	658		0.53 / 0.61
XD							40.8	553	253			
1001-156110 MD	1.94 / 1.80	0.937	2.80	10/10 views			42.0	554	250	658		0.55 / 0.61
XD							40.8	553	253			
1001-156112 MD	1.91 / 1.84	0.935	2.70	10/10 views			41.5	528	254	667		0.55 / 0.66
XD							40.3	518	266			
1001-156114 MD	1.90 / 1.86	0.935	2.84	10/10 views			42.4	547	254	667		0.55 / 0.65
XD							37.1	491	266			
1001-156126 MD	1.93 / 1.80	0.937	2.80	10/10 views			41.3	535	263	694		0.53 / 0.53
XD							40.1	526	270			
1001-156127 MD	1.90 / 1.84	0.937	2.80	10/10 views			41.3	535	263	694		0.58 / 0.57
XD							40.1	526	270			
1001-156142 MD	2.00 / 1.88	0.936	2.53	10/10 views			42.4	529	286	654		0.55 / 0.54
XD							43.6	550	282			
1001-156143 MD	1.99 / 1.90	0.936	2.53	10/10 views			42.4	529	286	654		0.53 / 0.53
XD							43.6	550	282			
1001-156150 MD	1.91 / 1.85	0.936	2.46	10/10 views			41.9	545	257	658		0.55 / 0.59
XD							39.1	519	260			
1001-156155 MD	1.90 / 1.71	0.936	2.61	10/10 views			41.9	558	281	627		0.57 / 0.59
XD							38.0	500	277			
1001-156162 MD	1.94 / 1.82	0.937	2.38	10/10 views			40.8	524	270	685		0.55 / 0.61
XD							39.2	520	264			
1001-156163 MD	1.90 / 1.81	0.937	2.39	10/10 views			40.3	532	270	685		0.54 / 0.57
XD							37.7	497	264			
1001-156165 MD	1.90 / 1.79	0.937	2.39	10/10 views			40.3	532	270	685		0.54 / 0.58
XD							37.7	497	264			

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003759

PROJECT NAME : EAGLE GOLD PROJECT

1001-156172	**MD**	1.90 / 1.73	0.935	2.44	10/10 views			40.1	522	275	636		0.56 / 0.57
	XD							40.5	539	289			
1001-156173	**MD**	1.90 / 1.81	0.935	2.44	10/10 views			40.1	522	275	636		0.57 / 0.58
	XD							40.5	539	289			
1001-156177	**MD**	1.91 / 1.81	0.936	2.69	10/10 views			42.7	543	272	654		0.54 / 0.57
	XD							35.6	464	285			
1001-156180	**MD**	1.92 / 1.85	0.937	2.70	10/10 views			40.8	522	264	672		0.55 / 0.57
	XD							40.6	528	265			

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Solmax International Inc.

2801 MARIE-VICTORIN,, VARENNES, QC, CANADA, J3X 0J4

SOLMAX.COM

CoA Date: 02/23/2022

Certificate of Analysis

Shipped To: SOLMAX
2801 BOUL MARIE-VICTORIN
VARENNES QC J3X 1P7
CANADA

Recipient: Marcotte
Fax:

Delivery #: 80620395
PO #: PO-002406
Weight: 188950.000 LB
Ship Date: 02/23/2022
Package: BULK
Mode: Hopper Car
Car #: PSPX008175
Seal No: 273865

Product:
MARLEX 7104 POLYETHYLENE in Bulk
Additive levels have been tested and meet minimum the specification for this lot.
As a result, Standard OIT (by ASTM D 3895) is greater than 120 minutes (nominal value, not tested on every lot).

Lot Number: DNM810230

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.35	g/10min
Density	D1505	0.919	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

AMANDA ROBY
QUALITY ASSURANCE SUPERINTENDENT

For CoA questions contact Leslie Dziamara at +1-832-813-4806

CoA Date: 02/16/2022

Certificate of Analysis

Shipped To: SOLMAX
2801 BOUL MARIE-VICTORIN
VARENNES QC J3X 1P7
CANADA

Recipient: Marcotte
Fax:

Delivery #: 80616065
PO #: PO-002406
Weight: 188850.000 LB
Ship Date: 02/16/2022
Package: BULK
Mode: Hopper Car
Car #: CEFX053981
Seal No: 275633

Product:
MARLEX 7104 POLYETHYLENE in Bulk
Additive levels have been tested and meet minimum the specification for this lot.
As a result, Standard OIT (by ASTM D 3895) is greater than 120 minutes (nominal value, not tested on every lot).

Lot Number: DPA810710

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.35	g/10min
Density	D1505	0.919	g/cm3

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AMANDA ROBY
QUALITY ASSURANCE SUPERINTENDENT

For CoA questions contact Leslie Dziamara at +1-832-813-4806

LIST OF GEOMEMBRANE ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003760

PROJECT NAME : EAGLE GOLD PROJECT

ROLL NUMBER	RESIN LOT NUMBER	MANUFACT. DATE	RESIN MELT INDEX 190/2.16 g/10 min D1238	RESIN DENSITY g/cc D1505	OIT min D3895	HPOIT min D5885	ESCR SP-NCTL hours D5397
Product Code : 1007064							
LLDPE 2.00 mm Black RT			**1.0**	**< 0.926**	**100**		**N/A**
1001-156185	DNM810230	2022-03-27	0.35	0.919	120.00		N/A
1001-156186	DNM810230	2022-03-27	0.35	0.919	120.00		N/A
1001-156187	DNM810230	2022-03-27	0.35	0.919	120.00		N/A
1001-156188	DNM810230	2022-03-28	0.35	0.919	120.00		N/A
1001-156189	DNM810230	2022-03-28	0.35	0.919	120.00		N/A
1001-156192	DNM810230	2022-03-28	0.35	0.919	120.00		N/A
1001-156195	DNM810230	2022-03-28	0.35	0.919	120.00		N/A
1001-156196	DNM810230	2022-03-28	0.35	0.919	120.00		N/A
1001-156197	DNM810230	2022-03-28	0.35	0.919	120.00		N/A
1001-156198	DNM810230	2022-03-28	0.35	0.919	120.00		N/A
1001-156199	DNM810230	2022-03-28	0.35	0.919	120.00		N/A
1001-156200	DNM810230	2022-03-28	0.35	0.919	120.00		N/A
1001-156201	DNM810230	2022-03-28	0.35	0.919	120.00		N/A
1001-156202	DNM810230	2022-03-28	0.35	0.919	120.00		N/A

QUANTITY (ROLLS): 14

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Solmax International Inc.
2801 MARIE-VICTORIN,, VARENNES, QC, CANADA, J3X 0J4

SOLMAX.COM

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32821

SALES ORDER: SO-001902

PACKING SLIP NUMBER: VS-000003760

PROJECT NAME : EAGLE GOLD PROJECT

PRODUCT: 1007064
LLDPE 2.00 mm Black RT

CE Certificate = LL-80-TT-BB

Properties	Thickness ave/min.	GeoM Density	Carbon Black Content	Carbon Black Dispersion	Tensile Yield Strength	Tensile Yield Elong.	Tensile Break Strength	Tensile Break Elong.	Tear Resist.	Puncture Resist.	Dimension Stability	Asperity Height In/Out
Unit	mm	g/cc	%	Cat 1 and 2	kN/m	%	kN/m	%	N	N	%	mm
Test Method	D5994	D792	D4218	D5596	D6693				D1004	D4833	D1204	D7466
Frequency	Each roll	Every 10 rolls	Every 2 rolls	Every 10 rolls	Every 2 rolls				Every 5 rolls	Every 5 rolls		Every roll
Specification	1.90 / 1.70	≤ 0.939	2.0 - 3.0	Cat. 1 / Cat. 2			31	400	220	500		0.50 / 0.50
1001-156185 MD	1.93 / 1.79	0.937	2.67	10/10 views			41.3	534	264	672		0.55 / 0.56
XD							39.1	509	265			
1001-156186 MD	1.96 / 1.83	0.936	2.67	10/10 views			41.3	534	277	676		0.54 / 0.57
XD							39.1	509	272			
1001-156187 MD	1.94 / 1.82	0.936	2.54	10/10 views			42.0	536	277	676		0.55 / 0.56
XD							38.9	501	272			
1001-156188 MD	1.91 / 1.83	0.936	2.54	10/10 views			42.0	536	277	676		0.56 / 0.56
XD							38.9	501	272			
1001-156189 MD	1.95 / 1.79	0.936	2.37	10/10 views			42.6	548	277	676		0.53 / 0.53
XD							38.7	515	272			
1001-156192 MD	1.91 / 1.77	0.937	2.58	10/10 views			42.7	538	274	654		0.57 / 0.57
XD							43.8	565	280			
1001-156195 MD	1.93 / 1.86	0.937	2.65	10/10 views			39.9	492	274	654		0.66 / 0.64
XD							39.4	509	280			
1001-156196 MD	1.91 / 1.83	0.933	2.65	10/10 views			39.9	492	274	658		0.61 / 0.65
XD							39.4	509	287			
1001-156197 MD	1.91 / 1.83	0.933	2.93	10/10 views			44.7	564	274	658		0.61 / 0.67
XD							37.1	478	287			
1001-156198 MD	1.90 / 1.83	0.933	2.93	10/10 views			44.7	564	274	658		0.62 / 0.64
XD							37.1	478	287			
1001-156199 MD	1.93 / 1.82	0.933	2.43	10/10 views			41.7	529	274	658		0.61 / 0.64
XD							41.7	544	287			
1001-156200 MD	1.90 / 1.84	0.933	2.43	10/10 views			41.7	529	274	658		0.64 / 0.63
XD							41.7	544	287			
1001-156201 MD	1.93 / 1.83	0.935	2.57	10/10 views			41.2	523	274	654		0.63 / 0.64
XD							39.6	511	278			
1001-156202 MD	2.00 / 1.96	0.935	2.57	10/10 views			41.2	523	274	654		0.65 / 0.64
XD							39.6	511	278			

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Solmax International Inc.
2801 MARIE-VICTORIN,, VARENNES, QC, CANADA, J3X 0J4

SOLMAX.COM

CoA Date: 02/23/2022

Certificate of Analysis

Shipped To: SOLMAX
2801 BOUL MARIE-VICTORIN
VARENNES QC J3X 1P7
CANADA

Recipient: Marcotte
Fax:

Delivery #: 80620395
PO #: PO-002406
Weight: 188950.000 LB
Ship Date: 02/23/2022
Package: BULK
Mode: Hopper Car
Car #: PSPX008175
Seal No: 273865

Product:
MARLEX 7104 POLYETHYLENE in Bulk
Additive levels have been tested and meet minimum the specification for this lot.
As a result, Standard OIT (by ASTM D 3895) is greater than 120 minutes (nominal value, not tested on every lot).

Lot Number: DNM810230

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.35	g/10min
Density	D1505	0.919	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

AMANDA ROBY
QUALITY ASSURANCE SUPERINTENDENT

For CoA questions contact Leslie Dziamara at +1-832-813-4806

MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-1

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

ROLL NUMBER	MANUFACT. DATE	BENTONITE LOT NUMBER	TOP LAYER 1	BOTTOM LAYER 1
Product Code : 1101179				
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NW, Peel 60				
0242-368563	2021-08-24	1081221B	2026845700	2BW18879-1500-012
0242-369305	2021-09-13	1090221A	2026895969	2BW18976-1500-004
0242-369397	2021-09-15	1090621A	2026881809	2AW18878-1500-020
0242-369569	2021-09-20	1091221A	2026892581	2AW18977-1500-025
0242-373594	2022-01-18	1011222B	2330-538966	2AW19335-1500-006
0242-373595	2022-01-18	1011222B	2330-538966	2AW19335-1500-006
0242-373596	2022-01-18	1011222B	2330-538966	2BW19531-1500-003
0242-373597	2022-01-18	1011222B	2330-538966	2BW19531-1500-003
0242-373598	2022-01-18	1011222B	2330-538966	2BW19531-1500-003
0242-373599	2022-01-18	1011222B	2330-538966	2BW19531-1500-003
0242-373600	2022-01-18	1011222B	2330-538966	2BW19531-1500-003
0242-373601	2022-01-18	1011222B	2330-540047	2BW19531-1500-003
0242-373602	2022-01-18	1011222C	2330-540047	2BW19531-1500-003
0242-373603	2022-01-18	1011222C	2330-540047	2BW19531-1500-003
0242-373604	2022-01-18	1011222C	2330-540047	2BW19531-1500-003
0242-373605	2022-01-18	1011222C	2330-540047	2BW19531-1500-003
0242-373606	2022-01-18	1011222C	2330-540047	2AW19335-1500-001
0242-373607	2022-01-18	1011222C	2330-540047	2AW19335-1500-001
0242-373608	2022-01-18	1011222C	2330-540047	2AW19335-1500-001
0242-373609	2022-01-19	1011222C	2330-538948	2AW19335-1500-001
0242-373610	2022-01-19	1011222C	2330-538948	2AW19335-1500-001
0242-373611	2022-01-19	1011222C	2330-538948	2AW19335-1500-001

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-1

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

0242-373612	2022-01-19	1011222C	2330-538948	2AW19335-1500-001
0242-373613	2022-01-19	1011222C	2330-538948	2AW19335-1500-001
0242-373614	2022-01-19	1011222C	2330-538948	2AW19335-1500-001
0242-373615	2022-01-19	1011222C	2330-538948	2AW19335-1500-001
0242-373616	2022-01-19	1011222C	2330-539990	2AW19335-1500-007
0242-373617	2022-01-19	1011222C	2330-539990	2AW19335-1500-007
0242-373618	2022-01-19	1011222C	2330-539990	2AW19335-1500-007
0242-373619	2022-01-19	1011222C	2330-539990	2AW19335-1500-007
0242-373620	2022-01-19	1011222C	2330-539990	2AW19335-1500-007
0242-373621	2022-01-19	1011222C	2330-539990	2AW19335-1500-007
0242-373622	2022-01-19	1011222C	2330-539990	2AW19335-1500-007
0242-373623	2022-01-19	1011222C	2330-539990	2AW19335-1500-007
0242-373625	2022-01-19	1011222C	2330-538974	2BW19531-1500-014
0242-373626	2022-01-19	1011222C	2330-538974	2BW19531-1500-014
0242-373627	2022-01-19	1011222C	2330-538974	2BW19531-1500-014
0242-373628	2022-01-19	1011222C	2330-538974	2BW19531-1500-014
0242-373629	2022-01-19	1011222C	2330-538974	2BW19531-1500-014
0242-373630	2022-01-19	1011222C	2330-538974	2BW19531-1500-014
0242-373631	2022-01-19	1011222C	2330-539983	2BW19531-1500-014
0242-373632	2022-01-19	1011222D	2330-539983	2BW19531-1500-014
0242-373633	2022-01-19	1011222D	2330-539983	2BW19531-1500-014
0242-373635	2022-01-19	1011222D	2330-539983	2AW19335-1500-005
0242-373636	2022-01-19	1011222D	2330-539983	2AW19335-1500-005
0242-373637	2022-01-19	1011222D	2330-539983	2AW19335-1500-005
0242-373638	2022-01-19	1011222D	2330-539983	2AW19335-1500-005
0242-373639	2022-01-19	1011222D	2330-539985	2AW19335-1500-005
0242-373640	2022-01-19	1011222D	2330-539985	2AW19335-1500-005
0242-373641	2022-01-19	1011222D	2330-539985	2AW19335-1500-005
0242-373642	2022-01-19	1011222D	2330-539985	2AW19335-1500-005

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MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-1

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

0242-373643	2022-01-19	1011222D	2330-539985	2AW19335-1500-005
0242-373644	2022-01-19	1011222D	2330-539985	2AW19335-1500-005
0242-373645	2022-01-19	1011222D	2330-539985	2BW19531-1500-019
0242-373646	2022-01-19	1011222D	2330-539984	2BW19531-1500-019
0242-373647	2022-01-19	1011222D	2330-539984	2BW19531-1500-019
0242-373648	2022-01-19	1011222D	2330-539984	2BW19531-1500-019
0242-373649	2022-01-19	1011222D	2330-539984	2BW19531-1500-019
0242-373650	2022-01-19	1011222D	2330-539984	2BW19531-1500-019
0242-373651	2022-01-19	1011222D	2330-539984	2BW19531-1500-019
0242-373652	2022-01-19	1011222D	2330-539984	2BW19531-1500-019
0242-373653	2022-01-19	1011222D	2330-539984	2BW19531-1500-019
0242-373654	2022-01-19	1011222D	2330-538965	2BW19531-1500-019
0242-373655	2022-01-19	1011222D	2330-538965	2AW19335-1500-002
0242-373656	2022-01-19	1011222D	2330-538965	2AW19335-1500-002
0242-373657	2022-01-19	1011222D	2330-538965	2AW19335-1500-002
0242-373658	2022-01-19	1011222D	2330-538965	2AW19335-1500-002
0242-373659	2022-01-19	1011222D	2330-538965	2AW19335-1500-002
0242-373660	2022-01-19	1011222D	2330-538965	2AW19335-1500-002
0242-373661	2022-01-19	1011222D	2330-538929	2AW19335-1500-002
0242-373662	2022-01-19	1011822A	2330-538929	2AW19335-1500-002
0242-373663	2022-01-19	1011822A	2330-538929	2AW19335-1500-002
0242-373664	2022-01-19	1011822A	2330-538929	2AW19335-1500-002
0242-373665	2022-01-19	1011822A	2330-538929	2AW19335-1500-003
0242-373666	2022-01-19	1011822A	2330-538929	2AW19335-1500-003
0242-373667	2022-01-19	1011822A	2330-538929	2AW19335-1500-003
0242-373668	2022-01-19	1011822A	2330-538929	2AW19335-1500-003
0242-373669	2022-01-19	1011822A	2330-538930	2AW19335-1500-003
0242-373670	2022-01-19	1011822A	2330-538930	2AW19335-1500-003
0242-373671	2022-01-19	1011822A	2330-538930	2AW19335-1500-003

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MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-1

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

0242-373672	2022-01-19	1011822A	2330-538930	2AW19335-1500-003
0242-373673	2022-01-19	1011822A	2330-538930	2AW19335-1500-003
0242-373674	2022-01-19	1011822A	2330-538930	2AW19335-1500-003
0242-373675	2022-01-19	1011822A	2330-538930	2AW19335-1500-004
0242-373676	2022-01-19	1011822A	2330-538930	2AW19335-1500-004

QUANTITY (ROLLS): 85

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Solmax Geosynthetics LLC
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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-1

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

PRODUCT: 1101179
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NW, Peel 60

Test	Property	Direction	Test Method	Frequency	Unit
1	Bentonite Mass (0% moisture)		ASTM D5993	1/40,000 ft²	lbs/ft²
2	Peel Strength (min.avg.)	MD	ASTM D4632	1/40,000 ft²	lbf
3	Peel Strength (min.avg.)	MD	ASTM D6496	1/40,000 ft²	lbf/in
4	Tensile Strength MD (min. avg.)	MD	ASTM D6768	1/40,000 ft²	lbf/in

Test	1	2	3	4
SPECIFICATIONS	**3.66**	**266**	**2100**	**8.7**
0242-368563	3.96	347	2,872	11.0
0242-369305	3.95	356	2,924	11.0
0242-369397	3.95	418	3,555	11.9
0242-369569	3.81	365	3,117	11.2
0242-373594	4.37	320	2,662	12.1
0242-373595	4.37	320	2,662	12.1
0242-373596	4.37	320	2,662	12.1
0242-373597	4.37	320	2,662	12.1
0242-373598	4.37	320	2,662	12.1
0242-373599	4.37	320	2,662	12.1
0242-373600	4.37	320	2,662	12.1
0242-373601	4.37	320	2,662	12.1
0242-373602	4.37	320	2,662	12.1
0242-373603	4.37	320	2,662	12.1
0242-373604	4.37	320	2,662	12.1
0242-373605	4.37	320	2,662	12.1
0242-373606	4.37	320	2,662	12.1
0242-373607	4.37	320	2,662	12.1
0242-373608	4.37	320	2,662	12.1
0242-373609	4.37	320	2,662	12.1
0242-373610	3.93	298	2,434	13.3
0242-373611	3.93	298	2,434	13.3
0242-373612	3.93	298	2,434	13.3
0242-373613	3.93	298	2,434	13.3
0242-373614	3.93	298	2,434	13.3
0242-373615	3.93	298	2,434	13.3
0242-373616	3.93	298	2,434	13.3

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19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-1

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	1	2	3	4
0242-373617	3.93	298	2,434	13.3
0242-373618	3.93	298	2,434	13.3
0242-373619	3.93	298	2,434	13.3
0242-373620	3.93	298	2,434	13.3
0242-373621	3.93	298	2,434	13.3
0242-373622	3.93	298	2,434	13.3
0242-373623	3.93	298	2,434	13.3
0242-373625	3.93	298	2,434	13.3
0242-373626	3.87	445	3,012	12.2
0242-373627	3.87	445	3,012	12.2
0242-373628	3.87	445	3,012	12.2
0242-373629	3.87	445	3,012	12.2
0242-373630	3.87	445	3,012	12.2
0242-373631	3.87	445	3,012	12.2
0242-373632	3.87	445	3,012	12.2
0242-373633	3.87	445	3,012	12.2
0242-373635	3.87	445	3,012	12.2
0242-373636	3.87	445	3,012	12.2
0242-373637	3.87	445	3,012	12.2
0242-373638	3.87	445	3,012	12.2
0242-373639	3.87	445	3,012	12.2
0242-373640	3.87	445	3,012	12.2
0242-373641	3.87	445	3,012	12.2
0242-373642	3.87	445	3,012	12.2
0242-373643	3.76	338	2,714	13.1
0242-373644	3.76	338	2,714	13.1
0242-373645	3.76	338	2,714	13.1
0242-373646	3.76	338	2,714	13.1
0242-373647	3.76	338	2,714	13.1
0242-373648	3.76	338	2,714	13.1
0242-373649	3.76	338	2,714	13.1
0242-373650	3.76	338	2,714	13.1
0242-373651	3.76	338	2,714	13.1
0242-373652	3.76	338	2,714	13.1
0242-373653	3.76	338	2,714	13.1
0242-373654	3.76	338	2,714	13.1

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-1

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	1	2	3	4
0242-373655	3.76	338	2,714	13.1
0242-373656	3.76	338	2,714	13.1
0242-373657	3.76	338	2,714	13.1
0242-373658	3.76	338	2,714	13.1
0242-373659	3.87	329	2,311	12.9
0242-373660	3.87	329	2,311	12.9
0242-373661	3.87	329	2,311	12.9
0242-373662	3.87	329	2,311	12.9
0242-373663	3.87	329	2,311	12.9
0242-373664	3.87	329	2,311	12.9
0242-373665	3.87	329	2,311	12.9
0242-373666	3.87	329	2,311	12.9
0242-373667	3.87	329	2,311	12.9
0242-373668	3.87	329	2,311	12.9
0242-373669	3.87	329	2,311	12.9
0242-373670	3.87	329	2,311	12.9
0242-373671	3.87	329	2,311	12.9
0242-373672	3.87	329	2,311	12.9
0242-373673	3.87	329	2,311	12.9
0242-373674	3.87	329	2,311	12.9
0242-373675	3.91	396	2,311	9.5
0242-373676	3.91	396	2,311	9.5

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-1

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

PRODUCT: 1101179-17578-9
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NW, Peel 60

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/200,000 ft²	g/m²
	Grab Tensile Properties (min. avg)		ASTM D4632	1/200,000 ft²	
2	Strength (MD)				N
3	Strength (TD)				N
4	Elongation (MD)				%
5	Elongation (TD)				%

Test	1	2	3	4	5
Specification	**270**	**98**	**98**	**130**	**100**
2330-538929	315	351.4	702.8	199	186
2330-538930	315	351.4	702.8	199	186
2330-538948	322	427.0	698.4	231	229
2330-538965	336	427.0	685.0	204	187
2330-538966	336	427.0	685.0	204	187
2330-538974	329	342.5	676.1	227	199
2330-539983	315	449.3	898.5	154	147
2330-539984	315	449.3	898.5	154	147
2330-539985	315	449.3	898.5	154	147
2330-539990	336	529.3	960.8	168	146
2330-540047	315	315.8	413.7	235	189

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-1

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/200,000 ft²	g/m²
	Grab Tensile Properties (min. avg)		ASTM D4632	1/200,000 ft²	
2	Strength (MD)				N
3	Strength (TD)				N
4	Elongation (MD)				%
5	Elongation (TD)				%

Test	1	2	3	4	5
Specification	**270**	**98**	**98**	**100**	**100**
2026845700	370	1,034.3	1,868.0	121	128
2026881809	378	819.1	1,850.9	137	140
2026892581	339	773.9	1,589.6	161	148
2026895969	343	735.6	1,604.3	162	151

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-1

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	Property	Direction	Test Method	Frequency	Unit
1	Swell Index (min.)		ASTM D5890		ml/2 g
2	Moisture Content (max.)		ASTM D4643		%
3	Fluid Loss (max.)		ASTM D5891		ml

Test	1	2	3
Specification	**24**	**12**	**18**
1011222B	32.0	9.5	15
1011222C	30.0	10.4	14
1011222D	28.0	10.1	16
1011822A	32.5	9.3	14
1081221B	35.0	10.0	14
1090221A	36.0	11.5	13
1090621A	31.0	10.9	14
1091221A	33.0	11.4	13

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-1

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/200,000 ft²	g/m²
	Grab Tensile Properties (min. avg)		ASTM D4632	1/200,000 ft²	
2	Strength (MD)				N
3	Strength (TD)				N
4	Elongation (MD)				%
5	Elongation (TD)				%

Test	1	2	3	4	5
Specification	**203**	**400**	**444**	**10**	**10**
2AW18878-1500-020	210	502.6	538.2	24	50
2AW18977-1500-025	216	511.5	618.3	28	26
2AW19335-1500-001	216	427.0	685.0	17	86
2AW19335-1500-002	216	427.0	685.0	17	86
2AW19335-1500-003	216	427.0	685.0	17	86
2AW19335-1500-004	216	427.0	685.0	17	86
2AW19335-1500-005	218	405.7	667.2	19	80
2AW19335-1500-006	218	405.7	667.2	19	80
2AW19335-1500-007	218	405.7	667.2	19	80
2BW18879-1500-012	217	458.2	680.6	22	85
2BW18976-1500-004	205	511.5	538.2	23	15
2BW19531-1500-003	211	533.8	662.8	22	59
2BW19531-1500-014	205	453.7	645.0	19	66
2BW19531-1500-019	205	449.3	627.2	19	80

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2021

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004589754	**08-12-21**	**1081221B**	**9.6**	**0.04**	**5.17**	**12.4**	**110**	**32**	**988**

AUGUST		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **21**	M AVG	**8.95**	**0.04**	**5.10**	**12.41**	**111.55**	**32.77**	**915.50**
	STD DEV	**0.45**	**0.03**	**1.80**	**0.41**	**4.13**	**2.15**	**45.64**

DATE
08-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **384**	M AVG	**9.00**	**0.15**	**4.17**	**12.74**	**114.65**	**32.56**	**967.11**
	STD DEV	**0.69**	**0.41**	**1.92**	**0.65**	**3.72**	**1.93**	**49.44**

SOLD TO: **Solmax**
19103 Gundle RD
Houston, TX 77073

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SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
08/12/21

CC: Thomas Anderson
Jason Tawse

File

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2021

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004598995	**09-02-21**	**1090221A**	**10.0**	**1.37**	**2.96**	**13.4**	**114**	**29**	**873**

SEPTEMBER		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS	M AVG	**9.57**	**1.60**	**3.62**	**13.40**	**114.67**	**30.00**	**897.00**
3	STD DEV	**0.37**	**1.33**	**0.58**	**0.65**	**0.94**	**1.41**	**42.71**

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS	M AVG	**9.03**	**0.16**	**4.16**	**12.73**	**114.51**	**32.56**	**964.29**
413	STD DEV	**0.70**	**0.44**	**1.89**	**0.65**	**3.69**	**1.96**	**51.85**

DATE
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09/03/21

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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2021

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004599002	**09-06-21**	**1090621A**	**10.7**	**0.15**	**2.76**	**14.2**	**114**	**29**	**957**

SEPTEMBER		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **7**	M AVG	**9.97**	**1.00**	**3.06**	**13.26**	**114.00**	**30.71**	**896.86**
	STD DEV	**0.54**	**1.09**	**1.00**	**0.65**	**1.07**	**2.05**	**38.70**

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **417**	M AVG	**9.05**	**0.16**	**4.15**	**12.73**	**114.50**	**32.55**	**963.66**
	STD DEV	**0.71**	**0.44**	**1.89**	**0.65**	**3.68**	**1.96**	**52.13**

DATE
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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2021

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004604525	**09-12-21**	**1091221A**	**10.0**	**0.15**	**4.65**	**11.8**	**112**	**33**	**988**

SEPTEMBER		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **16**	M AVG	**9.92**	**0.57**	**3.13**	**12.86**	**114.82**	**32.35**	**924.29**
	STD DEV	**0.48**	**0.85**	**1.51**	**0.85**	**2.28**	**2.87**	**39.49**

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **426**	M AVG	**9.07**	**0.16**	**4.13**	**12.73**	**114.52**	**32.57**	**963.20**
	STD DEV	**0.71**	**0.44**	**1.89**	**0.65**	**3.66**	**1.99**	**51.78**

DATE
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Prepared by: TO
09/13/21

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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004654371	**01-14-22**	**1011222B**	**8.4**	**0.11**	**2.90**	**13.4**	**112**	**31**	**1039**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **9**	M AVG	**8.57**	**0.57**	**3.00**	**14.09**	**114.00**	**31.22**	**958.89**
	STD DEV	**0.32**	**1.44**	**0.66**	**0.78**	**2.49**	**1.31**	**55.40**

DATE
01-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **9**	M AVG	**8.57**	**0.57**	**3.00**	**14.09**	**114.00**	**31.22**	**958.89**
	STD DEV	**0.32**	**1.44**	**0.66**	**0.78**	**2.49**	**1.31**	**55.40**

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SPEARFISH, SD 57783

Prepared by: TO
01/17/22

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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004654372	**01-17-22**	**1011222C**	**9.2**	**0.10**	**3.69**	**14.6**	**114**	**30**	**952**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **10**	M AVG	**8.63**	**0.53**	**3.07**	**14.14**	**114.00**	**31.10**	**958.20**
	STD DEV	**0.36**	**1.37**	**0.66**	**0.76**	**2.37**	**1.30**	**52.60**

DATE
01-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **10**	M AVG	**8.63**	**0.53**	**3.07**	**14.14**	**114.00**	**31.10**	**958.20**
	STD DEV	**0.36**	**1.37**	**0.66**	**0.76**	**2.37**	**1.30**	**52.60**

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Prepared by: TO
01/18/22

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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004654373	**01-18-22**	**1011222D**	**9.2**	**0.04**	**2.94**	**14.2**	**112**	**29**	**905**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **11**	M AVG	**8.68**	**0.48**	**3.06**	**14.15**	**113.82**	**30.91**	**953.36**
	STD DEV	**0.38**	**1.32**	**0.63**	**0.72**	**2.33**	**1.38**	**52.43**

DATE
01-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **11**	M AVG	**8.68**	**0.48**	**3.06**	**14.15**	**113.82**	**30.91**	**953.36**
	STD DEV	**0.38**	**1.32**	**0.63**	**0.72**	**2.33**	**1.38**	**52.43**

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Tucker Goodvin

SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
01/18/22

CC: Thomas Anderson
Jason Tawse

File

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004654374	**01-18-22**	**1011822A**	**8.4**	**0.03**	**5.25**	**14.4**	**114**	**30**	**943**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **12**	M AVG	**8.66**	**0.45**	**3.24**	**14.17**	**113.83**	**30.83**	**952.50**
	STD DEV	**0.37**	**1.27**	**0.85**	**0.70**	**2.23**	**1.34**	**50.28**

DATE
01-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **12**	M AVG	**8.66**	**0.45**	**3.24**	**14.17**	**113.83**	**30.83**	**952.50**
	STD DEV	**0.37**	**1.27**	**0.85**	**0.70**	**2.23**	**1.34**	**50.28**

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3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
01/19/22

CC: Thomas Anderson
Jason Tawse

File

MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-2

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

ROLL NUMBER	MANUFACT. DATE	BENTONITE LOT NUMBER	TOP LAYER 1	BOTTOM LAYER 1
Product Code : 1101179				
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NW, Peel 60				
0242-373677	2022-01-19	1011822A	2330-538956	2AW19335-1500-004
0242-373678	2022-01-19	1011822A	2330-538956	2AW19335-1500-004
0242-373679	2022-01-19	1011822A	2330-538956	2AW19335-1500-004
0242-373680	2022-01-19	1011822A	2330-538956	2AW19335-1500-004
0242-373681	2022-01-19	1011822A	2330-538956	2AW19335-1500-004
0242-373682	2022-01-20	1011822A	2330-538956	2AW19335-1500-004
0242-373683	2022-01-20	1011822A	2330-538956	2AW19335-1500-004
0242-373684	2022-01-20	1011822A	2330-538931	2AW19335-1500-004
0242-373685	2022-01-20	1011822A	2330-538931	2BW19531-1500-004
0242-373686	2022-01-20	1011822A	2330-538931	2BW19531-1500-004
0242-373687	2022-01-20	1011822A	2330-538931	2BW19531-1500-004
0242-373688	2022-01-20	1011822A	2330-538931	2BW19531-1500-004
0242-373689	2022-01-20	1011822A	2330-538931	2BW19531-1500-004
0242-373690	2022-01-20	1011822A	2330-538931	2BW19531-1500-004
0242-373691	2022-01-20	1011822A	2330-538931	2BW19531-1500-004
0242-373692	2022-01-20	1011822A	2330-539987	2BW19531-1500-004
0242-373693	2022-01-20	1011822A	2330-539987	2BW19531-1500-004
0242-373694	2022-01-20	1011822A	2330-539987	2BW19531-1500-005
0242-373695	2022-01-20	1011822A	2330-539987	2BW19531-1500-005
0242-373696	2022-01-20	1011822A	2330-539987	2BW19531-1500-005
0242-373697	2022-01-20	1011822A	2330-539987	2BW19531-1500-005
0242-373698	2022-01-20	1011822A	2330-539987	2BW19531-1500-005

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-2

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

0242-373699	2022-01-20	1011822B	2330-538938	2BW19531-1500-005
0242-373700	2022-01-20	1011822B	2330-538938	2BW19531-1500-005
0242-373701	2022-01-20	1011822B	2330-538938	2BW19531-1500-005
0242-373702	2022-01-20	1011822B	2330-538938	2BW19531-1500-005
0242-373703	2022-01-20	1011822B	2330-538938	2BW19531-1500-005
0242-373704	2022-01-20	1011822B	2330-538938	2BW19531-1500-005
0242-373705	2022-01-20	1011822B	2330-538938	2BW19531-1500-005
0242-373706	2022-01-20	1011822B	2330-538938	2BW19531-1500-006
0242-373707	2022-01-24	1011822B	2330-539972	2BW19531-1500-006
0242-373708	2022-01-24	1011822B	2330-539972	2BW19531-1500-006
0242-373709	2022-01-24	1011822B	2330-539972	2BW19531-1500-006
0242-373710	2022-01-24	1011822B	2330-539972	2BW19531-1500-006
0242-373711	2022-01-24	1011822B	2330-539972	2BW19531-1500-006
0242-373712	2022-01-24	1011822B	2330-539972	2BW19531-1500-006
0242-373713	2022-01-24	1011822B	2330-539972	2BW19531-1500-006
0242-373714	2022-01-24	1011822B	2330-539972	2BW19531-1500-006
0242-373715	2022-01-24	1011822B	2330-539959	2BW19531-1500-007
0242-373716	2022-01-24	1011822B	2330-539959	2BW19531-1500-007
0242-373717	2022-01-24	1011822B	2330-539959	2BW19531-1500-007
0242-373718	2022-01-24	1011822B	2330-539959	2BW19531-1500-007
0242-373719	2022-01-24	1011822B	2330-539959	2BW19531-1500-007
0242-373720	2022-01-24	1011822B	2330-539959	2BW19531-1500-007
0242-373721	2022-01-24	1011822B	2330-539959	2BW19531-1500-007
0242-373722	2022-01-24	1011822B	2330-539989	2BW19531-1500-007
0242-373723	2022-01-24	1011822B	2330-539989	2BW19531-1500-007
0242-373724	2022-01-24	1011822B	2330-539989	2BW19531-1500-007
0242-373725	2022-01-24	1011822B	2330-539989	2BW19531-1500-007
0242-373726	2022-01-24	1011822B	2330-539989	2BW19153-1500-022
0242-373727	2022-01-24	1011822C	2330-539989	2BW19153-1500-022

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-2

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

0242-373728	2022-01-24	1011822C	2330-539989	2BW19153-1500-022
0242-373729	2022-01-24	1011822C	2330-539989	2BW19153-1500-022
0242-373730	2022-01-24	1011822C	2330-539969	2BW19153-1500-022
0242-373731	2022-01-24	1011822C	2330-539969	2BW19153-1500-022
0242-373732	2022-01-24	1011822C	2330-539969	2BW19153-1500-022
0242-373733	2022-01-24	1011822C	2330-539969	2BW19153-1500-022
0242-373734	2022-01-24	1011822C	2330-539969	2BW19153-1500-022
0242-373735	2022-01-24	1011822C	2330-539969	2BW19153-1500-022
0242-373736	2022-01-24	1011822C	2330-539969	2BW19531-1500-012
0242-373737	2022-01-24	1011822C	2330-540004	2BW19531-1500-012
0242-373738	2022-01-24	1011822C	2330-540004	2BW19531-1500-012
0242-373739	2022-01-24	1011822C	2330-540004	2BW19531-1500-012
0242-373740	2022-01-24	1011822C	2330-540004	2BW19531-1500-012
0242-373741	2022-01-24	1011822C	2330-540004	2BW19531-1500-012
0242-373742	2022-01-24	1011822C	2330-540004	2BW19531-1500-012
0242-373743	2022-01-24	1011822C	2330-540004	2BW19531-1500-012
0242-373744	2022-01-24	1011822C	2330-540004	2BW19531-1500-012
0242-373745	2022-01-24	1011822C	2330-539971	2BW19531-1500-010
0242-373747	2022-01-24	1011822C	2330-539971	2BW19531-1500-010
0242-373748	2022-01-24	1011822C	2330-539971	2BW19531-1500-010
0242-373749	2022-01-24	1011822C	2330-539971	2BW19531-1500-010
0242-373750	2022-01-24	1011822C	2330-539971	2BW19531-1500-010
0242-373751	2022-01-24	1011822C	2330-539971	2BW19531-1500-010
0242-373752	2022-01-24	1011822C	2330-539971	2BW19531-1500-010
0242-373753	2022-01-24	1011822C	2330-539971	2BW19531-1500-010
0242-373754	2022-01-24	1011822C	2330-539986	2BW19531-1500-010
0242-373755	2022-01-24	1011822C	2330-539986	2BW19531-1500-010
0242-373756	2022-01-24	1011822C	2330-539986	2BW19531-1500-009
0242-373757	2022-01-24	1011822C	2330-539986	2BW19531-1500-009

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19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-2

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

0242-373758	2022-01-24	1011822C	2330-539986	2BW19531-1500-009
0242-373759	2022-01-24	1011822C	2330-539986	2BW19531-1500-009
0242-373760	2022-01-24	1011822D	2330-539986	2BW19531-1500-009
0242-373761	2022-01-24	1011822D	2330-539986	2BW19531-1500-009
0242-373762	2022-01-24	1011822D	2330-539961	2BW19531-1500-009
0242-373763	2022-01-24	1011822D	2330-539961	2BW19531-1500-009
0242-373764	2022-01-24	1011822D	2330-539961	2BW19531-1500-009
0242-373765	2022-01-24	1011822D	2330-539961	2BW19531-1500-009
0242-373766	2022-01-24	1011822D	2330-539961	2BW19531-1500-013
0242-373767	2022-01-24	1011822D	2330-539961	2BW19531-1500-013
0242-373768	2022-01-24	1011822D	2330-539961	2BW19531-1500-013
0242-373769	2022-01-24	1011822D	2330-539979	2BW19531-1500-013
0242-373770	2022-01-24	1011822D	2330-539979	2BW19531-1500-013
0242-373771	2022-01-24	1011822D	2330-539979	2BW19531-1500-013
0242-373772	2022-01-24	1011822D	2330-539979	2BW19531-1500-013

QUANTITY (ROLLS): 95

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-2

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

PRODUCT: 1101179
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NW, Peel 60

Test	Property	Direction	Test Method	Frequency	Unit
1	Bentonite Mass (0% moisture)		ASTM D5993	1/40,000 ft²	lbs/ft²
2	Peel Strength (min.avg.)	MD	ASTM D4632	1/40,000 ft²	lbf
3	Peel Strength (min.avg.)	MD	ASTM D6496	1/40,000 ft²	lbf/in
4	Tensile Strength MD (min. avg.)	MD	ASTM D6768	1/40,000 ft²	lbf/in

Test	1	2	3	4
SPECIFICATIONS	**3.66**	**266**	**2100**	**8.7**
0242-373677	3.91	396	2,311	9.5
0242-373678	3.91	396	2,311	9.5
0242-373679	3.91	396	2,311	9.5
0242-373680	3.91	396	2,311	9.5
0242-373681	3.91	396	2,311	9.5
0242-373682	3.91	396	2,311	9.5
0242-373683	3.91	396	2,311	9.5
0242-373684	3.91	396	2,311	9.5
0242-373685	3.91	396	2,311	9.5
0242-373686	3.91	396	2,311	9.5
0242-373687	3.91	396	2,311	9.5
0242-373688	3.91	396	2,311	9.5
0242-373689	3.91	396	2,311	9.5
0242-373690	3.91	396	2,311	9.5
0242-373691	3.89	374	2,994	10.4
0242-373692	3.89	374	2,994	10.4
0242-373693	3.89	374	2,994	10.4
0242-373694	3.89	374	2,994	10.4
0242-373695	3.89	374	2,994	10.4
0242-373696	3.89	374	2,994	10.4
0242-373697	3.89	374	2,994	10.4
0242-373698	3.89	374	2,994	10.4
0242-373699	3.89	374	2,994	10.4
0242-373700	3.89	374	2,994	10.4
0242-373701	3.89	374	2,994	10.4
0242-373702	3.89	374	2,994	10.4
0242-373703	3.89	374	2,994	10.4

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-2

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	1	2	3	4
0242-373704	3.89	374	2,994	10.4
0242-373705	3.89	374	2,994	10.4
0242-373706	3.89	374	2,994	10.4
0242-373707	3.92	400	3,187	11.8
0242-373708	3.92	400	3,187	11.8
0242-373709	3.92	400	3,187	11.8
0242-373710	3.92	400	3,187	11.8
0242-373711	3.92	400	3,187	11.8
0242-373712	3.92	400	3,187	11.8
0242-373713	3.92	400	3,187	11.8
0242-373714	3.92	400	3,187	11.8
0242-373715	3.92	400	3,187	11.8
0242-373716	3.92	400	3,187	11.8
0242-373717	3.92	400	3,187	11.8
0242-373718	3.92	400	3,187	11.8
0242-373719	3.92	400	3,187	11.8
0242-373720	3.92	400	3,187	11.8
0242-373721	3.92	400	3,187	11.8
0242-373722	3.92	400	3,187	11.8
0242-373723	4.00	351	2,872	11.8
0242-373724	4.00	351	2,872	11.8
0242-373725	4.00	351	2,872	11.8
0242-373726	4.00	351	2,872	11.8
0242-373727	4.00	351	2,872	11.8
0242-373728	4.00	351	2,872	11.8
0242-373729	4.00	351	2,872	11.8
0242-373730	4.00	351	2,872	11.8
0242-373731	4.00	351	2,872	11.8
0242-373732	4.00	351	2,872	11.8
0242-373733	4.00	351	2,872	11.8
0242-373734	4.00	351	2,872	11.8
0242-373735	4.00	351	2,872	11.8
0242-373736	4.00	351	2,872	11.8
0242-373737	4.00	351	2,872	11.8
0242-373738	4.00	351	2,872	11.8
0242-373739	4.02	423	3,485	12.8

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Solmax Geosynthetics LLC

19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-2

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	1	2	3	4
0242-373740	4.02	423	3,485	12.8
0242-373741	4.02	423	3,485	12.8
0242-373742	4.02	423	3,485	12.8
0242-373743	4.02	423	3,485	12.8
0242-373744	4.02	423	3,485	12.8
0242-373745	4.02	423	3,485	12.8
0242-373747	4.02	423	3,485	12.8
0242-373748	4.02	423	3,485	12.8
0242-373749	4.02	423	3,485	12.8
0242-373750	4.02	423	3,485	12.8
0242-373751	4.02	423	3,485	12.8
0242-373752	4.02	423	3,485	12.8
0242-373753	4.02	423	3,485	12.8
0242-373754	4.02	423	3,485	12.8
0242-373755	4.08	369	2,994	12.6
0242-373756	4.08	369	2,994	12.6
0242-373757	4.08	369	2,994	12.6
0242-373758	4.08	369	2,994	12.6
0242-373759	4.08	369	2,994	12.6
0242-373760	4.08	369	2,994	12.6
0242-373761	4.08	369	2,994	12.6
0242-373762	4.08	369	2,994	12.6
0242-373763	4.08	369	2,994	12.6
0242-373764	4.08	369	2,994	12.6
0242-373765	4.08	369	2,994	12.6
0242-373766	4.08	369	2,994	12.6
0242-373767	4.08	369	2,994	12.6
0242-373768	4.08	369	2,994	12.6
0242-373769	4.08	369	2,994	12.6
0242-373770	4.08	369	2,994	12.6
0242-373771	3.94	343	2,732	12.0
0242-373772	3.94	343	2,732	12.0

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19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-2

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

PRODUCT: 1101179
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NW, Peel 60

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/200,000 ft²	g/m²
	Grab Tensile Properties (min. avg)		ASTM D4632	1/200,000 ft²	
2	Strength (MD)				N
3	Strength (TD)				N
4	Elongation (MD)				%
5	Elongation (TD)				%

Test	1	2	3	4	5
Specification	**270**	**98**	**98**	**130**	**100**
2330-538931	315	351.4	702.8	199	186
2330-538938	353	351.4	702.8	199	186
2330-538956	328	404.8	582.7	213	196
2330-539959	315	324.7	680.6	182	185
2330-539961	315	324.7	680.6	182	185
2330-539969	315	435.9	524.9	158	141
2330-539971	315	435.9	524.9	158	141
2330-539972	315	453.7	925.2	161	135
2330-539979	315	453.7	925.2	161	135
2330-539986	315	449.3	898.5	154	147
2330-539987	315	449.3	898.5	154	147
2330-539989	336	529.3	960.8	168	146
2330-540004	342	382.5	622.8	172	184

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19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-2

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	Property	Direction	Test Method	Frequency	Unit
1	Swell Index (min.)		ASTM D5890		ml/2 g
2	Moisture Content (max.)		ASTM D4643		%
3	Fluid Loss (max.)		ASTM D5891		ml

Test	1	2	3
Specification	**24**	**12**	**18**
1011822A	32.5	9.3	14
1011822B	32.5	9.5	14
1011822C	30.0	9.7	14
1011822D	30.0	9.3	17

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-2

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/200,000 ft²	g/m²
	Grab Tensile Properties (min. avg)		ASTM D4632	1/200,000 ft²	
2	Strength (MD)				N
3	Strength (TD)				N
4	Elongation (MD)				%
5	Elongation (TD)				%

Test	1	2	3	4	5
Specification	**203**	**400**	**444**	**10**	**10**
2AW19335-1500-004	216	427.0	685.0	17	86
2BW19153-1500-022	217	529.3	609.4	27	65
2BW19531-1500-004	211	533.8	662.8	22	59
2BW19531-1500-005	204	516.0	591.6	20	58
2BW19531-1500-006	204	516.0	591.6	20	58
2BW19531-1500-007	204	516.0	591.6	20	58
2BW19531-1500-009	206	529.3	671.7	21	64
2BW19531-1500-010	206	529.3	671.7	21	64
2BW19531-1500-012	206	538.2	702.8	20	77
2BW19531-1500-013	206	538.2	702.8	20	77

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004654374	**01-18-22**	**1011822A**	**8.4**	**0.03**	**5.25**	**14.4**	**114**	**30**	**943**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **12**	M AVG	**8.66**	**0.45**	**3.24**	**14.17**	**113.83**	**30.83**	**952.50**
	STD DEV	**0.37**	**1.27**	**0.85**	**0.70**	**2.23**	**1.34**	**50.28**

DATE
01-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **12**	M AVG	**8.66**	**0.45**	**3.24**	**14.17**	**113.83**	**30.83**	**952.50**
	STD DEV	**0.37**	**1.27**	**0.85**	**0.70**	**2.23**	**1.34**	**50.28**

SOLD TO: **Solmax**
19103 Gundle RD
Houston, TX 77073

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
01/19/22

CC: Thomas Anderson
Jason Tawse

File

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004654375	**01-18-22**	**1011822B**	**8.3**	**0.02**	**3.74**	**14.2**	**112**	**29**	**905**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **13**	M AVG	**8.63**	**0.41**	**3.28**	**14.17**	**113.69**	**30.69**	**948.85**
	STD DEV	**0.37**	**1.22**	**0.83**	**0.67**	**2.20**	**1.38**	**49.94**

DATE
01-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **13**	M AVG	**8.63**	**0.41**	**3.28**	**14.17**	**113.69**	**30.69**	**948.85**
	STD DEV	**0.37**	**1.22**	**0.83**	**0.67**	**2.20**	**1.38**	**49.94**

SOLD TO: **Solmax**
19103 Gundle RD
Houston, TX 77073

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
01/19/22

CC: Thomas Anderson
Jason Tawse

File

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004654377	**01-18-22**	**1011822C**	**8.8**	**0.06**	**3.81**	**15.4**	**110**	**28**	**875**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **14**	M AVG	**8.64**	**0.39**	**3.32**	**14.26**	**113.43**	**30.50**	**943.57**
	STD DEV	**0.36**	**1.18**	**0.81**	**0.72**	**2.32**	**1.50**	**51.74**

DATE
01-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **14**	M AVG	**8.64**	**0.39**	**3.32**	**14.26**	**113.43**	**30.50**	**943.57**
	STD DEV	**0.36**	**1.18**	**0.81**	**0.72**	**2.32**	**1.50**	**51.74**

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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004654380	**01-19-22**	**1011822D**	**8.6**	**0.04**	**4.38**	**15.0**	**110**	**29**	**904**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **15**	M AVG	**8.64**	**0.36**	**3.39**	**14.31**	**113.20**	**30.40**	**940.93**
	STD DEV	**0.34**	**1.15**	**0.83**	**0.72**	**2.40**	**1.50**	**50.95**

DATE
01-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **15**	M AVG	**8.64**	**0.36**	**3.39**	**14.31**	**113.20**	**30.40**	**940.93**
	STD DEV	**0.34**	**1.15**	**0.83**	**0.72**	**2.40**	**1.50**	**50.95**

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Tucker Goodvin

SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
01/20/22

CC: Thomas Anderson
Jason Tawse

File

MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-5

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

ROLL NUMBER	MANUFACT. DATE	BENTONITE LOT NUMBER	TOP LAYER 1	BOTTOM LAYER 1
Product Code : 1101179				
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NW, Peel 60				
0242-374561	2022-02-16	1021122C	2330-542947	2027015040
0242-374562	2022-02-16	1021122C	2330-542947	2027015040
0242-374563	2022-02-16	1021122C	2330-542944	2027015034
0242-374564	2022-02-16	1021122C	2330-542944	2027015034
0242-374565	2022-02-16	1021122C	2330-542944	2027015034
0242-374566	2022-02-16	1021122C	2330-542944	2027015034
0242-374567	2022-02-16	1021122C	2330-542944	2027015034
0242-374568	2022-02-16	1021122C	2330-542944	2027015034
0242-374569	2022-02-16	1021122C	2330-542944	2027015034
0242-374570	2022-02-16	1021122C	2330-542934	2027015034
0242-374571	2022-02-16	1021122C	2330-542934	2027015034
0242-374572	2022-02-16	1021122C	2330-542934	2027015034
0242-374573	2022-02-16	1021122C	2330-542934	2027015034
0242-374574	2022-02-16	1021122C	2330-542934	2027015034
0242-374575	2022-02-16	1021122C	2330-542934	2027015034
0242-374576	2022-02-16	1021122C	2330-542934	2027015034
0242-374577	2022-02-16	1021122C	2330-542946	2027015034
0242-374578	2022-02-16	1021122C	2330-542946	2027015034

QUANTITY (ROLLS): 18

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-5

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

PRODUCT: 1101179
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NW, Peel 60

Test	Property	Direction	Test Method	Frequency	Unit
1	Bentonite Mass (0% moisture)		ASTM D5993	1/40,000 ft²	kg/m²
2	Peel Strength (min.avg.)	MD	ASTM D4632	1/40,000 ft²	N
3	Peel Strength (min.avg.)	MD	ASTM D6496	1/40,000 ft²	N/m
4	Tensile Strength MD (min. avg.)	MD	ASTM D6768	1/40,000 ft²	kN/m

Test	1	2	3	4
SPECIFICATIONS	**3.66**	**266**	**2100**	**8.7**
0242-374561	4.00	382	3275	10.86
0242-374562	4.00	382	3275	10.86
0242-374563	4.00	382	3275	10.86
0242-374564	4.00	382	3275	10.86
0242-374565	4.00	382	3275	10.86
0242-374566	4.00	382	3275	10.86
0242-374567	4.00	382	3275	10.86
0242-374568	4.00	382	3275	10.86
0242-374569	4.00	382	3275	10.86
0242-374570	4.00	382	3275	10.86
0242-374571	4.00	382	3275	10.86
0242-374572	4.00	382	3275	10.86
0242-374573	4.00	382	3275	10.86
0242-374574	4.00	382	3275	10.86
0242-374575	4.00	382	3275	10.86
0242-374576	4.00	382	3275	10.86
0242-374577	4.10	400	3432	10.33
0242-374578	4.10	400	3432	10.33

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19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-5

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

PRODUCT: 1101179
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NW, Peel 60

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/200,000 ft²	g/m²
	Grab Tensile Properties (min. avg)		ASTM D4632	1/200,000 ft²	
2	Strength (MD)				N
3	Strength (TD)				N
4	Elongation (MD)				%
5	Elongation (TD)				%

Test	1	2	3	4	5
Specification	**270**	**98**	**98**	**130**	**100**
2330-542934	312	436	503	153	214
2330-542944	322	405	578	150	203
2330-542946	322	405	578	150	203
2330-542947	322	405	578	150	203

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19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-5

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	Property	Direction	Test Method	Frequency	Unit
1	Swell Index (min.)		ASTM D5890		ml/2 g
2	Moisture Content (max.)		ASTM D4643		%
3	Fluid Loss (max.)		ASTM D5891		ml

Test	1	2	3
Specification	**24**	**12**	**18**
1021122C	30.5	8.8	12

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-5

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/200,000 ft²	g/m²
	Grab Tensile Properties (min. avg)		ASTM D4632	1/200,000 ft²	
2	Strength (MD)				N
3	Strength (TD)				N
4	Elongation (MD)				%
5	Elongation (TD)				%

Test	1	2	3	4	5
Specification	**203**	**400**	**445**	**10**	**10**
2027015034	203	476	547	21	12
2027015040	203	480	543	23	13

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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004668540	**02-13-22**	**1021122C**	**8.3**	**0.09**	**1.21**	**14.8**	**114**	**29**	**906**

FEBRUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **15**	M AVG	**8.85**	**0.43**	**2.39**	**14.56**	**114.80**	**30.20**	**953.93**
	STD DEV	**1.00**	**0.94**	**1.81**	**0.64**	**2.17**	**0.98**	**44.06**

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **42**	M AVG	**8.86**	**0.34**	**3.28**	**14.28**	**113.33**	**30.24**	**948.57**
	STD DEV	**0.76**	**0.89**	**1.71**	**0.68**	**2.75**	**1.32**	**55.24**

DATE
02-*

SOLD TO: **Solmax**
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SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
02/14/22

CC: Thomas Anderson
Jason Tawse

File

MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-3

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

ROLL NUMBER	MANUFACT. DATE	BENTONITE LOT NUMBER	TOP LAYER 1	BOTTOM LAYER 1
Product Code : 1101179				
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NW, Peel 60				
0242-373773	2022-01-25	1011822D	2330-539979	2BW19531-1500-013
0242-373774	2022-01-25	1011822D	2330-539979	2BW19531-1500-013
0242-373775	2022-01-25	1011822D	2330-539979	2BW19531-1500-013
0242-373776	2022-01-25	1011822D	2330-539979	2BW19531-1500-013
0242-373777	2022-01-25	1011822D	2330-540038	2BW19531-1500-016
0242-373778	2022-01-25	1011822D	2330-540038	2BW19531-1500-016
0242-373779	2022-01-25	1011822D	2330-540038	2BW19531-1500-016
0242-373780	2022-01-25	1011822D	2330-540038	2BW19531-1500-016
0242-373781	2022-01-25	1011822D	2330-540038	2BW19531-1500-016
0242-373782	2022-01-25	1011822D	2330-540038	2BW19531-1500-016
0242-373783	2022-01-25	1011822D	2330-540038	2BW19531-1500-016
0242-373784	2022-01-25	1011822D	2330-540038	2BW19531-1500-016
0242-373785	2022-01-25	1011822D	2330-539960	2BW19531-1500-016
0242-373786	2022-01-25	1011822D	2330-539960	2BW19531-1500-016
0242-373787	2022-01-25	1011822D	2330-539960	2BW19531-1500-011
0242-373788	2022-01-25	1011822D	2330-539960	2BW19531-1500-011
0242-373789	2022-01-25	1011822D	2330-539960	2BW19531-1500-011
0242-373790	2022-01-25	1011822D	2330-539960	2BW19531-1500-011
0242-373791	2022-01-25	1011822D	2330-539960	2BW19531-1500-011
0242-373792	2022-01-25	1011822D	2330-539980	2BW19531-1500-011
0242-373793	2022-01-25	1011922A	2330-539980	2BW19531-1500-011
0242-373794	2022-01-25	1011922A	2330-539980	2BW19531-1500-011

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MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-3

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

0242-373795	2022-01-25	1011922A	2330-539980	2BW19531-1500-011
0242-373796	2022-01-25	1011922A	2330-539980	2BW19531-1500-011
0242-373797	2022-01-25	1011922A	2330-539980	2BW19531-1500-015
0242-373798	2022-01-25	1011922A	2330-539980	2BW19531-1500-015
0242-373799	2022-01-25	1011922A	2330-539980	2BW19531-1500-015
0242-373800	2022-01-25	1011922A	2330-540028	2BW19531-1500-015
0242-373801	2022-01-25	1011922A	2330-540028	2BW19531-1500-015
0242-373802	2022-01-25	1011922A	2330-540028	2BW19531-1500-015
0242-373803	2022-01-25	1011922A	2330-540028	2BW19531-1500-015
0242-373804	2022-01-25	1011922A	2330-540028	2BW19531-1500-015
0242-373805	2022-01-25	1011922A	2330-540028	2BW19531-1500-015
0242-373806	2022-01-25	1011922A	2330-540028	2BW19531-1500-015
0242-373807	2022-01-25	1011922A	2330-540028	2BW19531-1500-017
0242-373808	2022-01-25	1011922A	2330-540029	2BW19531-1500-017
0242-373809	2022-01-25	1011922A	2330-540029	2BW19531-1500-017
0242-373810	2022-01-25	1011922A	2330-540029	2BW19531-1500-017
0242-373811	2022-01-25	1011922A	2330-540029	2BW19531-1500-017
0242-373812	2022-01-25	1011922A	2330-540029	2BW19531-1500-017
0242-373813	2022-01-25	1011922A	2330-540029	2BW19531-1500-017
0242-373814	2022-01-25	1011922A	2330-540029	2BW19531-1500-017
0242-373815	2022-01-25	1011922A	2330-540023	2BW19531-1500-017
0242-373816	2022-01-25	1011922A	2330-540023	2BW19531-1500-017
0242-373817	2022-01-25	1011922A	2330-540023	2027010433
0242-373818	2022-01-25	1011922A	2330-540023	2027010433
0242-373819	2022-01-25	1011922A	2330-540023	2027010433
0242-373820	2022-01-25	1011922A	2330-540023	2027010433
0242-373821	2022-01-25	1011922A	2330-540023	2027010433
0242-373822	2022-01-25	1011922A	2330-540023	2027010433
0242-373823	2022-01-25	1011922A	2330-540041	2027010433

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MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-3

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

0242-373824	2022-01-25	1011922A	2330-540041	2027010433
0242-373825	2022-01-25	1011922A	2330-540041	2027010433
0242-373826	2022-01-25	1011922B	2330-540041	2027010433
0242-373827	2022-01-25	1011922B	2330-540041	2027010433
0242-373828	2022-01-25	1011922B	2330-540041	2027010433
0242-373829	2022-01-25	1011922B	2330-540041	2027010441
0242-373830	2022-01-25	1011922B	2330-540042	2027010441
0242-373831	2022-01-25	1011922B	2330-540042	2027010441
0242-373832	2022-01-25	1011922B	2330-540042	2027010441
0242-373833	2022-01-25	1011922B	2330-540042	2027010441
0242-373834	2022-01-25	1011922B	2330-540042	2027010441
0242-373835	2022-01-25	1011922B	2330-540042	2027010441
0242-373836	2022-01-25	1011922B	2330-540042	2027010441
0242-373837	2022-01-25	1011922B	2330-540042	2027010441
0242-373838	2022-01-25	1011922B	2330-540036	2027010441
0242-373839	2022-01-25	1011922B	2330-540036	2027010441
0242-373840	2022-01-25	1011922B	2330-540036	2027010436
0242-373841	2022-01-25	1011922B	2330-540036	2027010436
0242-373842	2022-01-25	1011922B	2330-540036	2027010436
0242-373843	2022-01-25	1011922B	2330-540036	2027010436
0242-373844	2022-01-25	1011922B	2330-540036	2027010436
0242-373845	2022-01-25	1011922B	2330-540036	2027010436
0242-373846	2022-01-25	1011922B	2330-540045	2027010436
0242-373847	2022-01-25	1011922B	2330-540045	2027010436
0242-373848	2022-01-26	1011922B	2330-540045	2027010436
0242-373849	2022-01-26	1011922B	2330-540045	2027010436
0242-373850	2022-01-26	1011922B	2330-540045	2027010436
0242-373851	2022-01-26	1011922B	2330-540045	2027010436
0242-373852	2022-01-26	1011922B	2330-540045	2027010436

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-3

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

0242-373853	2022-01-26	1011922B	2330-540034	2027010436
0242-373854	2022-01-26	1011922B	2330-540034	2027010436
0242-373855	2022-01-26	1011922B	2330-540034	2027010429
0242-373856	2022-01-26	1011922B	2330-540034	2027010429
0242-373857	2022-01-26	1011922C	2330-540034	2027010429
0242-373858	2022-01-26	1011922C	2330-540034	2027010429
0242-373859	2022-01-26	1011922C	2330-540034	2027010429
0242-373860	2022-01-26	1011922C	2330-540034	2027010429
0242-373861	2022-01-26	1011922C	2330-540031	2027010429
0242-373862	2022-01-26	1011922C	2330-540031	2027010429
0242-373863	2022-01-26	1011922C	2330-540031	2027010429
0242-373864	2022-01-26	1011922C	2330-540031	2027010429
0242-373865	2022-01-26	1011922C	2330-540031	2027010429
0242-373866	2022-01-26	1011922C	2330-540031	2027010429
0242-373867	2022-01-26	1011922C	2330-540031	2027010429
0242-373868	2022-01-26	1011922C	2330-540049	2027010429
0242-373869	2022-01-26	1011922C	2330-540049	2027010429
0242-373870	2022-01-26	1011922C	2330-540049	2027010429
0242-373871	2022-01-26	1011922C	2330-540049	2027010431
0242-373872	2022-01-26	1011922C	2330-540049	2027010431
0242-373873	2022-01-26	1011922C	2330-540049	2027010431
0242-373874	2022-01-26	1011922C	2330-540049	2027010431
0242-373875	2022-01-26	1011922C	2330-540049	2027010431
0242-373876	2022-01-26	1011922C	2330-540027	2027010431
0242-373877	2022-01-26	1011922C	2330-540027	2027010431
0242-373878	2022-01-26	1011922C	2330-540027	2027010431
0242-373879	2022-01-26	1011922C	2330-540027	2027010431
0242-373880	2022-01-26	1011922C	2330-540027	2027010431
0242-373881	2022-01-26	1011922C	2330-540027	2027010431

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MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-3

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

0242-373882	2022-01-26	1011922C	2330-540027	2027010431
0242-373883	2022-01-26	1011922C	2330-540039	2027010430
0242-373884	2022-01-26	1011922C	2330-540039	2027010430
0242-373885	2022-01-26	1011922C	2330-540039	2027010430
0242-373886	2022-01-26	1011922C	2330-540039	2027010430
0242-373887	2022-01-26	1011922C	2330-540039	2027010430
0242-373888	2022-01-26	1011922D	2330-540039	2027010430
0242-373889	2022-01-26	1011922D	2330-540039	2027010430
0242-373890	2022-01-26	1011922D	2330-540039	2027010430
0242-373891	2022-01-26	1011922D	2330-539964	2027010430
0242-373892	2022-01-26	1011922D	2330-539964	2027010430
0242-373893	2022-01-26	1011922D	2330-539964	2027010430
0242-373894	2022-01-26	1011922D	2330-539964	2027010430
0242-373895	2022-01-26	1011922D	2330-539964	2027010430
0242-373896	2022-01-26	1011922D	2330-539964	2027010430
0242-373898	2022-01-26	1011922D	2330-539970	2027010439
0242-373899	2022-01-26	1011922D	2330-539970	2027010439
0242-373900	2022-01-26	1011922D	2330-539970	2027010439
0242-373901	2022-01-26	1011922D	2330-539970	2027010439
0242-373902	2022-01-26	1011922D	2330-539970	2027010439
0242-373903	2022-01-26	1011922D	2330-539970	2027010439
0242-373904	2022-01-26	1011922D	2330-539970	2027010439
0242-373905	2022-01-26	1011922D	2330-539970	2027010439
0242-373906	2022-01-26	1011922D	2330-539973	2027010439
0242-373907	2022-01-26	1011922D	2330-539973	2027010439
0242-373908	2022-01-26	1011922D	2330-539973	2027010439
0242-373909	2022-01-26	1011922D	2330-539973	2027010439
0242-373910	2022-01-26	1011922D	2330-539973	2027010439
0242-373911	2022-01-26	1011922D	2330-539973	2027010439

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MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-3

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

0242-373912	2022-01-26	1011922D	2330-539973	2027010435
0242-373913	2022-01-26	1011922D	2330-539968	2027010435
0242-373914	2022-01-26	1011922D	2330-539968	2027010435
0242-373915	2022-01-26	1011922D	2330-539968	2027010435
0242-373916	2022-01-26	1012522B	2330-539968	2027010435
0242-373917	2022-01-26	1012522B	2330-539968	2027010435
0242-373918	2022-01-26	1012522B	2330-539968	2027010435
0242-373919	2022-01-27	1012522B	2330-539968	2027010435
0242-373920	2022-01-27	1012522B	2330-539968	2027010435
0242-373921	2022-01-27	1012522B	2330-540035	2027010435
0242-373922	2022-01-27	1012522B	2330-540035	2027010435
0242-373923	2022-01-27	1012522B	2330-540035	2027010435
0242-373924	2022-01-27	1012522B	2330-540035	2027010435
0242-373925	2022-01-27	1012522B	2330-540035	2027010435
0242-373926	2022-01-27	1012522B	2330-540035	2027010434
0242-373927	2022-01-27	1012522B	2330-540035	2027010434
0242-373928	2022-01-27	1012522B	2330-540025	2027010434
0242-373929	2022-01-27	1012522B	2330-540025	2027010434
0242-373930	2022-01-27	1012522B	2330-540025	2027010434
0242-373931	2022-01-27	1012522B	2330-540025	2027010434
0242-373932	2022-01-27	1012522B	2330-540025	2027010434
0242-373933	2022-01-27	1012522B	2330-540025	2027010434
0242-373934	2022-01-27	1012522B	2330-540025	2027010434
0242-373935	2022-01-27	1012522B	2330-540025	2027010434
0242-373936	2022-01-27	1012522B	2330-540030	2027010434
0242-373937	2022-01-27	1012522B	2330-540030	2027010434
0242-373938	2022-01-27	1012522B	2330-540030	2027010434
0242-373939	2022-01-27	1012522B	2330-540030	2027010434
0242-373940	2022-01-27	1012522B	2330-540030	2027010416

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19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-3

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

0242-373942	2022-01-27	1012522B	2330-540030	2027010416
0242-373943	2022-01-27	1012522B	2330-540030	2027010416
0242-373944	2022-01-27	1012522C	2330-540044	2027010416
0242-373945	2022-01-27	1012522C	2330-540044	2027010416
0242-373946	2022-01-27	1012522C	2330-540044	2027010416
0242-373947	2022-01-27	1012522C	2330-540044	2027010416
0242-373948	2022-01-27	1012522C	2330-540044	2027010416
0242-373949	2022-01-27	1012522C	2330-540044	2027010416
0242-373950	2022-01-27	1012522C	2330-540044	2027010416
0242-373951	2022-01-27	1012522C	2330-541671	2027010416
0242-373952	2022-01-27	1012522C	2330-541671	2027010416
0242-373953	2022-01-27	1012522C	2330-541671	2027010416
0242-373954	2022-01-27	1012522C	2330-541671	2027010416
0242-373955	2022-01-27	1012522C	2330-541671	2027010416
0242-373956	2022-01-27	1012522C	2330-541671	2027010449
0242-373957	2022-01-31	1012522C	2330-541671	2027010449
0242-373958	2022-01-31	1012522C	2330-541671	2027010449
0242-373959	2022-01-31	1012522C	2330-541671	2027010449
0242-373960	2022-01-31	1012522C	2330-540024	2027010449
0242-373961	2022-01-31	1012522C	2330-540024	2027010449
0242-373962	2022-01-31	1012522C	2330-540024	2027010449

QUANTITY (ROLLS): 188

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-3

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

PRODUCT: 1101179
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NW, Peel 60

Test	Property	Direction	Test Method	Frequency	Unit
1	Bentonite Mass (0% moisture)		ASTM D5993	1/40,000 ft²	lbs/ft²
2	Peel Strength (min.avg.)	MD	ASTM D4632	1/40,000 ft²	lbf
3	Peel Strength (min.avg.)	MD	ASTM D6496	1/40,000 ft²	lbf/in
4	Tensile Strength MD (min. avg.)	MD	ASTM D6768	1/40,000 ft²	lbf/in

Test	1	2	3	4
SPECIFICATIONS	**3.66**	**266**	**2100**	**8.7**
0242-373773	3.94	343	2,732	12.0
0242-373774	3.94	343	2,732	12.0
0242-373775	3.94	343	2,732	12.0
0242-373776	3.94	343	2,732	12.0
0242-373777	3.94	343	2,732	12.0
0242-373778	3.94	343	2,732	12.0
0242-373779	3.94	343	2,732	12.0
0242-373780	3.94	343	2,732	12.0
0242-373781	3.94	343	2,732	12.0
0242-373782	3.94	343	2,732	12.0
0242-373783	3.94	343	2,732	12.0
0242-373784	3.94	343	2,732	12.0
0242-373785	3.94	343	2,732	12.0
0242-373786	3.94	343	2,732	12.0
0242-373787	4.24	414	3,222	13.9
0242-373788	4.24	414	3,222	13.9
0242-373789	4.24	414	3,222	13.9
0242-373790	4.24	414	3,222	13.9
0242-373791	4.24	414	3,222	13.9
0242-373792	4.24	414	3,222	13.9
0242-373793	4.24	414	3,222	13.9
0242-373794	4.24	414	3,222	13.9
0242-373795	4.24	414	3,222	13.9
0242-373796	4.24	414	3,222	13.9
0242-373797	4.24	414	3,222	13.9
0242-373798	4.24	414	3,222	13.9
0242-373799	4.24	414	3,222	13.9

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19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-3

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	1	2	3	4
0242-373800	4.24	414	3,222	13.9
0242-373801	4.24	414	3,222	13.9
0242-373802	4.24	414	3,222	13.9
0242-373803	4.05	400	3,310	12.8
0242-373804	4.05	400	3,310	12.8
0242-373805	4.05	400	3,310	12.8
0242-373806	4.05	400	3,310	12.8
0242-373807	4.05	400	3,310	12.8
0242-373808	4.05	400	3,310	12.8
0242-373809	4.05	400	3,310	12.8
0242-373810	4.05	400	3,310	12.8
0242-373811	4.05	400	3,310	12.8
0242-373812	4.05	400	3,310	12.8
0242-373813	4.05	400	3,310	12.8
0242-373814	4.05	400	3,310	12.8
0242-373815	4.05	400	3,310	12.8
0242-373816	4.05	400	3,310	12.8
0242-373817	4.05	400	3,310	12.8
0242-373818	4.05	400	3,310	12.8
0242-373819	3.97	369	2,977	11.4
0242-373820	3.97	369	2,977	11.4
0242-373821	3.97	369	2,977	11.4
0242-373822	3.97	369	2,977	11.4
0242-373823	3.97	369	2,977	11.4
0242-373824	3.97	369	2,977	11.4
0242-373825	3.97	369	2,977	11.4
0242-373826	3.97	369	2,977	11.4
0242-373827	3.97	369	2,977	11.4
0242-373828	3.97	369	2,977	11.4
0242-373829	3.97	369	2,977	11.4
0242-373830	3.97	369	2,977	11.4
0242-373831	3.97	369	2,977	11.4
0242-373832	3.97	369	2,977	11.4
0242-373833	3.97	369	2,977	11.4
0242-373834	3.97	369	2,977	11.4
0242-373835	3.90	365	3,012	11.4

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-3

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	1	2	3	4
0242-373836	3.90	365	3,012	11.4
0242-373837	3.90	365	3,012	11.4
0242-373838	3.90	365	3,012	11.4
0242-373839	3.90	365	3,012	11.4
0242-373840	3.90	365	3,012	11.4
0242-373841	3.90	365	3,012	11.4
0242-373842	3.90	365	3,012	11.4
0242-373843	3.90	365	3,012	11.4
0242-373844	3.90	365	3,012	11.4
0242-373845	3.90	365	3,012	11.4
0242-373846	3.90	365	3,012	11.4
0242-373847	3.90	365	3,012	11.4
0242-373848	3.90	365	3,012	11.4
0242-373849	3.90	365	3,012	11.4
0242-373850	3.90	365	3,012	11.4
0242-373851	4.08	351	2,994	10.8
0242-373852	4.08	351	2,994	10.8
0242-373853	4.08	351	2,994	10.8
0242-373854	4.08	351	2,994	10.8
0242-373855	4.08	351	2,994	10.8
0242-373856	4.08	351	2,994	10.8
0242-373857	4.08	351	2,994	10.8
0242-373858	4.08	351	2,994	10.8
0242-373859	4.08	351	2,994	10.8
0242-373860	4.08	351	2,994	10.8
0242-373861	4.08	351	2,994	10.8
0242-373862	4.08	351	2,994	10.8
0242-373863	4.08	351	2,994	10.8
0242-373864	4.08	351	2,994	10.8
0242-373865	4.08	351	2,994	10.8
0242-373866	4.08	351	2,994	10.8
0242-373867	3.93	396	2,662	11.7
0242-373868	3.93	396	2,662	11.7
0242-373869	3.93	396	2,662	11.7
0242-373870	3.93	396	2,662	11.7
0242-373871	3.93	396	2,662	11.7

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-3

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	1	2	3	4
0242-373872	3.93	396	2,662	11.7
0242-373873	3.93	396	2,662	11.7
0242-373874	3.93	396	2,662	11.7
0242-373875	3.93	396	2,662	11.7
0242-373876	3.93	396	2,662	11.7
0242-373877	3.93	396	2,662	11.7
0242-373878	3.93	396	2,662	11.7
0242-373879	3.93	396	2,662	11.7
0242-373880	3.93	396	2,662	11.7
0242-373881	3.93	396	2,662	11.7
0242-373882	3.93	396	2,662	11.7
0242-373883	3.79	445	3,064	8.9
0242-373884	3.79	445	3,064	8.9
0242-373885	3.79	445	3,064	8.9
0242-373886	3.79	445	3,064	8.9
0242-373887	3.79	445	3,064	8.9
0242-373888	3.79	445	3,064	8.9
0242-373889	3.79	445	3,064	8.9
0242-373890	3.79	445	3,064	8.9
0242-373891	3.79	445	3,064	8.9
0242-373892	3.79	445	3,064	8.9
0242-373893	3.79	445	3,064	8.9
0242-373894	3.79	445	3,064	8.9
0242-373895	3.79	445	3,064	8.9
0242-373896	3.79	445	3,064	8.9
0242-373898	3.79	445	3,064	8.9
0242-373899	3.83	374	2,767	12.1
0242-373900	3.83	374	2,767	12.1
0242-373901	3.83	374	2,767	12.1
0242-373902	3.83	374	2,767	12.1
0242-373903	3.83	374	2,767	12.1
0242-373904	3.83	374	2,767	12.1
0242-373905	3.83	374	2,767	12.1
0242-373906	3.83	374	2,767	12.1
0242-373907	3.83	374	2,767	12.1
0242-373908	3.83	374	2,767	12.1

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-3

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	1	2	3	4
0242-373909	3.83	374	2,767	12.1
0242-373910	3.83	374	2,767	12.1
0242-373911	3.83	374	2,767	12.1
0242-373912	3.83	374	2,767	12.1
0242-373913	3.83	374	2,767	12.1
0242-373914	3.83	374	2,767	12.1
0242-373915	3.74	445	3,642	11.7
0242-373916	3.74	445	3,642	11.7
0242-373917	3.74	445	3,642	11.7
0242-373918	3.74	445	3,642	11.7
0242-373919	3.74	445	3,642	11.7
0242-373920	3.74	445	3,642	11.7
0242-373921	3.74	445	3,642	11.7
0242-373922	3.74	445	3,642	11.7
0242-373923	3.74	445	3,642	11.7
0242-373924	3.74	445	3,642	11.7
0242-373925	3.74	445	3,642	11.7
0242-373926	3.74	445	3,642	11.7
0242-373927	3.74	445	3,642	11.7
0242-373928	3.74	445	3,642	11.7
0242-373929	3.74	445	3,642	11.7
0242-373930	3.74	445	3,642	11.7
0242-373931	3.76	405	3,327	9.8
0242-373932	3.76	405	3,327	9.8
0242-373933	3.76	405	3,327	9.8
0242-373934	3.76	405	3,327	9.8
0242-373935	3.76	405	3,327	9.8
0242-373936	3.76	405	3,327	9.8
0242-373937	3.76	405	3,327	9.8
0242-373938	3.76	405	3,327	9.8
0242-373939	3.76	405	3,327	9.8
0242-373940	3.76	405	3,327	9.8
0242-373942	3.76	405	3,327	9.8
0242-373943	3.76	405	3,327	9.8
0242-373944	3.76	405	3,327	9.8
0242-373945	3.76	405	3,327	9.8

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Solmax Geosynthetics LLC

19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-3

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	1	2	3	4
0242-373946	3.76	405	3,327	9.8
0242-373947	4.14	316	2,592	11.8
0242-373948	4.14	316	2,592	11.8
0242-373949	4.14	316	2,592	11.8
0242-373950	4.14	316	2,592	11.8
0242-373951	4.14	316	2,592	11.8
0242-373952	4.14	316	2,592	11.8
0242-373953	4.14	316	2,592	11.8
0242-373954	4.14	316	2,592	11.8
0242-373955	4.14	316	2,592	11.8
0242-373956	4.14	316	2,592	11.8
0242-373957	4.14	316	2,592	11.8
0242-373958	4.14	316	2,592	11.8
0242-373959	4.14	316	2,592	11.8
0242-373960	4.14	316	2,592	11.8
0242-373961	4.14	316	2,592	11.8
0242-373962	4.14	316	2,592	11.8

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-3

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

PRODUCT: 1101179
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NW, Peel 60

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/200,000 ft²	g/m²
	Grab Tensile Properties (min. avg)		ASTM D4632	1/200,000 ft²	
2	Strength (MD)				N
3	Strength (TD)				N
4	Elongation (MD)				%
5	Elongation (TD)				%

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-3

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	1	2	3	4	5
Specification	**270**	**98**	**98**	**130**	**100**
2330-539960	315	324.7	680.6	182	185
2330-539964	315	435.9	524.9	158	141
2330-539968	315	435.9	524.9	158	141
2330-539970	315	435.9	524.9	158	141
2330-539973	315	453.7	925.2	161	135
2330-539979	315	453.7	925.2	161	135
2330-539980	315	449.3	898.5	154	147
2330-540023	315	373.7	636.1	192	188
2330-540024	315	373.7	636.1	192	188
2330-540025	315	373.7	636.1	192	188
2330-540027	315	373.7	636.1	192	188
2330-540028	315	373.7	636.1	192	188
2330-540029	315	373.7	636.1	192	188
2330-540030	315	373.7	636.1	192	188
2330-540031	330	400.3	609.4	206	186
2330-540034	330	400.3	609.4	206	186
2330-540035	330	400.3	609.4	206	186
2330-540036	330	400.3	609.4	206	186
2330-540038	315	400.3	609.4	206	186
2330-540039	315	400.3	609.4	206	186
2330-540041	325	315.8	413.7	235	189
2330-540042	325	315.8	413.7	235	189
2330-540044	325	315.8	413.7	235	189
2330-540045	325	315.8	413.7	235	189
2330-540049	315	315.8	413.7	235	189
2330-541671	298	413.7	627.2	205	177

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-3

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	Property	Direction	Test Method	Frequency	Unit
1	Swell Index (min.)		ASTM D5890		ml/2 g
2	Moisture Content (max.)		ASTM D4643		%
3	Fluid Loss (max.)		ASTM D5891		ml

Test	1	2	3
Specification	**24**	**12**	**18**
1011822D	30.0	9.3	17
1011922A	29.0	9.7	16
1011922B	26.5	10.0	14
1011922C	29.0	10.3	15
1011922D	30.0	9.1	15
1012522B	28.0	10.2	13
1012522C	28.5	10.7	15

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-3

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/200,000 ft²	g/m²
	Grab Tensile Properties (min. avg)		ASTM D4632	1/200,000 ft²	
2	Strength (MD)				N
3	Strength (TD)				N
4	Elongation (MD)				%
5	Elongation (TD)				%

Test	1	2	3	4	5
Specification	**203**	**400**	**445**	**10**	**10**
2027010416	209	407.5	445.5	19	19
2027010429	232	435.0	584.3	22	11
2027010430	232	435.0	584.3	22	11
2027010431	232	435.0	584.3	22	11
2027010433	243	455.2	504.7	21	19
2027010434	243	455.2	504.7	21	19
2027010435	238	408.2	653.5	17	56
2027010436	238	408.2	653.5	17	56
2027010439	236	433.0	662.5	20	36
2027010441	235	446.4	572.0	21	12
2027010449	220	421.4	542.7	20	33

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-3

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/200,000 ft^2	g/m^2
	Grab Tensile Properties (min. avg)		ASTM D4632	1/200,000 ft^2	
2	Strength (MD)				N
3	Strength (TD)				N
4	Elongation (MD)				%
5	Elongation (TD)				%

Test	1	2	3	4	5
Specification	**203**	**400**	**444**	**10**	**10**
2BW19531-1500-011	206	538.2	702.8	20	77
2BW19531-1500-013	206	538.2	702.8	20	77
2BW19531-1500-015	205	453.7	645.0	19	66
2BW19531-1500-016	205	453.7	645.0	19	66
2BW19531-1500-017	205	449.3	627.2	19	80

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004654380	**01-19-22**	**1011822D**	**8.6**	**0.04**	**4.38**	**15.0**	**110**	**29**	**904**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **15**	M AVG	**8.64**	**0.36**	**3.39**	**14.31**	**113.20**	**30.40**	**940.93**
	STD DEV	**0.34**	**1.15**	**0.83**	**0.72**	**2.40**	**1.50**	**50.95**

DATE
01-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **15**	M AVG	**8.64**	**0.36**	**3.39**	**14.31**	**113.20**	**30.40**	**940.93**
	STD DEV	**0.34**	**1.15**	**0.83**	**0.72**	**2.40**	**1.50**	**50.95**

SOLD TO: **Solmax**
19103 Gundle RD
Houston, TX 77073

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
01/20/22

CC: Thomas Anderson
Jason Tawse

File

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004654381	**01-19-22**	**1011922A**	**8.4**	**0.10**	**5.17**	**14.8**	**114**	**30**	**922**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **16**	M AVG	**8.63**	**0.35**	**3.50**	**14.34**	**113.25**	**30.38**	**939.75**
	STD DEV	**0.34**	**1.11**	**0.91**	**0.71**	**2.33**	**1.45**	**49.55**

DATE
01-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **16**	M AVG	**8.63**	**0.35**	**3.50**	**14.34**	**113.25**	**30.38**	**939.75**
	STD DEV	**0.34**	**1.11**	**0.91**	**0.71**	**2.33**	**1.45**	**49.55**

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3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
01/21/22

CC: Thomas Anderson
Jason Tawse

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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004654382	**01-21-22**	**1011922B**	**9.3**	**0.22**	**4.12**	**13.6**	**108**	**30**	**874**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **17**	M AVG	**8.66**	**0.34**	**3.54**	**14.29**	**112.94**	**30.35**	**935.88**
	STD DEV	**0.36**	**1.08**	**0.90**	**0.71**	**2.58**	**1.41**	**50.50**

DATE
01-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **17**	M AVG	**8.66**	**0.34**	**3.54**	**14.29**	**112.94**	**30.35**	**935.88**
	STD DEV	**0.36**	**1.08**	**0.90**	**0.71**	**2.58**	**1.41**	**50.50**

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SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
01/24/22

CC: Thomas Anderson
Jason Tawse

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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004654384	**01-24-22**	**1011922C**	**9.1**	**0.62**	**1.36**	**138.0**	**110**	**30**	**894**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **19**	M AVG	**8.67**	**0.34**	**3.61**	**20.82**	**112.84**	**30.16**	**928.37**
	STD DEV	**0.37**	**1.02**	**1.28**	**27.63**	**2.54**	**1.53**	**53.41**

DATE
01-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **19**	M AVG	**8.67**	**0.34**	**3.61**	**20.82**	**112.84**	**30.16**	**928.37**
	STD DEV	**0.37**	**1.02**	**1.28**	**27.63**	**2.54**	**1.53**	**53.41**

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Tucker Goodvin

SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
01/25/22

CC: Thomas Anderson
Jason Tawse

File

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004663476	**01-25-22**	**1011922D**	**8.3**	**0.06**	**7.10**	**14.6**	**114**	**27**	**835**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **19**	M AVG	**8.67**	**0.34**	**3.61**	**20.82**	**112.84**	**30.16**	**928.37**
	STD DEV	**0.37**	**1.02**	**1.28**	**27.63**	**2.54**	**1.53**	**53.41**

DATE
01-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **19**	M AVG	**8.67**	**0.34**	**3.61**	**20.82**	**112.84**	**30.16**	**928.37**
	STD DEV	**0.37**	**1.02**	**1.28**	**27.63**	**2.54**	**1.53**	**53.41**

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SPEARFISH, SD 57783

Prepared by: TO
01/25/22

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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004663479	**01-25-22**	**1012522B**	**9.2**	**0.20**	**3.58**	**13.0**	**108**	**30**	**1039**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **21**	M AVG	**8.70**	**0.32**	**3.80**	**20.10**	**112.48**	**30.10**	**930.57**
	STD DEV	**0.37**	**0.98**	**1.47**	**26.37**	**2.68**	**1.48**	**57.94**

DATE
01-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **21**	M AVG	**8.70**	**0.32**	**3.80**	**20.10**	**112.48**	**30.10**	**930.57**
	STD DEV	**0.37**	**0.98**	**1.47**	**26.37**	**2.68**	**1.48**	**57.94**

SOLD TO: **Solmax**
19103 Gundle RD
Houston, TX 77073

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

CC: Thomas Anderson
Jason Tawse

File

Prepared by: TO
01/26/22

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004663481	**01-27-22**	**1012522C**	**9.5**	**0.22**	**3.49**	**14.0**	**110**	**30**	**1008**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **22**	M AVG	**8.73**	**0.32**	**3.78**	**19.82**	**112.36**	**30.09**	**934.09**
	STD DEV	**0.40**	**0.95**	**1.44**	**25.80**	**2.67**	**1.44**	**58.86**

DATE
01-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **22**	M AVG	**8.73**	**0.32**	**3.78**	**19.82**	**112.36**	**30.09**	**934.09**
	STD DEV	**0.40**	**0.95**	**1.44**	**25.80**	**2.67**	**1.44**	**58.86**

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3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
01/27/22

CC: Thomas Anderson
Jason Tawse

File

MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-4

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

ROLL NUMBER	MANUFACT. DATE	BENTONITE LOT NUMBER	TOP LAYER 1	BOTTOM LAYER 1
Product Code : 1101179				
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NW, Peel 60				
0242-373963	2022-01-31	1012522C	2330-540024	2027010449
0242-373964	2022-01-31	1012522C	2330-540024	2027010449
0242-373965	2022-01-31	1012522C	2330-540024	2027010449
0242-373966	2022-01-31	1012522C	2330-540024	2027010449
0242-373967	2022-01-31	1012522C	2330-540032	2027010449
0242-373968	2022-01-31	1012522C	2330-540032	2027010449
0242-373969	2022-01-31	1012522C	2330-540032	2027010449
0242-373970	2022-01-31	1012522C	2330-540032	2027010449
0242-373971	2022-01-31	1012522C	2330-540032	2027010449
0242-373973	2022-01-31	1012522C	2330-540032	2027012262
0242-373974	2022-01-31	1012522C	2330-539988	2027012262
0242-373975	2022-01-31	1012522C	2330-539988	2027012262
0242-373976	2022-01-31	1012522D	2330-539988	2027012262
0242-373977	2022-01-31	1012522D	2330-539988	2027012262
0242-373978	2022-01-31	1012522D	2330-539988	2027012262
0242-373979	2022-01-31	1012522D	2330-539988	2027012262
0242-373980	2022-01-31	1012522D	2330-539988	2027012262
0242-373981	2022-01-31	1012522D	2330-541670	2027012262
0242-373982	2022-01-31	1012522D	2330-541670	2027012262
0242-373983	2022-01-31	1012522D	2330-541670	2027012262
0242-373984	2022-01-31	1012522D	2330-541670	2027012262
0242-373985	2022-01-31	1012522D	2330-541670	2027012262

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-4

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

0242-373986	2022-01-31	1012522D	2330-541670	2027012262
0242-373987	2022-01-31	1012522D	2330-541670	2027012262
0242-373988	2022-01-31	1012522D	2330-541670	2027012262
0242-373989	2022-01-31	1012522D	2330-541660	2027012258
0242-373990	2022-01-31	1012522D	2330-541660	2027012258
0242-373991	2022-01-31	1012522D	2330-541660	2027012258
0242-373992	2022-01-31	1012522D	2330-541660	2027012258
0242-373993	2022-01-31	1012522D	2330-541660	2027012258
0242-373994	2022-01-31	1012522D	2330-541660	2027012258
0242-373995	2022-01-31	1012522D	2330-541660	2027012258
0242-373996	2022-01-31	1012522D	2330-541672	2027012258
0242-373997	2022-01-31	1012522D	2330-541672	2027012258
0242-373998	2022-01-31	1012522D	2330-541672	2027012258
0242-373999	2022-01-31	1012522D	2330-541672	2027012258
0242-374000	2022-01-31	1012522D	2330-541672	2027012258
0242-374001	2022-01-31	1012522D	2330-541672	2027012258
0242-374002	2022-01-31	1012522D	2330-541672	2027012258
0242-374003	2022-01-31	1012522D	2330-541672	2027012258
0242-374004	2022-01-31	1012522D	2330-541666	2027012258
0242-374005	2022-01-31	1012522D	2330-541666	2027010450
0242-374006	2022-01-31	1012522D	2330-541666	2027010450
0242-374007	2022-01-31	1012522D	2330-541666	2027010450
0242-374008	2022-01-31	1012522D	2330-541666	2027010450
0242-374009	2022-01-31	1012722A	2330-541666	2027010450
0242-374010	2022-01-31	1012722A	2330-541666	2027010450
0242-374011	2022-01-31	1012722A	2330-540005	2027010450
0242-374012	2022-01-31	1012722A	2330-540005	2027010450
0242-374013	2022-01-31	1012722A	2330-540005	2027010450
0242-374014	2022-01-31	1012722A	2330-540005	2027010450

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PACKING SLIP NUMBER: Pre-SO-092975-4

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

0242-374015	2022-01-31	1012722A	2330-540005	2027010450
0242-374016	2022-01-31	1012722A	2330-540005	2027010450
0242-374017	2022-01-31	1012722A	2330-540005	2027010450
0242-374018	2022-01-31	1012722A	2330-540005	2027010450
0242-374019	2022-01-31	1012722A	2330-541665	2027010450
0242-374020	2022-01-31	1012722A	2330-541665	2027012264
0242-374021	2022-01-31	1012722A	2330-541665	2027012264
0242-374022	2022-01-31	1012722A	2330-541665	2027012264
0242-374023	2022-01-31	1012722A	2330-541665	2027012264
0242-374024	2022-01-31	1012722A	2330-541665	2027012264
0242-374025	2022-01-31	1012722A	2330-541665	2027012264
0242-374026	2022-01-31	1012722A	2330-541675	2027012264
0242-374027	2022-01-31	1012722A	2330-541675	2027012264
0242-374028	2022-01-31	1012722A	2330-541675	2027012264
0242-374029	2022-01-31	1012722A	2330-541675	2027012264
0242-374030	2022-01-31	1012722A	2330-541675	2027012264
0242-374031	2022-01-31	1012722A	2330-541675	2027012264
0242-374032	2022-02-01	1012722A	2330-541675	2027012264
0242-374033	2022-02-01	1012722A	2330-541675	2027012264
0242-374034	2022-02-01	1012722A	2330-541663	2027012264
0242-374035	2022-02-01	1012722A	2330-541663	2027012264
0242-374036	2022-02-01	1012722A	2330-541663	2027012264
0242-374037	2022-02-01	1012722A	2330-541663	2027012259
0242-374038	2022-02-01	1012722A	2330-541663	2027012259
0242-374039	2022-02-01	1012722B	2330-541663	2027012259
0242-374040	2022-02-01	1012722B	2330-541663	2027012259
0242-374041	2022-02-01	1012722B	2330-541657	2027012259
0242-374042	2022-02-01	1012722B	2330-541657	2027012259
0242-374043	2022-02-01	1012722B	2330-541657	2027012259

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PACKING SLIP NUMBER: Pre-SO-092975-4

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

0242-374044	2022-02-01	1012722B	2330-541657	2027012259
0242-374045	2022-02-01	1012722B	2330-541657	2027012259
0242-374046	2022-02-01	1012722B	2330-541657	2027012259
0242-374047	2022-02-01	1012722B	2330-541657	2027012259
0242-374048	2022-02-01	1012722B	2330-541657	2027012259
0242-374049	2022-02-01	1012722B	2330-540037	2027012259
0242-374050	2022-02-01	1012722B	2330-540037	2027012259
0242-374051	2022-02-01	1012722B	2330-540037	2027012259
0242-374052	2022-02-01	1012722B	2330-540037	2027012260
0242-374053	2022-02-01	1012722B	2330-540037	2027012260
0242-374054	2022-02-01	1012722B	2330-540037	2027012260
0242-374055	2022-02-01	1012722B	2330-540037	2027012260
0242-374056	2022-02-01	1012722B	2330-540037	2027012260
0242-374057	2022-02-01	1012722B	2330-541664	2027012260
0242-374058	2022-02-01	1012722B	2330-541664	2027012260
0242-374059	2022-02-01	1012722B	2330-541664	2027012260
0242-374060	2022-02-01	1012722B	2330-541664	2027012260
0242-374061	2022-02-01	1012722B	2330-541664	2027012260
0242-374062	2022-02-01	1012722B	2330-541664	2027012260
0242-374063	2022-02-01	1012722B	2330-541664	2027012260
0242-374064	2022-02-01	1012722B	2330-541673	2027012260
0242-374065	2022-02-01	1012722B	2330-541673	2027012260
0242-374066	2022-02-01	1012722B	2330-541673	2027012260
0242-374067	2022-02-01	1012722B	2330-541673	2027012260
0242-374068	2022-02-01	1012722B	2330-541673	2027012260
0242-374069	2022-02-01	1012722B	2330-541673	2027010452
0242-374070	2022-02-01	1012722B	2330-541673	2027010452
0242-374072	2022-02-01	1012722C	2330-541658	2027010452
0242-374073	2022-02-01	1012722C	2330-541658	2027010452

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MANUFACTURING QUALITY CONTROL

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SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-4

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

0242-374074	2022-02-01	1012722C	2330-541658	2027010452
0242-374075	2022-02-01	1012722C	2330-541658	2027010452
0242-374076	2022-02-01	1012722C	2330-541658	2027010452
0242-374077	2022-02-01	1012722C	2330-541658	2027010452
0242-374078	2022-02-01	1012722C	2330-541658	2027010452
0242-374079	2022-02-01	1012722C	2330-541658	2027010452
0242-374080	2022-02-01	1012722C	2330-539962	2027010452
0242-374081	2022-02-01	1012722C	2330-539962	2027010452
0242-374082	2022-02-01	1012722C	2330-539962	2027010452
0242-374083	2022-02-01	1012722C	2330-539962	2027010452
0242-374086	2022-02-02	1012722C	2330-539962	2027010456
0242-374087	2022-02-02	1012722C	2330-539978	2027010456
0242-374088	2022-02-02	1012722C	2330-539978	2027010456
0242-374089	2022-02-02	1012722C	2330-539978	2027010456
0242-374090	2022-02-02	1012722C	2330-539978	2027010456
0242-374091	2022-02-02	1012722C	2330-539978	2027010456
0242-374092	2022-02-02	1012722C	2330-539978	2027010456
0242-374093	2022-02-02	1012722C	2330-539978	2027010456
0242-374094	2022-02-02	1012722C	2330-539978	2027010456
0242-374095	2022-02-02	1012722C	2330-540009	2027010456
0242-374096	2022-02-02	1012722C	2330-540009	2027010456
0242-374097	2022-02-02	1012722C	2330-540009	2027010456
0242-374098	2022-02-02	1012722C	2330-540009	2027010456
0242-374099	2022-02-02	1012722C	2330-540009	2027010456
0242-374100	2022-02-02	1012722C	2330-540009	2027012267
0242-374101	2022-02-02	1012722C	2330-540009	2027012267
0242-374102	2022-02-02	1012722D	2330-540009	2027012267
0242-374103	2022-02-02	1012722D	2330-539956	2027012267
0242-374104	2022-02-02	1012722D	2330-539956	2027012267

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19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-4

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

0242-374105	2022-02-02	1012722D	2330-539956	2027012267
0242-374106	2022-02-02	1012722D	2330-539956	2027012267
0242-374107	2022-02-02	1012722D	2330-539956	2027012267
0242-374108	2022-02-02	1012722D	2330-539956	2027012267
0242-374109	2022-02-02	1012722D	2330-539956	2027012267
0242-374110	2022-02-02	1012722D	2330-539967	2027012267
0242-374111	2022-02-02	1012722D	2330-539967	2027012267
0242-374112	2022-02-02	1012722D	2330-539967	2027012267
0242-374113	2022-02-02	1012722D	2330-539967	2027012267
0242-374114	2022-02-02	1012722D	2330-539967	2027012267
0242-374115	2022-02-02	1012722D	2330-539967	2027012267
0242-374116	2022-02-02	1012722D	2330-539967	2027014154
0242-374117	2022-02-02	1012722D	2330-539967	2027014154
0242-374119	2022-02-02	1012722D	2330-539957	2027014154
0242-374120	2022-02-02	1012722D	2330-539957	2027014154
0242-374121	2022-02-02	1012722D	2330-539957	2027014154
0242-374122	2022-02-02	1012722D	2330-539957	2027014154
0242-374123	2022-02-02	1012722D	2330-539957	2027014154
0242-374124	2022-02-02	1012722D	2330-539957	2027014154
0242-374125	2022-02-02	1012722D	2330-539966	2027014154
0242-374126	2022-02-02	1012722D	2330-539966	2027014154
0242-374127	2022-02-02	1012722D	2330-539966	2027014154
0242-374128	2022-02-02	1012722D	2330-539966	2027014154
0242-374129	2022-02-02	1012722D	2330-539966	2027014154
0242-374130	2022-02-02	1012722D	2330-539966	2027014154
0242-374131	2022-02-02	1012722D	2330-539966	2027014153
0242-374132	2022-02-02	1012722D	2330-539966	2027014153
0242-374133	2022-02-02	1012722D	2330-539965	2027014153
0242-374134	2022-02-02	1020122A	2330-539965	2027014153

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-4

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

0242-374135	2022-02-02	1020122A	2330-539965	2027014153

QUANTITY (ROLLS): 168

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SOLMAX.COM

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-4

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

PRODUCT: 1101179
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NW, Peel 60

Test	Property	Direction	Test Method	Frequency	Unit
1	Bentonite Mass (0% moisture)		ASTM D5993	1/40,000 ft²	lbs/ft²
2	Peel Strength (min.avg.)	MD	ASTM D4632	1/40,000 ft²	lbf
3	Peel Strength (min.avg.)	MD	ASTM D6496	1/40,000 ft²	lbf/in
4	Tensile Strength MD (min. avg.)	MD	ASTM D6768	1/40,000 ft²	lbf/in

Test	1	2	3	4
SPECIFICATIONS	**3.66**	**266**	**2100**	**8.7**
0242-373963	4.03	440	3,012	9.8
0242-373964	4.03	440	3,012	9.8
0242-373965	4.03	440	3,012	9.8
0242-373966	4.03	440	3,012	9.8
0242-373967	4.03	440	3,012	9.8
0242-373968	4.03	440	3,012	9.8
0242-373969	4.03	440	3,012	9.8
0242-373970	4.03	440	3,012	9.8
0242-373971	4.03	440	3,012	9.8
0242-373973	4.03	440	3,012	9.8
0242-373974	4.03	440	3,012	9.8
0242-373975	4.03	440	3,012	9.8
0242-373976	4.03	440	3,012	9.8
0242-373977	4.03	440	3,012	9.8
0242-373978	4.03	440	3,012	9.8
0242-373979	3.87	431	3,187	12.7
0242-373980	3.87	431	3,187	12.7
0242-373981	3.87	431	3,187	12.7
0242-373982	3.87	431	3,187	12.7
0242-373983	3.87	431	3,187	12.7
0242-373984	3.87	431	3,187	12.7
0242-373985	3.87	431	3,187	12.7
0242-373986	3.87	431	3,187	12.7
0242-373987	3.87	431	3,187	12.7
0242-373988	3.87	431	3,187	12.7
0242-373989	3.87	431	3,187	12.7
0242-373990	3.87	431	3,187	12.7

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-4

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	1	2	3	4
0242-373991	3.87	431	3,187	12.7
0242-373992	3.87	431	3,187	12.7
0242-373993	3.87	431	3,187	12.7
0242-373994	3.87	431	3,187	12.7
0242-373995	3.85	378	2,959	10.3
0242-373996	3.85	378	2,959	10.3
0242-373997	3.85	378	2,959	10.3
0242-373998	3.85	378	2,959	10.3
0242-373999	3.85	378	2,959	10.3
0242-374000	3.85	378	2,959	10.3
0242-374001	3.85	378	2,959	10.3
0242-374002	3.85	378	2,959	10.3
0242-374003	3.85	378	2,959	10.3
0242-374004	3.85	378	2,959	10.3
0242-374005	3.85	378	2,959	10.3
0242-374006	3.85	378	2,959	10.3
0242-374007	3.85	378	2,959	10.3
0242-374008	3.85	378	2,959	10.3
0242-374009	3.85	378	2,959	10.3
0242-374010	3.85	378	2,959	10.3
0242-374011	3.87	440	2,522	10.6
0242-374012	3.87	440	2,522	10.6
0242-374013	3.87	440	2,522	10.6
0242-374014	3.87	440	2,522	10.6
0242-374015	3.87	440	2,522	10.6
0242-374016	3.87	440	2,522	10.6
0242-374017	3.87	440	2,522	10.6
0242-374018	3.87	440	2,522	10.6
0242-374019	3.87	440	2,522	10.6
0242-374020	3.87	440	2,522	10.6
0242-374021	3.87	440	2,522	10.6
0242-374022	3.87	440	2,522	10.6
0242-374023	3.87	440	2,522	10.6
0242-374024	3.87	440	2,522	10.6
0242-374025	3.87	440	2,522	10.6
0242-374026	3.87	440	2,522	10.6

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Solmax Geosynthetics LLC

19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-4

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	1	2	3	4
0242-374027	3.88	445	3,415	9.5
0242-374028	3.88	445	3,415	9.5
0242-374029	3.88	445	3,415	9.5
0242-374030	3.88	445	3,415	9.5
0242-374031	3.88	445	3,415	9.5
0242-374032	3.88	445	3,415	9.5
0242-374033	3.88	445	3,415	9.5
0242-374034	3.88	445	3,415	9.5
0242-374035	3.88	445	3,415	9.5
0242-374036	3.88	445	3,415	9.5
0242-374037	3.88	445	3,415	9.5
0242-374038	3.88	445	3,415	9.5
0242-374039	3.88	445	3,415	9.5
0242-374040	3.88	445	3,415	9.5
0242-374041	3.88	445	3,415	9.5
0242-374042	3.88	445	3,415	9.5
0242-374043	4.22	369	2,994	9.8
0242-374044	4.22	369	2,994	9.8
0242-374045	4.22	369	2,994	9.8
0242-374046	4.22	369	2,994	9.8
0242-374047	4.22	369	2,994	9.8
0242-374048	4.22	369	2,994	9.8
0242-374049	4.22	369	2,994	9.8
0242-374050	4.22	369	2,994	9.8
0242-374051	4.22	369	2,994	9.8
0242-374052	4.22	369	2,994	9.8
0242-374053	4.22	369	2,994	9.8
0242-374054	4.22	369	2,994	9.8
0242-374055	4.22	369	2,994	9.8
0242-374056	4.22	369	2,994	9.8
0242-374057	4.22	369	2,994	9.8
0242-374058	4.22	369	2,994	9.8
0242-374059	3.76	369	3,029	10.1
0242-374060	3.76	369	3,029	10.1
0242-374061	3.76	369	3,029	10.1
0242-374062	3.76	369	3,029	10.1

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19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-4

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	1	2	3	4
0242-374063	3.76	369	3,029	10.1
0242-374064	3.76	369	3,029	10.1
0242-374065	3.76	369	3,029	10.1
0242-374066	3.76	369	3,029	10.1
0242-374067	3.76	369	3,029	10.1
0242-374068	3.76	369	3,029	10.1
0242-374069	3.76	369	3,029	10.1
0242-374070	3.76	369	3,029	10.1
0242-374072	3.76	369	3,029	10.1
0242-374073	3.76	369	3,029	10.1
0242-374074	3.76	369	3,029	10.1
0242-374075	3.76	369	3,029	10.1
0242-374076	4.11	343	2,364	9.6
0242-374077	4.11	343	2,364	9.6
0242-374078	4.11	343	2,364	9.6
0242-374079	4.11	343	2,364	9.6
0242-374080	4.11	343	2,364	9.6
0242-374081	4.11	343	2,364	9.6
0242-374082	4.11	343	2,364	9.6
0242-374083	4.11	343	2,364	9.6
0242-374086	4.11	343	2,364	9.6
0242-374087	4.11	343	2,364	9.6
0242-374088	4.11	343	2,364	9.6
0242-374089	4.11	343	2,364	9.6
0242-374090	4.11	343	2,364	9.6
0242-374091	4.11	343	2,364	9.6
0242-374092	4.11	343	2,364	9.6
0242-374093	4.11	343	2,364	9.6
0242-374094	3.84	338	2,714	12.7
0242-374095	3.84	338	2,714	12.7
0242-374096	3.84	338	2,714	12.7
0242-374097	3.84	338	2,714	12.7
0242-374098	3.84	338	2,714	12.7
0242-374099	3.84	338	2,714	12.7
0242-374100	3.84	338	2,714	12.7
0242-374101	3.84	338	2,714	12.7

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Solmax Geosynthetics LLC

19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-4

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	1	2	3	4
0242-374102	3.84	338	2,714	12.7
0242-374103	3.84	338	2,714	12.7
0242-374104	3.84	338	2,714	12.7
0242-374105	3.84	338	2,714	12.7
0242-374106	3.84	338	2,714	12.7
0242-374107	3.84	338	2,714	12.7
0242-374108	3.84	338	2,714	12.7
0242-374109	3.84	338	2,714	12.7
0242-374110	4.01	351	2,942	9.0
0242-374111	4.01	351	2,942	9.0
0242-374112	4.01	351	2,942	9.0
0242-374113	4.01	351	2,942	9.0
0242-374114	4.01	351	2,942	9.0
0242-374115	4.01	351	2,942	9.0
0242-374116	4.01	351	2,942	9.0
0242-374117	4.01	351	2,942	9.0
0242-374119	4.01	351	2,942	9.0
0242-374120	4.01	351	2,942	9.0
0242-374121	4.01	351	2,942	9.0
0242-374122	4.01	351	2,942	9.0
0242-374123	4.01	351	2,942	9.0
0242-374124	4.01	351	2,942	9.0
0242-374125	4.01	351	2,942	9.0
0242-374126	4.01	351	2,942	9.0
0242-374127	3.93	534	3,957	12.7
0242-374128	3.93	534	3,957	12.7
0242-374129	3.93	534	3,957	12.7
0242-374130	3.93	534	3,957	12.7
0242-374131	3.93	534	3,957	12.7
0242-374132	3.93	534	3,957	12.7
0242-374133	3.93	534	3,957	12.7
0242-374134	3.93	534	3,957	12.7
0242-374135	3.93	534	3,957	12.7

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698
SALES ORDER: SO-092975
PACKING SLIP NUMBER: Pre-SO-092975-4

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

PRODUCT: 1101179
Bentoliner 0.75 lbs/ft² - 3.66 kg/m², NW, Peel 60

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/200,000 ft²	g/m²
	Grab Tensile Properties (min. avg)		ASTM D4632	1/200,000 ft²	
2	Strength (MD)				N
3	Strength (TD)				N
4	Elongation (MD)				%
5	Elongation (TD)				%

Test	1	2	3	4	5
Specification	**270**	**98**	**98**	**130**	**100**
2330-539956	315	324.7	680.6	182	185
2330-539957	315	324.7	680.6	182	185
2330-539962	315	324.7	680.6	182	185
2330-539965	315	435.9	524.9	158	141
2330-539966	315	435.9	524.9	158	141
2330-539967	315	435.9	524.9	158	141
2330-539978	315	453.7	925.2	161	135
2330-539988	336	529.3	960.8	168	146
2330-540005	325	360.3	711.7	160	154
2330-540009	325	360.3	711.7	160	154
2330-540024	315	373.7	636.1	192	188
2330-540032	330	400.3	609.4	206	186
2330-540037	315	400.3	609.4	206	186
2330-541657	338	453.7	676.1	179	207
2330-541658	321	413.7	645.0	186	187
2330-541660	321	413.7	645.0	186	187
2330-541663	321	413.7	645.0	186	187
2330-541664	321	413.7	645.0	186	187
2330-541665	321	413.7	645.0	186	187
2330-541666	321	413.7	645.0	186	187
2330-541670	298	413.7	627.2	205	177
2330-541672	298	413.7	627.2	205	177
2330-541673	322	413.7	627.2	205	177
2330-541675	322	413.7	627.2	205	177

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19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-4

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	Property	Direction	Test Method	Frequency	Unit
1	Swell Index (min.)		ASTM D5890		ml/2 g
2	Moisture Content (max.)		ASTM D4643		%
3	Fluid Loss (max.)		ASTM D5891		ml

Test	1	2	3
Specification	**24**	**12**	**18**
1012522C	28.5	10.7	15
1012522D	30.5	11.0	15
1012722A	30.0	12.0	15
1012722B	32.0	10.2	14
1012722C	30.0	10.6	15
1012722D	26.0	10.8	15
1020122A	27.0	9.7	15

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS

PROJECT NUMBER: E32698

SALES ORDER: SO-092975

PACKING SLIP NUMBER: Pre-SO-092975-4

PROJECT NAME : EAGLE GOLD PROJECT-PH. 1B

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/200,000 ft²	g/m²
	Grab Tensile Properties (min. avg)		ASTM D4632	1/200,000 ft²	
2	Strength (MD)				N
3	Strength (TD)				N
4	Elongation (MD)				%
5	Elongation (TD)				%

Test	1	2	3	4	5
Specification	**203**	**400**	**445**	**10**	**10**
2027010449	220	421.4	542.7	20	33
2027010450	218	441.1	523.6	22	11
2027010452	218	441.1	523.6	22	11
2027010456	220	443.8	540.4	22	12
2027012258	220	443.8	540.4	22	12
2027012259	224	465.4	545.8	21	23
2027012260	224	465.4	545.8	21	23
2027012262	223	469.8	523.2	18	21
2027012264	223	469.8	523.2	18	21
2027012267	235	465.4	553.2	23	12
2027014153	225	472.8	613.3	23	22
2027014154	225	472.8	613.3	23	22

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Solmax Geosynthetics LLC
19103 GUNDLE RD,, HOUSTON, TX, UNITED STATES, 77073

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004663481	**01-27-22**	**1012522C**	**9.5**	**0.22**	**3.49**	**14.0**	**110**	**30**	**1008**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **22**	M AVG	**8.73**	**0.32**	**3.78**	**19.82**	**112.36**	**30.09**	**934.09**
	STD DEV	**0.40**	**0.95**	**1.44**	**25.80**	**2.67**	**1.44**	**58.86**

DATE
01-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **22**	M AVG	**8.73**	**0.32**	**3.78**	**19.82**	**112.36**	**30.09**	**934.09**
	STD DEV	**0.40**	**0.95**	**1.44**	**25.80**	**2.67**	**1.44**	**58.86**

SOLD TO: **Solmax**
19103 Gundle RD
Houston, TX 77073

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
01/27/22

CC: Thomas Anderson
Jason Tawse

File

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004663483	**01-27-22**	**1012522D**	**8.3**	**0.18**	**4.68**	**13.8**	**112**	**30**	**994**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **23**	M AVG	**8.71**	**0.31**	**3.82**	**19.56**	**112.35**	**30.09**	**936.70**
	STD DEV	**0.40**	**0.93**	**1.42**	**25.26**	**2.61**	**1.41**	**58.85**

DATE
01-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **23**	M AVG	**8.71**	**0.31**	**3.82**	**19.56**	**112.35**	**30.09**	**936.70**
	STD DEV	**0.40**	**0.93**	**1.42**	**25.26**	**2.61**	**1.41**	**58.85**

SOLD TO: **Solmax**
19103 Gundle RD
Houston, TX 77073

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)

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Q.A. SUPERVISOR
Tucker Goodvin

SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
01/27/22

CC: Thomas Anderson
Jason Tawse

File

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004663485	**01-27-22**	**1012722A**	**10.8**	**0.26**	**1.15**	**13.6**	**112**	**32**	**996**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **24**	M AVG	**8.80**	**0.31**	**3.71**	**14.13**	**112.33**	**30.17**	**939.17**
	STD DEV	**0.57**	**0.91**	**1.49**	**0.69**	**2.56**	**1.43**	**58.81**

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **24**	M AVG	**8.80**	**0.31**	**3.71**	**14.13**	**112.33**	**30.17**	**939.17**
	STD DEV	**0.57**	**0.91**	**1.49**	**0.69**	**2.56**	**1.43**	**58.81**

DATE
01-*

SOLD TO: **Solmax**
19103 Gundle RD
Houston, TX 77073

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)

For any questions contact.
Q.A. SUPERVISOR
Tucker Goodvin

SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
01/28/22

CC: Thomas Anderson
Jason Tawse

File

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004663486	**01-30-22**	**1012722B**	**9.0**	**0.25**	**3.86**	**14.2**	**118**	**31**	**1061**
B0004666100	**01-31-22**	**1012722C**	**9.6**	**0.16**	**4.66**	**14.0**	**110**	**29**	**953**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **26**	M AVG	**8.84**	**0.30**	**3.75**	**14.13**	**112.46**	**30.15**	**944.38**
	STD DEV	**0.57**	**0.88**	**1.44**	**0.67**	**2.73**	**1.41**	**61.19**

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **26**	M AVG	**8.84**	**0.30**	**3.75**	**14.13**	**112.46**	**30.15**	**944.38**
	STD DEV	**0.57**	**0.88**	**1.44**	**0.67**	**2.73**	**1.41**	**61.19**

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BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004663486	**01-30-22**	**1012722B**	**9.0**	**0.25**	**3.86**	**14.2**	**118**	**31**	**1061**
B0004666100	**01-31-22**	**1012722C**	**9.6**	**0.16**	**4.66**	**14.0**	**110**	**29**	**953**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **26**	M AVG	**8.84**	**0.30**	**3.75**	**14.13**	**112.46**	**30.15**	**944.38**
	STD DEV	**0.57**	**0.88**	**1.44**	**0.67**	**2.73**	**1.41**	**61.19**

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **26**	M AVG	**8.84**	**0.30**	**3.75**	**14.13**	**112.46**	**30.15**	**944.38**
	STD DEV	**0.57**	**0.88**	**1.44**	**0.67**	**2.73**	**1.41**	**61.19**

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SPEARFISH, SD 57783

Prepared by: TO
01/31/22

CC: Thomas Anderson
Jason Tawse

File

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004666102	**01-31-22**	**1012722D**	**9.7**	**0.24**	**4.27**	**13.8**	**114**	**33**	**977**

FEBRUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **2**	M AVG	**8.25**	**0.18**	**1.57**	**15.00**	**114.00**	**30.50**	**983.50**
	STD DEV	**0.35**	**0.12**	**0.07**	**0.20**	**2.00**	**0.50**	**15.50**

DATE
02-*

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **29**	M AVG	**8.83**	**0.29**	**3.62**	**14.18**	**112.62**	**30.28**	**948.21**
	STD DEV	**0.59**	**0.83**	**1.48**	**0.67**	**2.68**	**1.44**	**59.17**

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SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
02/02/22

CC: Thomas Anderson
Jason Tawse

File

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2022

PRODUCT : NATIONAL® 30

SHIPPED FRO **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	**LOT CODE**	% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	FL **18 MAX**	MBC MEQ **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
B0004666104	**02-01-22**	**1020122A**	**8.6**	**0.06**	**1.64**	**15.2**	**112**	**31**	**968**

JANUARY		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **27**	M AVG	**8.87**	**0.30**	**3.77**	**14.12**	**112.52**	**30.26**	**945.59**
	STD DEV	**0.58**	**0.86**	**1.42**	**0.66**	**2.70**	**1.48**	**60.36**

YTD		% MOIST **12 MAX**	Mesh % + 20 **15 MAX**	Mesh % - 200 **10 MAX**	0 FL **18 MAX**	MBC meq **70 MIN**	SWELL INDEX **25 MIN**	PWA **750 MIN**
No. of CARS **28**	M AVG	**8.86**	**0.29**	**3.70**	**14.16**	**112.50**	**30.29**	**946.39**
	STD DEV	**0.57**	**0.85**	**1.45**	**0.67**	**2.65**	**1.46**	**59.42**

DATE
01-*

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SHIPPED TO: **Solmax**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Prepared by: TO
02/01/22

CC: Thomas Anderson
Jason Tawse

File

LAYFIELD CANADA LTD.
17720 – 129 Avenue NW Edmonton, Alberta T5V 0C4 Canada
Phone: (780) 453-6731
Fax: (780) 452-9495
Toll Free: 1 800 840-2884
Web: www.layfieldgroup.com
E-Mail: edm@layfieldgroup.com

INSTALLATION WARRANTY

Layfield Reference No. : (Job #) CT001708

LAYFIELD CANADA LTD. (LAYFIELD) hereby warrants to Victoria Gold Corp .; (the Customer) that the work performed by LAYFIELD on the Installation described as Eagle Gold Phase 2A will:

1. Meet the field seam specifications set out in the contract between LAYFIELD and the Customer (as amended by LAYFIELD's quotation), all workmanship to meet the requirements of LAYFIELD's Field Installation Quality Assurance program, and be free of defects at the time of completion of the Installation; and

2. Be free of installation defects from the date of the completion of the Installation (June 20, 2022), for a period of One year so long as the completed Installation is used for the purposes and in the manner for which the Installation was designed.

Should damage or defects within the scope of the aforesaid warranties occur, LAYFIELD shall repair the damage or defects, PROVIDED THAT the area to be repaired must first be made ready by the Customer and be in a clean, dry, unencumbered condition, free from all water, soil, sludge, residuals, and liquids of any kind.

To enable LAYFIELD to investigate and determine the cause of any alleged damage or defect, notice and details of any claim hereunder must be presented in writing to LAYFIELD within thirty (30) days after the alleged damage or defect was first noticed or observed. Failure to provide such notice and details shall invalidate all warranties provided hereunder.

The liability of LAYFIELD under the aforesaid warranties are subject to the following conditions:

a. LAYFIELD's only obligation shall be to repair or replace any defective workmanship and in no event shall LAYFIELD be liable for any amount in excess of the cost of the Installation;

b. No allowance will be made for repairs, replacements or alterations made by the Customer unless with the prior written consent of LAYFIELD;

c. The warranties hereunder extend only to the Customer and are not transferable;

d. The warranties hereunder shall not apply to any damage or defects resulting from misuse, mechanical abuse by machinery, equipment or persons, excessive pressures or stresses, exposure of the completed Installation of harmful chemicals, unusual weather conditions, casualty catastrophe such as (but not limited to) earthquake, flood, hail, tornado, or any other act of God;

e. Under no circumstances shall LAYFIELD be liable for any special, direct, indirect, or consequential damages including the loss of use of the Installation howsoever caused;

f. All liner materials provided for the Installation are covered by a separate warranty provided by Solmax , and LAYFIELD shall not be liable for material failure claims hereunder;

g. The warranties hereunder are given in lieu of all other warranties, express, implied, statutory, or otherwise, and the Customer expressly waives all other warranties and claims whatsoever except those specifically given herein, and the Customer acknowledges that the warranties hereunder are accepted in preference to and to the exclusion of any or all other warranties; and

h. An Installation Warranty will not be provided for lining projects unless the installation is completed by LAYFIELD personnel or designated LAYFIELD subcontractors.

LAYFIELD CANADA LTD.

Jon Feenstra, Senior Project Manager

LAYFIELD CANADA LTD.

Cameron Forster, Vice President

LAYFIELD
Canada

Project Completion QA/QC Package
for

Victoria Gold Corp

Ph 1B, 2A Conveyor Liner Modifications

Dublin Gulch
Eagle Gold Mine, Yukon

Supply and Install of NWL60 GCL and 80 mil RT LLDPE

Prepared By: Jason Wheeler

Reviewed By: Jason Wheeler

Date Revised: October 17, 2022

Layfield Canada Ltd.

Table of Contents

for

Victoria Gold Corp

Ph 1B, 2A Conveyor Liner Modifications

Dublin Gulch
Eagle Gold Mine, Yukon

1)	Certificate of Inspection of Soil Subgrade Surface	1 pg.
2)	Geomembrane Deployment Log	1 pg.
3)	Geomembrane Seam & Test Log	2 pgs.
4)	Geomembrane Detail & Test Log	1 pg.
5)	As-built	1 pg.
6)	Certificate of Final Inspection and Acceptance	1 pg.

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF INSPECTION OF SOIL SUBGRADE SURFACE

PROJECT NAME: Victoria Gold Subgrade & liner Rework
PROJECT NUMBER: CTQ01795
OWNER/CONTRACTOR: Victoria Gold JDS mine / Ewing
LOCATION: Elsa Yukon

I, the undersigned, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the soil subgrade surface described below, and:

- ☑ *found it to be an acceptable surface on which to install geomembrane; OR*
- ☐ *found it to be an Unacceptable surface on which to install geomembrane*

Area Inspected (☐ Partial or ☐ Complete):
Dimensions of Subgrade Inspection:
Anchor Trench Dimensions:
Comments: 1) Cut liner in South east corner for 20 m
2) cut liner from south west corner of Phase 2 up 75 m

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield and Layfield makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade inspected on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

LAYFIELD REPRESENTATIVE:

Date: September 18 2022
Signature:
Name: Greg Fraser
Title:

OWNERS REPRESENTATIVE:

I, the undersigned, a duly appointed representative of the Owner, hereby understand the soil subgrade surface inspection described above and authorize Layfield to proceed with deployment of geosynthetics on the subgrade provided.

Date: September 22 2022.
Signature:
Name: Cory Roberts.
Title: Construction Superintendent
Company: JDS

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001795
PROJECT TITLE Victoria Gold subgrade and liner rework
AREA / LAYER Primary
DEPLOYMENT DATE 2022/09/19

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
1	01-1007064	8	6.8	14	GOOD	GF	reworked with a berm

TOTAL PAGE AREA 54.4 m²

QC TECH EE / AG
SUPERVISOR Greg Frizell
SUBMISSION DATE Sept 27 2022
SHEET NUMBER 1 of 2

GEOMEMBRANE DEPLOYMENT LOG

PROJECT NUMBER CT001795
PROJECT TITLE Victoria Gold subgrade and liner rework
AREA / LAYER Primary
DEPLOYMENT DATE 2022/09/21

PANEL NUMBER	ROLL NUMBER	LENGTH (m)	WIDTH (m)	AIR TEMP °C	PANEL CONDITION	CHECKED BY	SUBGRADE CONDITION
2	01-1007064	2	6.8	8	GOOD	GF	reworked with a berm

TOTAL PAGE AREA 13.6 m²

QC TECH EE / AG
SUPERVISOR Greg Frizell
SUBMISSION DATE Sept 27 2022
SHEET NUMBER 2 of 2

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001795 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold subgrade and liner rework | SEAM DATE 2022/09/19

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS		SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
1	EXIST	SEOS	NEOS	1615	10	AG	PX-028	7.5		VB	9/19/2022					PASS	GF
							PAGE TOTAL	7.5									

TEST METHOD

AL - AIR LANCE	ST - SPARK TEST
AP - AIR PRESSURE	VB - EXTRUDED & VAC BOX
PS - POINT STRESS	

REMARKS:

QC TECH EE / AG
SUPERVISOR Greg Frizell
SUBMISSION DATE Sept 27 2022
SHEET NUMBER 1 of 2

GEOMEMBRANE SEAM & TEST LOG

PROJECT NUMBER CT001795 | AREA / LAYER Primary
PROJECT TITLE Victoria Gold subgrade and liner rework | SEAM DATE 2022/09/21

TRIAL SEAMS

#	MACHINE NUMBER	TIME	TECH	AIR TEMP °C	SPEED	TEMP/ SETTING	INSIDE PEEL (PPI)					OUTSIDE PEEL (PPI)					SHEAR (PPI)					CHK'D BY	LINER TO LINER TYPE AND REMARKS

WELD SEAMS

PANEL NUMBERS		SEAM SECTION FROM	SEAM SECTION TO	START TIME	AIR TEMP °C	WELD TECH	MACHINE NUMBER	WELD LENGTH	DESTRUCT NUMBER	QC TEST METH.	QC TEST DATE Y-M-D	AIR PRESSURE TEST (PSI) TIME START	TIME END	PRESSURE START	PRESSURE END	VERIFY PASS	VERIFY QC TECH
2	EXIST	EEOS	WEOS	1815	8	AG	PX-028	7.3		VB	9/21/2022					PASS	GF

GEOMEMBRANE DETAIL & TEST LOG

PROJECT NUMBER CT001795 AREA / LAYER Primary

PROJECT TITLE Victoria Gold subgrade and liner rework

TRIAL SEAMS

#	MACHINE NUMBER	DATE YYYY-MM-DD	TIME	WELD TECH	AIR TEMP °C	PREHEAT TEMP °C	EXTRUDER TEMP °C	PEEL (PPI)					SHEAR (PPI)					CHK'D BY	REMARKS
1	PX-028	2022/09/19	1400	AG	14	251°C	243°C	155	154	157	161	157	195	197	199	201	195	GF	
2	PX-028	2022/09/21	1315	AG	8	251°C	243°C	163	159	162	169	181	204	200	201	200	202	GF	
3	PX-028	2022/09/21	1730	AG	10	251°C	243°C	163	161	157	159	161	197	201	200	200	199	GF	
4																			
5																			
6																			

DETAIL CODE	PANEL NUMBER(S)	LOCATION DESCRIPTION	DETAIL TYPE	REPAIR TYPE	MACHINE NUMBER	REPAIR DATE YYYY-MM-DD	START TIME	WELD TECH	AIR TEMP °C	TEST DATE YYYY-MM-DD	TEST METH.	QC TECH
1A	EXIST /	20 M EEOS & 4 M SEOS	SI	P	PX-028	2022/09/19	1430	AG	8	2022/09/21	VB	GF
1B	EXIST /	10 M EEOS & 4 M SEOS	SI	P	PX-028	2022/09/19	1500	AG	8	2022/09/21	VB	GF
1C	EXIST / 1	SEOS - EEOS	SI	EXT	PX-028	2022/09/19	1530	AG	8	2022/09/21	VB	GF
1D	EXIST /	FROM PANEL 1 TO EAST ANCHOR	SI	EXT	PX-028	2022/09/19	1600	AG	8	2022/09/21	VB	GF
1E	EXIST / 1	PATCH INTO SPLIT IN ANCHOR	SI	P	PX-028	2022/09/19	1615	AG	8	2022/09/21	VB	GF
1F	EXIST / 1	PATCH INTO SPLIT IN ANCHOR	SI	P	PX-028	2022/09/19	1630	AG	8	2022/09/21	VB	GF
1G	EXIST /	20 M E OF PHASE 1/2 TIE-IN	EXT	P	PX-028	2022/09/21	1400	AG	8	2022/09/21	VB	GF
1H	EXIST /	10 M E OF PHASE 1/2 TIE-IN	SI	P	PX-028	2022/09/21	1430	AG	8	2022/09/21	VB	GF
1I	EXIST /	SPLIT AT PHASE 1/2 TIE-IN	SI	P	PX-028	2022/09/21	1500	AG	8	2022/09/21	VB	GF
1J	EXIST /	2M W OF PHASE 1/2 TIE-IN 1M SO	D	P	PX-028	2022/09/21	1530	AG	8	2022/09/21	VB	GF
1K	EXIST /	10M W OF 1/2 PHASE TIE-IN	SI	P	PX-028	2022/09/21	1600	AG	8	2022/09/21	VB	GF
1L	EXIST /	16 M W OF TIE-IN & 1M SEOS	D	P	PX-028	2022/09/21	1630	AG	8	2022/09/21	VB	GF
1M	EXIST /	25M W OF TIE-IN & 4 M SEOS	SI	P	PX-028	2022/09/21	1640	AG	8	2022/09/21	VB	GF
1N	EXIST /	2 M W OF1M & CREST OF Anchor	D	P	PX-028	2022/09/21	1655	AG	8	2022/09/21	VB	GF
1O	EXIST /	10m w of 1M & 1 M N OF Anchor	D	P	PX-028	2022/09/21	1705	AG	8	2022/09/21	VB	GF
1P	EXIST /	37 m w of tie-in & 4 m seos	SI	P	PX-028	2022/09/21	1730	AG	8	2022/09/21	VB	GF
1Q	EXIST /	FROM 1P T0 1R SPLIT shortage	EXT	P	PX-028	2022/09/21	1800	AG	8	2022/09/21	VB	GF
1R	EXIST /	End of 1Q 2.5 m long from anchor	SI	P	PX-028	2022/09/21	1820	AG	8	2022/09/21	VB	GF
	/											
	/											

DETAIL TYPE:

AD - ANIMAL DAMAGE	DS-# - DESTRUCT SAMPLE NUMBER	IO - INSUFFICIENT OVERLAP	T - THREE PANEL INTERSECTION
ATL - AIR TEST LEAK	EE - EARTHWORK EQUIPMENT DAMAGE	MD - MANUFACTURER/DELIVERY DAMAGE	VL - VACUUM TEST LEAK
BO - FUSION WELDER BURN	EXT - EXTENSION	P - PENETRATION	WR - WRINKLE
CR - CREASE	FM - FISHMOUTH	PT - PRESSURE TEST CUT	WS - WELDER RESTART
D - INSTALLATION DAMAGE	FS - FAILED SEAM LENGTH	SI - SOIL SURFACE IRREGULARITY	OTHER:

TEST METHOD:

AL - AIR LANCE	VB - VAC BOX
PS - POINT STRESS	ST - SPARK TEST

REPAIR TYPE:

G&W - GRIND & WELD	B - BOOT	P - PATCH
HAW - HOT AIR WELD	C - CAP	

REMARKS

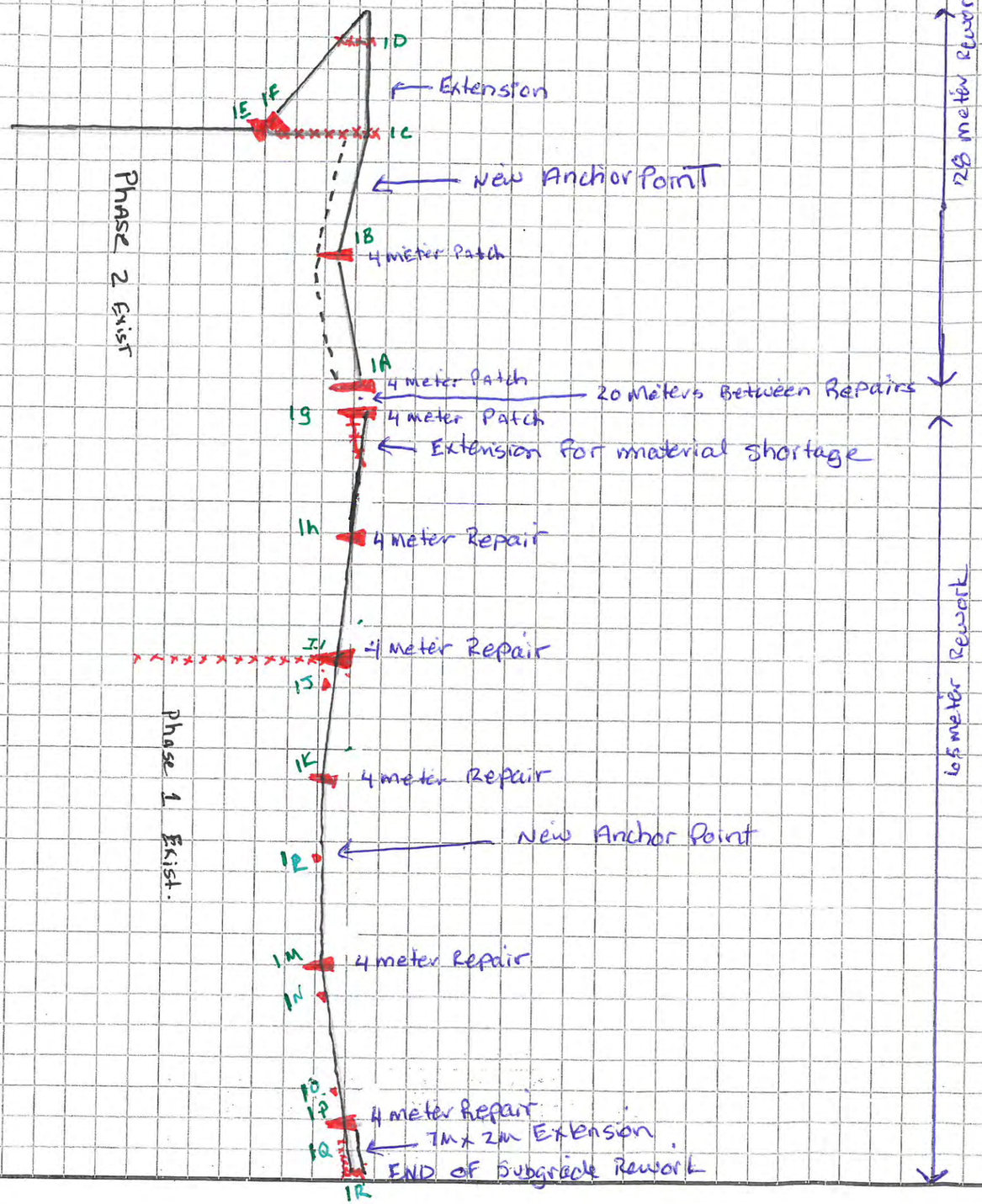
QC TECH EE / AG

SUPERVISOR Greg Frizell

SUBMISSION DATE Sept 27 2022

SHEET NUMBER 1 of 1

No.	Revisions	Date (MM/DD/YY)	By



PROJECT NAME
Victoria Gold
Subgrade & Liner Rework

MATERIAL TYPE
60 mil LLDPE

LAYFIELD

LEGEND

- Extent of Liner
- Toe of Slope
- Liner Field Seam
- XXX Extrusion Welding
- △ Patch
- P2 Panel Number
- 1A Repair Number

Quote No.	PROJECT No. CTO01795
DWG: 1 OF 1	SCALE: 1:400
DWN:	CHKD: / APP'D:
DATE: Sept 26/2022	REVISION:

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF FINAL INSPECTION AND ACCEPTANCE

PROJECT NAME: Victoria Gold Subgrade + liner Rework
PROJECT NUMBER: CT00 1795 **DATE:** September 22 2022
OWNER: Victoria Gold JDS mine / Euring
LOCATION: Elsa Yukon

Scope of Installation(s): **THE WORK**
Area/Layer: _____ Area Inspected: ☐ Partial or ☐ Complete
Dimensions: opened up upper Section For 20 meters and Repair the splits with 2 Patches when Subgrade was Repaired and Extended a Pie out for 5 meters, Put out 75 meters off the Anchor Trench and split in 7 Different areas Repaired with Patches and at Each end had to Extend out into New Anchor Trench All has Been VAC Box tested

Part 1 – LAYFIELD CANADA LTD.

I, Greg Frizzell, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the installations (as outlined above), and have found the Work to be complete and free of defects and declare that the Work was completed in accordance with the project specifications, Layfield's QC program and the terms and conditions of the contract.

Layfield Representative:
Name: Greg Frizzell
Title: Supervisor
Date: September 22 2022 **Signature:** [signature]

Part 2 – OWNER (or Representative)

I, Cory Roberts, a duly appointed representative of JDS / Victoria Gold, do hereby take over and accept the installation(s) described above, and confirm that the work has been completed in accordance with the project specifications and the terms of the conditions of the contract.

I have evaluated and measured the work together with the Layfield representative, and agree that the measurements shown are both true and correct, and that the installation has met our approval.

Owners Representative:
Name: Cory Roberts
Title: Construction Superintend.
Company: JDS
Date: sept 22 2022. **Signature:** [signature]

Comments: _____

LAYFIELD
ENVIRONMENTAL CONTAINMENT

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Part 1 – LAYFIELD CANADA LTD. All has Been VAC Box tested

I, Greg Frizzell, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the installations (as outlined above), and have found the Work to be complete and free of defects and declare that the Work was completed in accordance with the project specifications, Layfield's QC program and the terms and conditions of the contract.

Layfield Representative:
Name: Greg Frizzell
Title: Supervisor
Date: September 22 2022 **Signature:** [signature]

Part 2 – OWNER (or Representative)

I, Cory Roberts, a duly appointed representative of JDS / Victoria Gold, do hereby take over and accept the installation(s) described above, and confirm that the work has been completed in accordance with the project specifications and the terms of the conditions of the contract.

I have evaluated and measured the work together with the Layfield representative, and agree that the measurements shown are both true and correct, and that the installation has met our approval.

Owners Representative:
Name: Cory Roberts
Title: Construction Superintend.
Company: JDS
Date: sept 22 2022 **Signature:** [signature]

Comments: _____

BL

LAYFIELD
ENVIRONMENTAL CONTAINMENT

CERTIFICATE OF INSPECTION OF SOIL SUBGRADE SURFACE

PROJECT NAME: Victoria Gold Subgrade & liner Rework
PROJECT NUMBER: 2T001795
OWNER/CONTRACTOR: Victoria Gold JDS mine / Ewing
LOCATION: Elsa Yukon

I, the undersigned, a duly appointed representative of Layfield Canada Ltd. (Layfield), have visually observed the soil subgrade surface described below, and:

- ☑ *found it to be an acceptable surface on which to install geomembrane; OR*
- ☐ *found it to be an Unacceptable surface on which to install geomembrane*

Area Inspected (☐ Partial or ☐ Complete): _____
Dimensions of Subgrade Inspection: _____
Anchor Trench Dimensions: _____
Comments: 1) Cut liner in South East Corner for 20 m
2) cut liner from South West Corner of Phase 2 up 75 m

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Layfield and Layfield makes no representations or warranties regarding conditions which may exist below the surface of the subgrade. Layfield accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade inspected on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

LAYFIELD REPRESENTATIVE:

Date: September 18 2022
Signature:
Name: Greg Fraell
Title:

OWNERS REPRESENTATIVE:

I, the undersigned, a duly appointed representative of the Owner, hereby understand the soil subgrade surface inspection described above and authorize Layfield to proceed with deployment of geosynthetics on the subgrade provided.

Date: September 22 2022
Signature:
Name: Cory Roberts
Title: Construction Superintendent
Company: JDS

APPENDIX 10: PHOTOLOG

Photo 1: Phase 2A Slope Shaping

Photo 2: Phase 2A header drain extension

Photo 3: Phase 2A later #1 west construction

Photo 4: Phase 2A Lateral Drain 1 East construction

Photo 5: Phase 2A Lateral Drain 2 East construction

Photo 6: Phase 2A Lateral Drain 2 West Extension construction.

Photo 7: Phase 2A Lateral Drain 3 Construction

Photo 8: Phase 2A Lateral Drain 3 West Extension construction.

Photo 9: Phase 2A Lateral Drain 4 construction.

Photo 10: Phase 2A liner install.

Photo 11: Phase 2A foundation construction

Photo 12: Phase 2A perimeter berm construction

www.fortedynamics.com
120 Commerce Drive, Unit 3-4, Fort Collins, CO 80524
Phone: +1 (720) 642-9359 info@fortedynamics.com

March 29, 2023 Project 0792031-10

Victoria Gold Corp.
Suite 1000 - 1050 West Pender Street
Vancouver, BC V6E 3S7

Attention: Phil Emerson, Environmental Coordinator

Eagle Gold Mine Hydrograph Update (2022 Data)

1.0 INTRODUCTION

BGC Engineering Inc. (BGC) was retained by Victoria Gold Corporation (VGC) to review and process physical hydrogeological and climate data collected by VGC from the Eagle Gold mine site. The scope of services completed by BGC consisted of the review, processing, and presentation of climate and groundwater level data from 2022 that are a regulatory requirement for the Eagle Gold Mine.

This letter documents the results of BGC's review and includes hydrograph plots (Figures 1 through 35) and a potentiometric surface map (Figure 36) updated with data collected in 2022. Hydrograph plots are provided for locations where data were collected in 2022. The potentiometric map considers all locations where groundwater data are available, including data collected in 2021, with consideration given to the effects of mining activities such as dewatering. Water levels collected by VGC from monitoring wells located in the Upper Dublin Gulch Basin were included within the potentiometric surface map (Figure 36); however, these locations are not a regulatory requirement, and details from these locations will be presented under separate cover (BGC, in progress).

2.0 2022 GROUNDWATER AND CLIMATE DATA PROCESSING

The groundwater data to be reviewed and processed were received via a SharePoint link provided by email from Phil Emerson (VGC) on January 28, 2023. The data received included climate data from the Camp Meteorological Station operated by VGC (i.e., temperature and precipitation), field notes, manual depth to water measurements, and Solinst Levelogger data from monitoring wells where loggers were installed.

For new wells installed in 2022 (i.e.,FD-BH22-02, FD-BH22-13B, MW22-AG6AR, MW22-EPW1BR, MW22-PGW1BR, MW22-151A, MW22-AG6B, MW22-HLF2A, MW22-HLF2B, MW22-HLF3A, MW22-HLF3B, MW22-HLF4A, MW22-HLF4B, MW22-LPH1, and MW22-LPH2), the GPS coordinates, elevation, and screened depths/materials presented in the figures were taken from CoreGeo (February 14, 2023) and the Excel file "As-built Collar

Coordinates_Standpipe Piezometers", both of which were provided by VGC (SharePoint link provided by email from Phil Emerson, January 28, 2023; email from Katie Chakhova, March 27, 2023). BGC relied on the data provided in these files and has presented these data as received.

BGC reviewed the water level and climate data received to identify any discrepancies or data gaps, which were communicated to VGC by email. Additional data and clarification on discrepancies was provided by Phil Emerson (by email) on February 1 and 6, 2023. The water level and climate data provided by VGC were processed by BGC to produce hydrograph plots showing the groundwater elevation through time at each location, alongside climate data that were collected over the same time period. A summary of the well locations for which hydrograph plots were generated is provided in Table 1. The updated hydrograph and climate plots for 2022 are appended to this letter as Figures 1 to 35.

The tasks completed by BGC to produce the hydrographs consisted of:

1. Reviewing the water level and climate data noted above to identify gaps, inconsistencies, and duplicates.
2. Converting manual measurements of groundwater levels to groundwater elevations. These groundwater elevations were calculated based on top of casing elevations that are consistent with those used during the previous hydrograph update (BGC, March 24, 2022), except at MW5-151, where the top of casing elevation was revised to better align with the available topographic dataset (provided by VGC, April 9, 2020). For the wells installed in 2022, the top of PVC elevation was used for the groundwater elevation calculations, based on survey data provided by Phil Emerson (personal communication, email, January 28, 2023) and CoreGeo (February 14, 2023).
3. Barometrically correcting data from the Leveloggers with data from the Barologger. The corrected data were then converted into groundwater elevations through comparison with the manual measurements of groundwater levels. During this step, the data were corrected for discrepancies associated with deploying the loggers at inconsistent depths throughout time. The manual data generally aligned well with the barometrically corrected datalogger data.
4. Converting the processed Levelogger data to average daily values to decrease the volume of data and adding relevant field notes to each plot.
5. Plotting climate data from the Camp Meteorological Station (see Figure 36 for location) below each of the hydrographs. The data shown are daily averages for temperature (calculated by BGC) and daily totals for precipitation[1] (calculated by VGC).

[1] An all-weather gauge was installed in March 2020, allowing for the measurement of both rainfall and snowfall for the daily totals for precipitation. Prior to this, only rainfall was measured by means of a tipping bucket rainfall gauge.

3.0 CLOSURE

We trust the above satisfies your requirements. Should you have any questions or comments, please do not hesitate to contact us.

Yours sincerely,

BGC Engineering Inc.
per:

Andrew Krentz, M.A.Sc., P.Eng. (BC, ON)
Senior Hydrogeological Engineer

Reviewed by:

Trevor Crozier, M.Eng., P.Eng. (BC, ON)
Principal Hydrogeological Engineer

AK/TWC/wn/sjk

Attachment(s): Table 1
Figures

LIMITATIONS

BGC Engineering Inc. (BGC) prepared this document for the account of Victoria Gold Corp.. The material in it reflects the judgment of BGC staff in light of the information available to BGC at the time of document preparation. Any use which a third party makes of this document or any reliance on decisions based on it is the responsibility of such third parties. BGC accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this document.

As a mutual protection to our client, the public, and ourselves, BGC submits all documents and drawings for the confidential information of our client for a specific project. Authorization for any use and/or publication of this document (or any data, statements, conclusions, or abstracts from or regarding our documents and drawings) through any form of print or electronic media including, without limitation, posting or reproduction of the same on any website, is reserved pending BGC's written approval.

A record copy of this document is on file at BGC. That copy takes precedence over any other copy or reproduction of this document.

REFERENCES

BGC Engineering Inc. (2019, June 26). 2019 Eagle Gold Monitoring Wells [Letter Report]. Prepared for StrataGold Corporation.

BGC Engineering Inc. (2022, March 24). Eagle Gold Mine Hydrograph Update (2021 Data) [Transmittal]. Prepared for Victoria Gold Corporation.

BGC Engineering Inc. (In progress). Eagle Gold Mine Upper Dublin Gulch Basin Hydrograph Update (2022 Data) [Letter Report]. Prepared for Victoria Gold Corporation.

Core Geoscience Services. (2023, February 14). 2022 Monitoring Well Installation Program [Report]. Prepared for Victoria Gold Corporation.

Stantec (2012, June). *Environmental Baseline Data Report: Hydrogeology 2011-2012 Update* [Report]. Prepared for Victoria Gold Corporation.

TABLE

Table 1 Summary of 2022 data for monitoring wells (excluding locations in Upper Dublin Gulch Basin)[1].

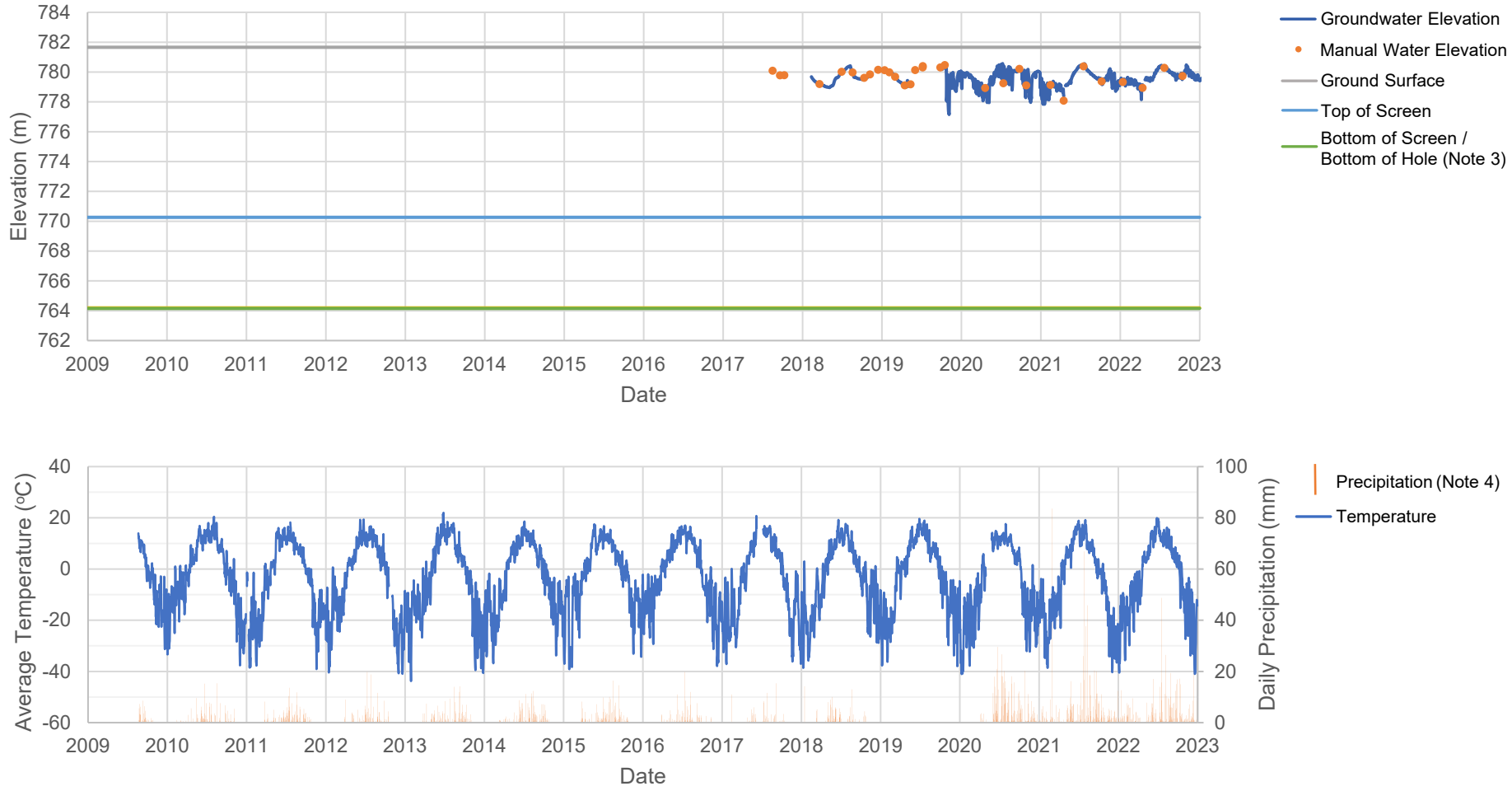
Well	Northing (m)	Easting (m)	Elevation (m)	Manual (M), Dry (D), or Frozen (F)[2]				2022 Level Logger ID
				Q1	Q2	Q3	Q4	
BH-BGC11-72	7101087	458238	781.7	M	M	M	M	2079898 32094792 2130794[3]
BH-BGC11-74	7101163	458275	789.1	-	M	M	M	2130796
FD-BH22-02[4]	7101226	459615	875.7	M	M	M	M	-
FD-BH22-13B[4]	7101078	459277	841.5	M	M	M	M	-
MW10-PG1	7099557	458988	857.8	M	M	M	M	2017767 2130777 2130780[5]
MW18-DG2R	7100865	458950	825.1	M	M	M	M	2100811
MW18-LDSP1A[6]	7100854	458641	811.2	M	M	M	M	-
MW19-DG6RA[7,8]	7101121	459225	839.8	M	M	M	M	2066224
MW19-DG6RB[7,8]	7101119	459221	839.7	M	M[9]	M	M	-
MW19-EPW1A[8]	7100996	459751	898.8	M	M	M	M	2100823
MW19-EPW1B[8]	7100991	459752	899.0	F	F	Damaged[10]		2079412
MW19-EVP1A[8]	7101188	459264	861.1	D	D	D	D	-
MW19-EVP1B[8]	7101193	459264	861.4	M	M	D	D	-
MW19-EVP2A[8]	7101091	459073	843.9	D	D	M	D	-
MW19-EVP2B[8]	7101088	459075	843.8	M	M	M	M	2161778
MW19-HLF1A[8]	7101316	459542	882.3	D	D	D	D	-
MW19-HLF1B[8]	7101309	459540	882.1	M	M	M	M	1057770
MW19-LDSP-2A[8]	7101045	458365	794.2	M	D	M	M	-
MW19-LDSP-2B[8]	7101047	458365	794.2	M	M	M	M	2079423 2130778[11]
MW19-PGW1A[8]	7099539	459169	883.0	M	M	M	M	-
MW19-PGW1B[8]	7099539	459169	883.0	Well Damaged[12]				-
MW22-151A[4]	7101043	459654	885.3	-	-	-	M	-[13]
MW22-AG6AR[4]	7101387	459633	907.2	-	-	-	-[14]	-[13]
MW22-AG6B[4]	7101391	459629	907.2	-	-	-	M	-[13]
MW22-EPW1BR[4]	7101006	459742	896.9	-	-	-	M	-[13]
MW22-HLF2A[4,8]	7101255	459425	863.9	-	-	-	M	-[13]
MW22-HLF2B[4,8]	7101260	459427	864.0	-	-	-	M	-[13]

Well	Northing (m)	Easting (m)	Elevation (m)	Manual (M), Dry (D), or Frozen (F)[2]				2022 Level Logger ID
				Q1	Q2	Q3	Q4	
MW22-HLF3A[4,8]	7102126	460439	1181.6	-	-	-	D	2130781[15]
MW22-HLF3B[4,8]	7102132	460431	1180.6	-	-	-	M	2132866[15]
MW22-HLF4A[4,8]	7102126	459258	1035.2	-	-	-	M	2161815
MW22-HLF4B[4,8]	7102124	459251	1034.9	-	-	-	M	-[13]
MW22-LPH1[4]	7100132	458689	841.3	-	-	-	M	-[13]
MW22-LPH2[4]	7100061	458694	841.5	-	-	-	M	-[13]
MW22-PGW1BR[4]	7099525	459167	883.3	-	-	-	M	-[13]
MW95-151[16]	7100862	459768	884.0	M	M	M	M	-
MW96-9B	7101252	463073	1360.3	M	M	M	M	1050237
Barologger[17]	7101088	459075	-	-	-	-	-	2100686

Notes:

1. Data provided by Victoria Gold Corp. (Personal communication, email, Phil Emerson, January 28, 2023).
2. "-" = no data available; "M" = Manual reading taken; "D" = Manual reading taken, but well dry, "F" = Manual reading attempted but well frozen.
3. Logger in BH-BGC11-72 was replaced on April 25, 2022 with logger ID 2130794.
4. Monitoring well installed in 2022.
5. Logger in MW10-PG1 was replaced on April 25, 2022 with logger ID 2130780.
6. MW18-LDSP1A and MW6 are the same location, as confirmed by Stephen Wilbur (VGC) (Email, February 5, 2021).
7. Naming for MW19-DG6RA and MW19-DG6RB is consistent with the borehole logs (BGC, June 26, 2019). However, VGC field staff may also refer to these locations as MW19-DG6AR and MW19-DG6BR.
8. The following wells (A and B) are nested monitoring locations, where each well in a pair has its own borehole: MW19-DG6RA and B, MW19-EVP1A and B, MW19-EVP2A and B, MW19-HLF1A and B, MW19-LDSP-2A and B, MW19-PGW1A and B, MW22-HLF2A and B, MW22-HLF3A and B, and MW22-HLF4A and B.
9. A manual reading was attempted at MW19-DG6RB in April 2022, but the well was found to be frozen. A manual reading was re-attempted in June 2022 and the water level was measured successfully.
10. MW19-EPW1B was damaged and decommissioned in 2022. A replacement well, MW22-EPW1BR, was installed in October 2022.
11. Logger in MW19-LDSP-2B was replaced on April 25, 2022 with logger ID 2130778.
12. MW19-PGW1B was previously damaged in 2020 and no groundwater readings or samples can be taken. A replacement well, MW22-PGW1BR, was installed in October 2022.
13. Loggers are planned for these locations but were not deployed in 2022.
14. MW22-AG6AR is the replacement well for MW10-AG6 well and was installed in October 2022. However, no manual readings were completed during 2022 as the well was still being developed.
15. Loggers were installed in MW22-HLF3A and MW22-HLF3B on November 12, 2022. However, no data were downloaded/received for 2022.
16. MW95-151 was previously mislabelled as MW96-15 but was corrected in the Eagle Gold Mine Hydrograph Update (2021 Data) (BGC, March 19, 2021). Location name was confirmed by Stephen Wilbur (VGC) (Email, February 5, 2021).
17. Barologger installed at MW19-LDSP-2B.

FIGURES



NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. 2019 PRECIPITATION DATA NOT AVAILABLE DUE TO DATALOGGER MALFUNCTION. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 20, 2020 (EQUAL TO BOTTOM SCREEN). BOTTOM OF SCREEN DEPTH BASED ON AVAILABLE BOREHOLE LOGS.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. A NEW LOGGER WAS INSTALLED AT BH-BGC11-72 ON APRIL 25, 2022.

PREPARED BY:	FIGURE TITLE		
AK	BH-BGC11-72 GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792031	1

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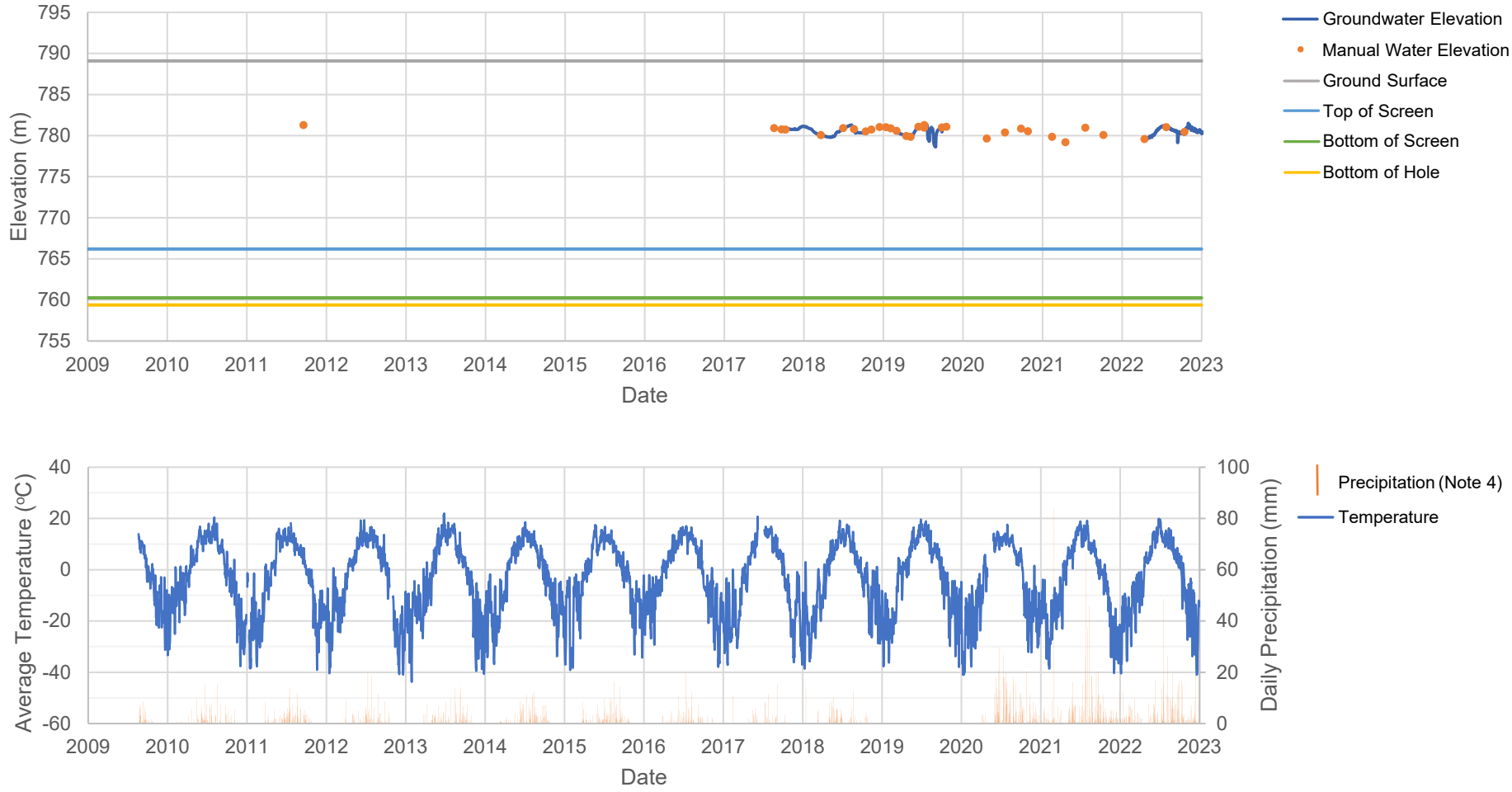
BGC ENGINEERING INC.



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4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. NO LOGGER WAS INSTALLED AT BH-BGC11-74 FROM DECEMBER TO APRIL 2022.
6. A LOGGER WAS INSTALLED AT BH-BGC11-74 ON APRIL 25, 2022.

PREPARED BY:	FIGURE TITLE		
AK	BH-BGC11-74 GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
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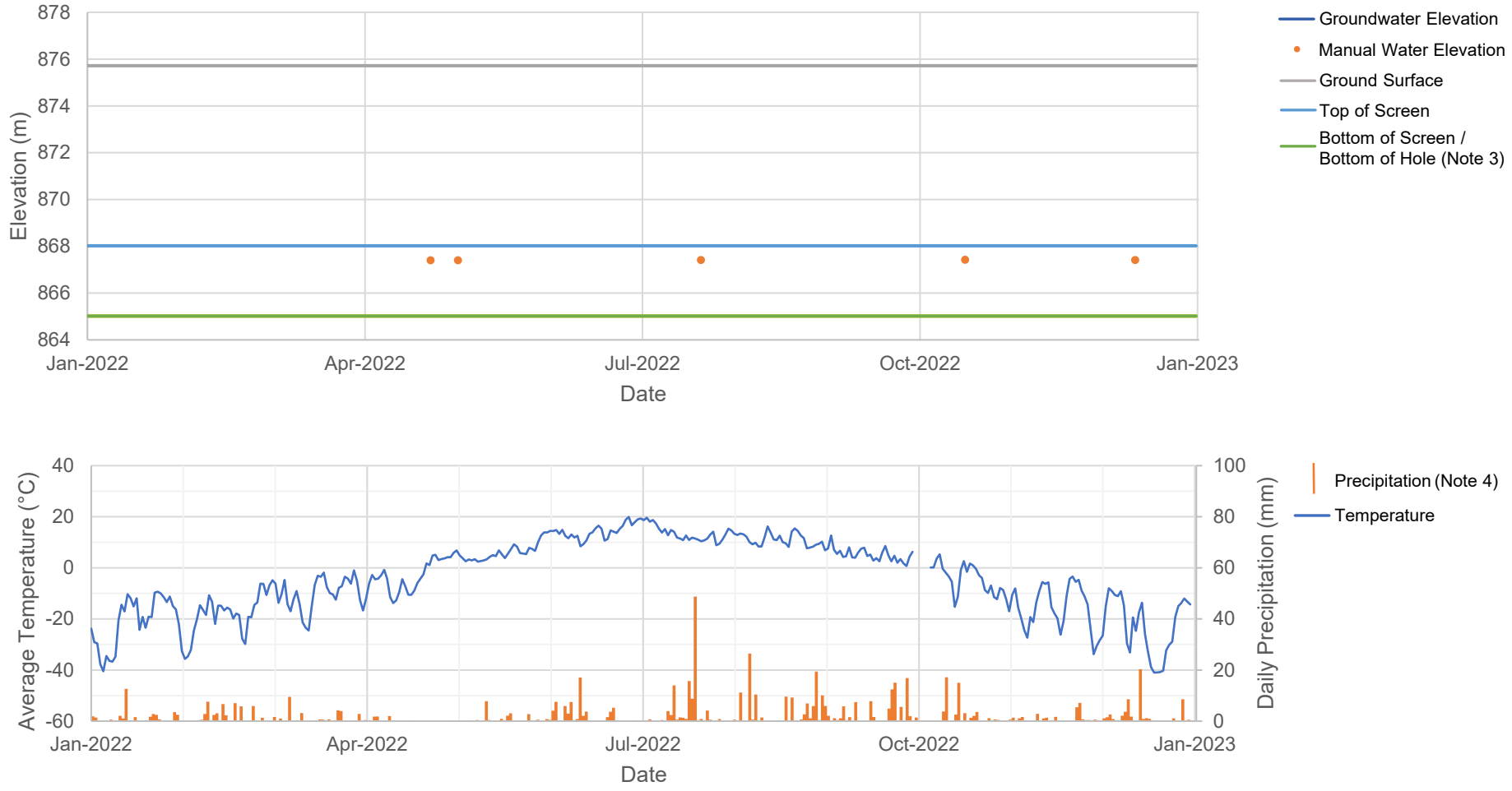
BGC ENGINEERING INC.



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2. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. BOTTOM OF HOLE DEPTH AND BOTTOM OF SCREEN DEPTH ARE EQUAL AND BASED ON AVAILABLE BOREHOLE LOGS.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.

PREPARED BY:	FIGURE TITLE		
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CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792031	3

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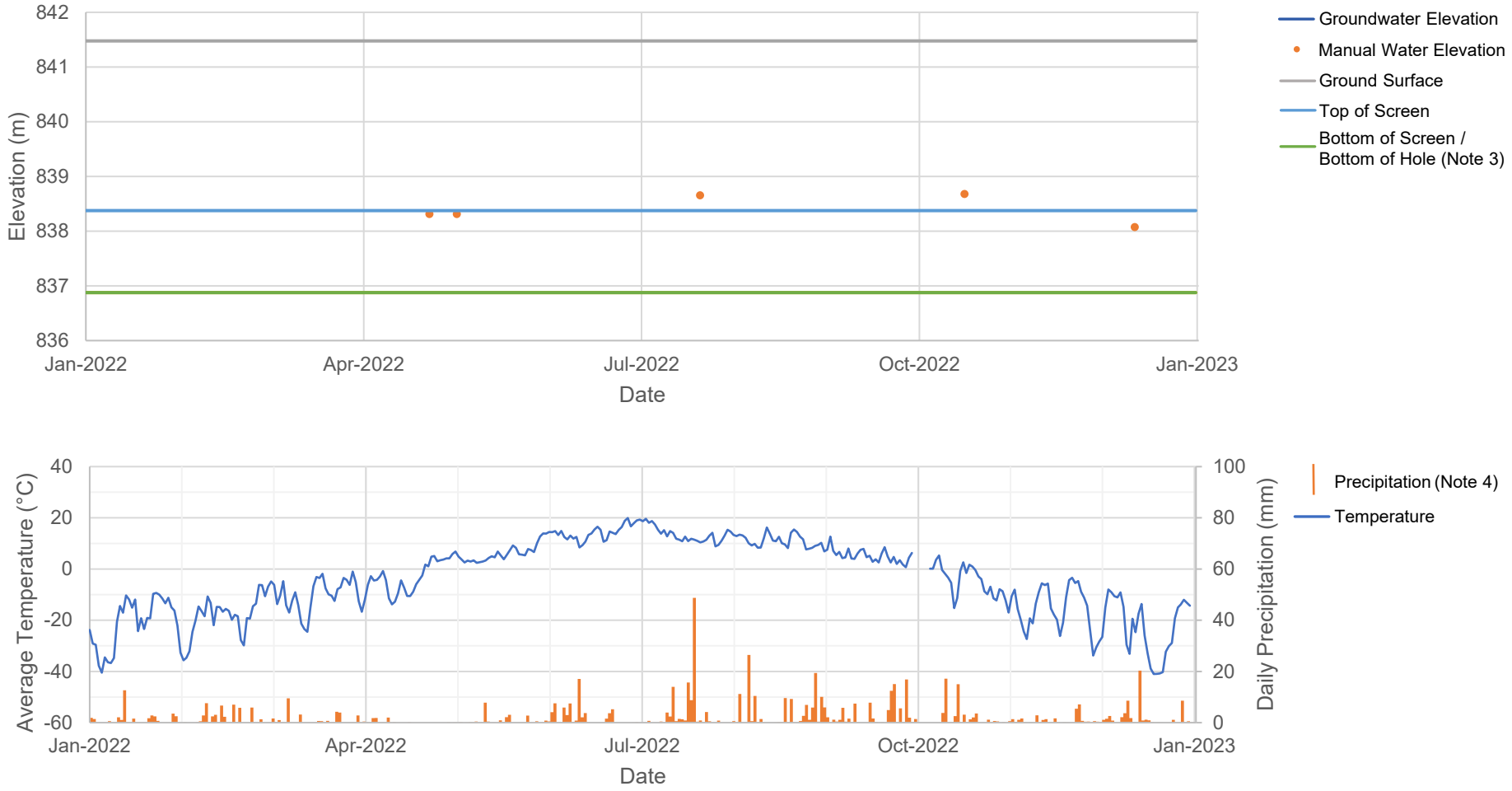
BGC ENGINEERING INC.



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2. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. BOTTOM OF HOLE DEPTH AND BOTTOM OF SCREEN DEPTH ARE EQUAL AND BASED ON AVAILABLE BOREHOLE LOGS.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.

PREPARED BY: AK	FIGURE TITLE: FD-BH22-13B GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 4

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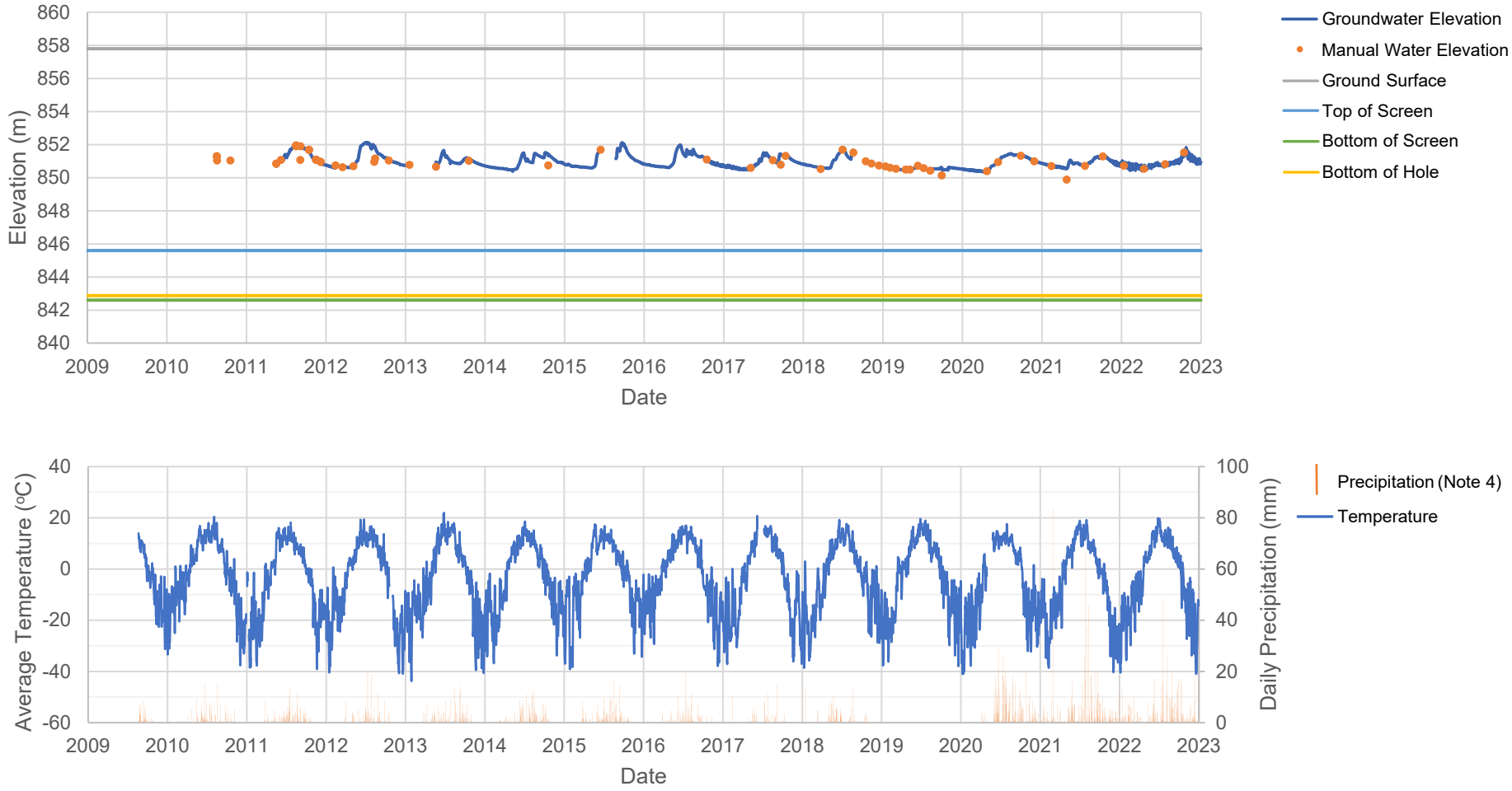
BGC ENGINEERING INC.



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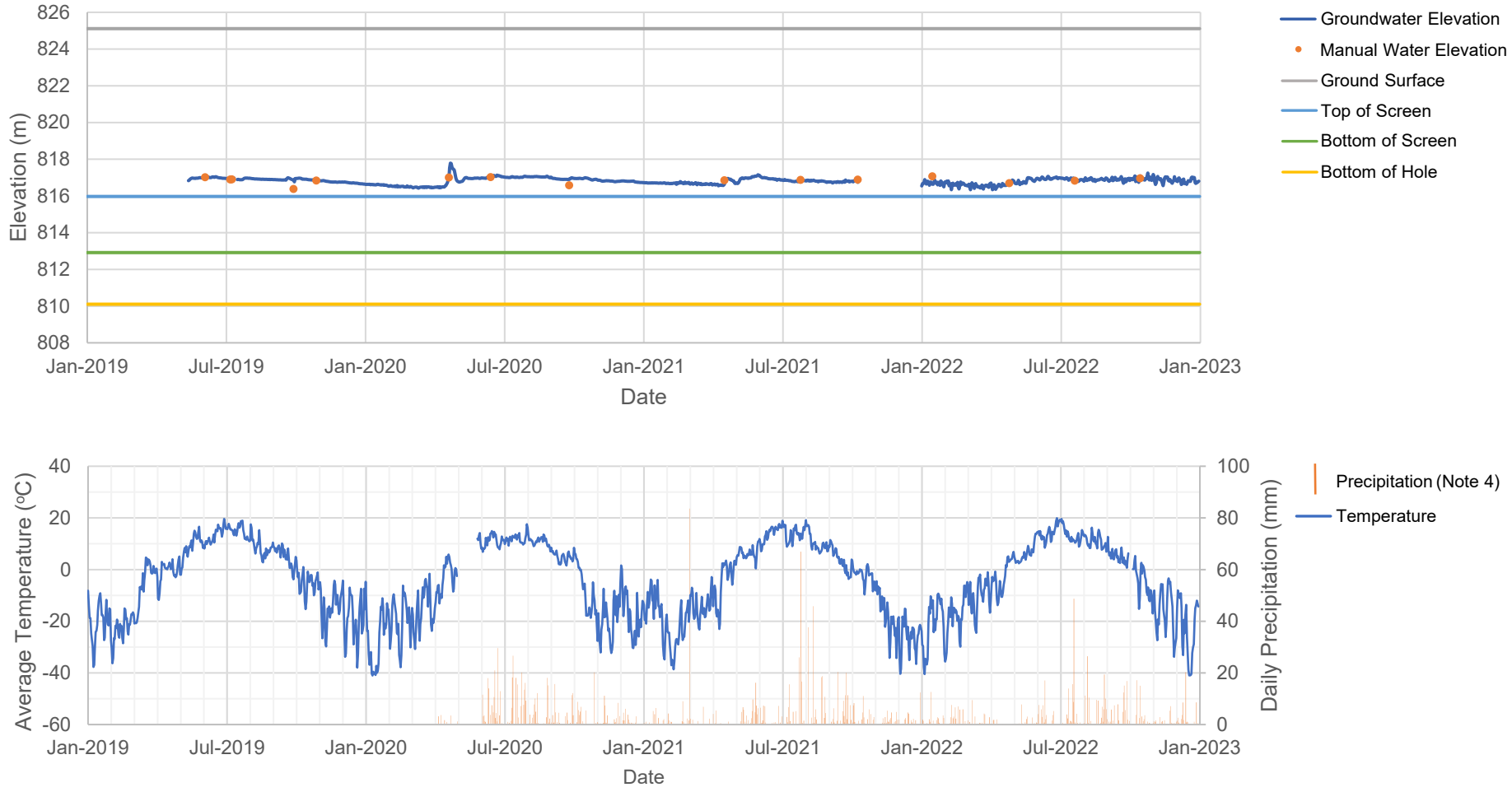
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. A NEW LOGGER WAS INSTALLED AT MW10-PG1 ON APRIL 25, 2022.

PREPARED BY:	FIGURE TITLE		
AK	MW10-PG1 GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792031	5

0 5 10 mm in ANSI A sized paper

BGC ENGINEERING INC.



NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. 2019 PRECIPITATION DATA NOT AVAILABLE DUE TO DATALOGGER MALFUNCTION. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 20, 2020. BOTTOM OF SCREEN DEPTH BASED ON AVAILABLE BOREHOLE LOGS. LOCATIONS WHERE THE BOTTOM OF SCREEN IS BELOW THE MEASURED BOTTOM OF HOLE MAY INDICATE INFILLING WITH SEDIMENTS, OR MODIFICATIONS TO THE WELL STICKUP THAT BGC IS NOT AWARE OF.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.

PREPARED BY: AK	FIGURE TITLE: MW18-DG2R GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 6

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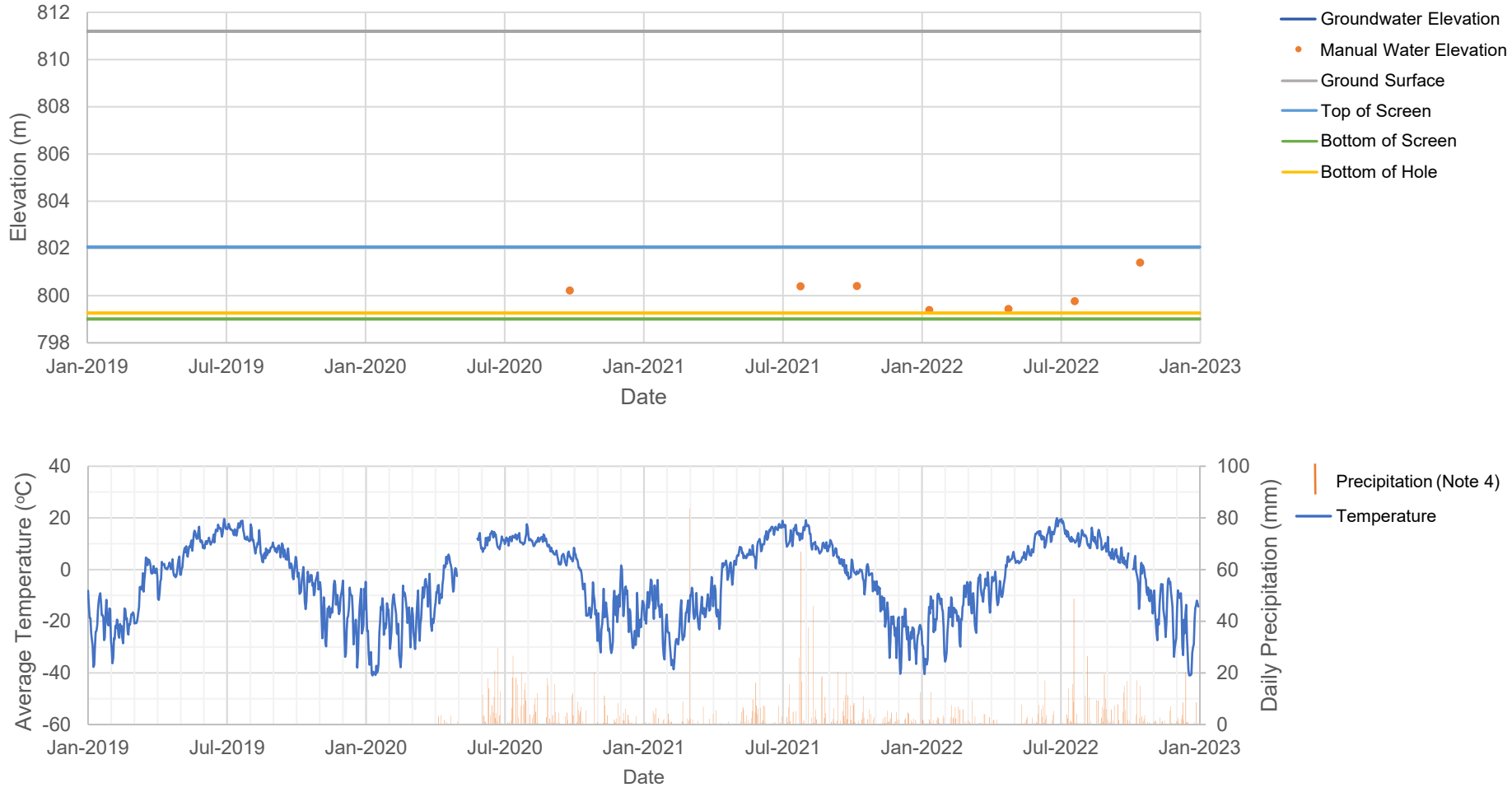
BGC ENGINEERING INC.



NOTES:

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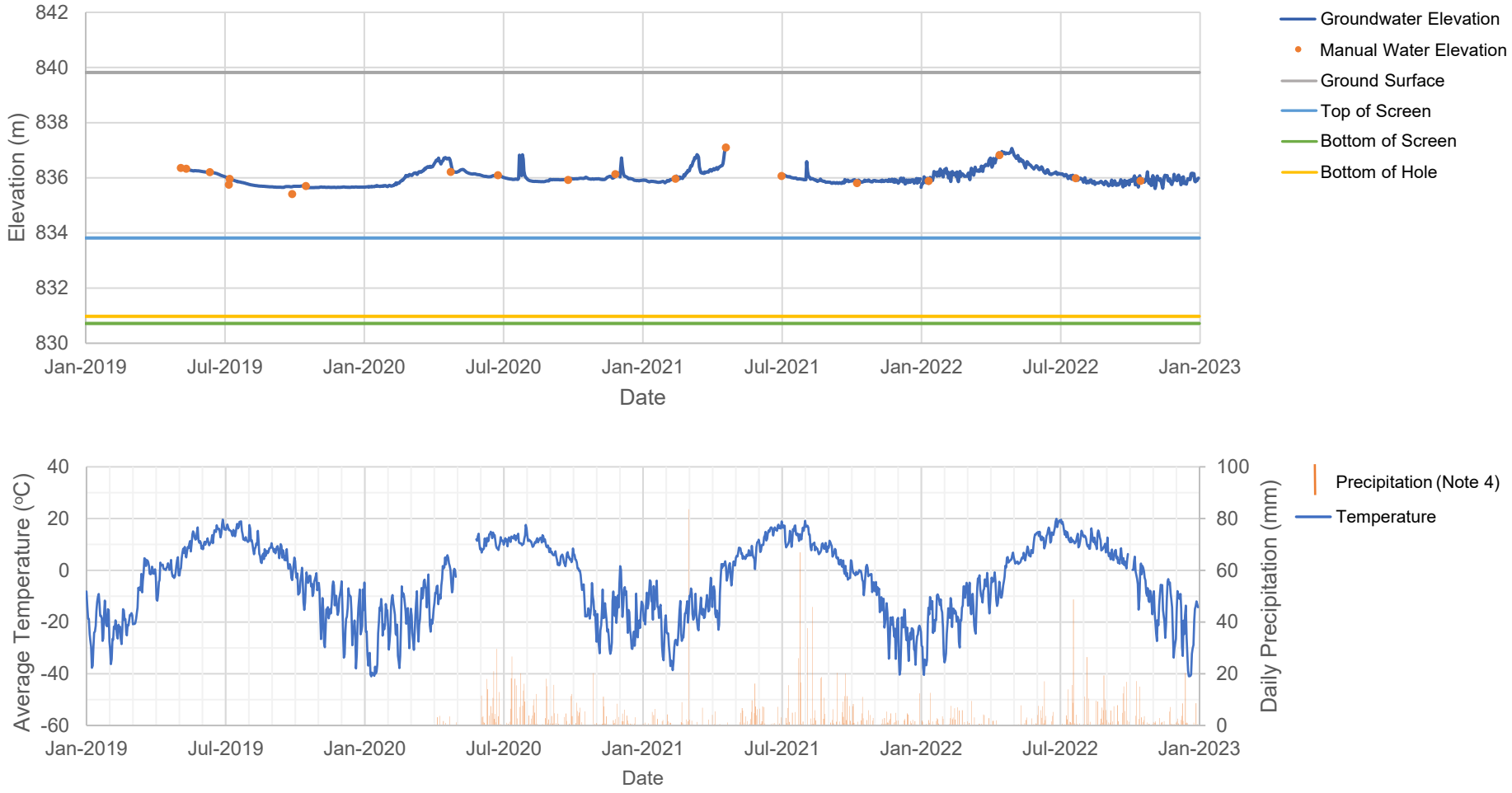
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. NO LOGGER DATA WERE COLLECTED AT MW18-LDSP1A IN 2022.
6. MW18-LDSP1A AND MW6 ARE THE SAME LOCATION, AS CONFIRMED BY STEPHEN WILBUR (VGC) (EMAIL, FEBRUARY 5, 2021).

PREPARED BY: AK	FIGURE TITLE: MW18-LDSP1A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 7

0 5 10 mm in ANSI A sized paper

BGC ENGINEERING INC.



NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. 2019 PRECIPITATION DATA NOT AVAILABLE DUE TO DATALOGGER MALFUNCTION. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 29, 2020. BOTTOM OF SCREEN DEPTH BASED ON AVAILABLE BOREHOLE LOGS. LOCATIONS WHERE THE BOTTOM OF SCREEN IS BELOW THE MEASURED BOTTOM OF HOLE MAY INDICATE INFILLING WITH SEDIMENTS, OR MODIFICATIONS TO THE WELL STICKUP THAT BGC IS NOT AWARE OF.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. MW19-DGR6A IS A NESTED MONITORING LOCATION WITH MW19-DGR6B, EACH WITH THEIR OWN BOREHOLE
6. NAMING FOR MW19-DG6RA IS CONSISTENT WITH THE BOREHOLE LOG (BGC, JUNE 26, 2019). HOWEVER, VGC FIELD STAFF MAY ALSO REFER TO THIS LOCATION AS MW19-DG6AR.

PREPARED BY: AK	FIGURE TITLE: MW19-DG6RA GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 8

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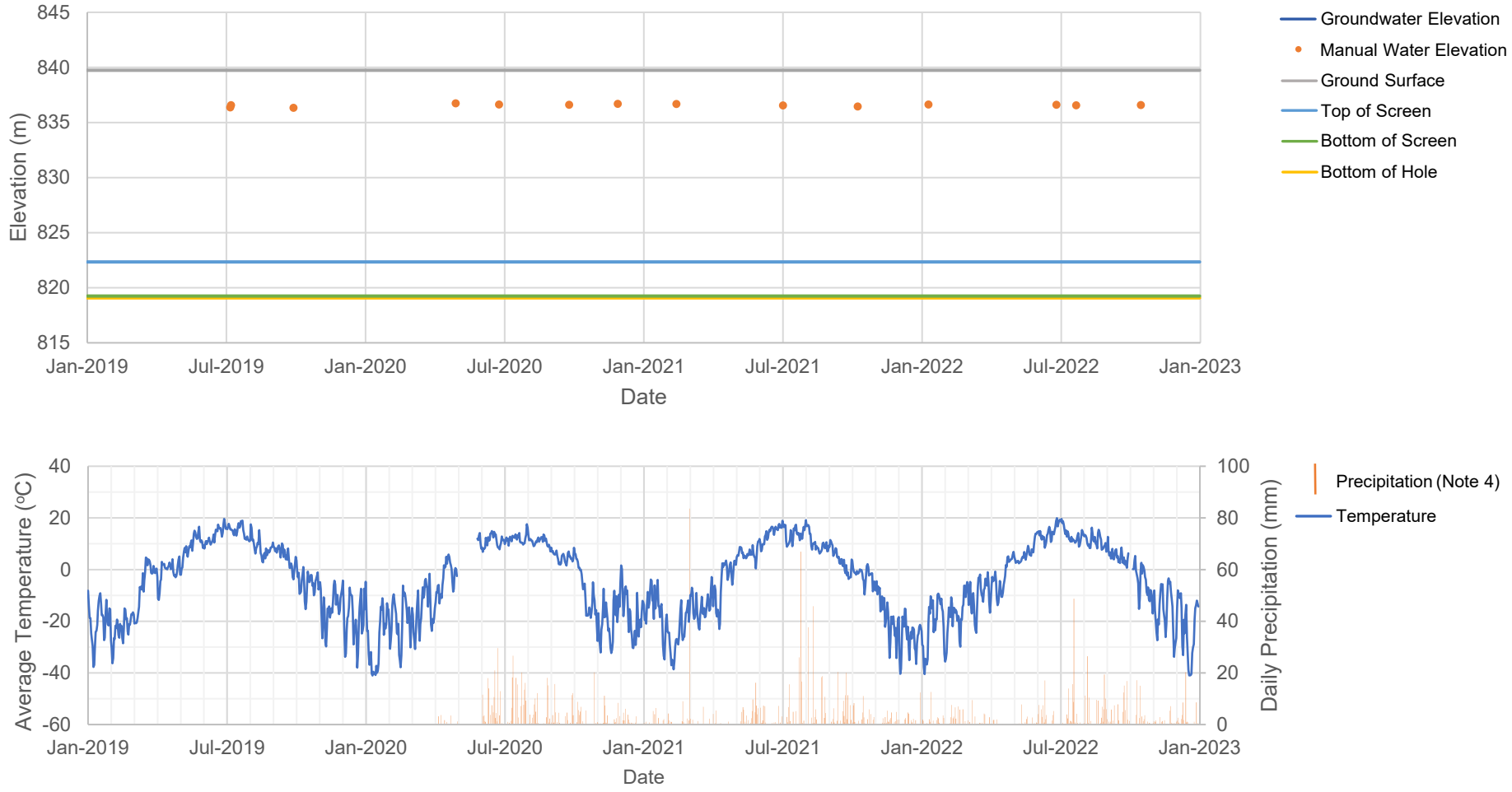
BGC ENGINEERING INC.



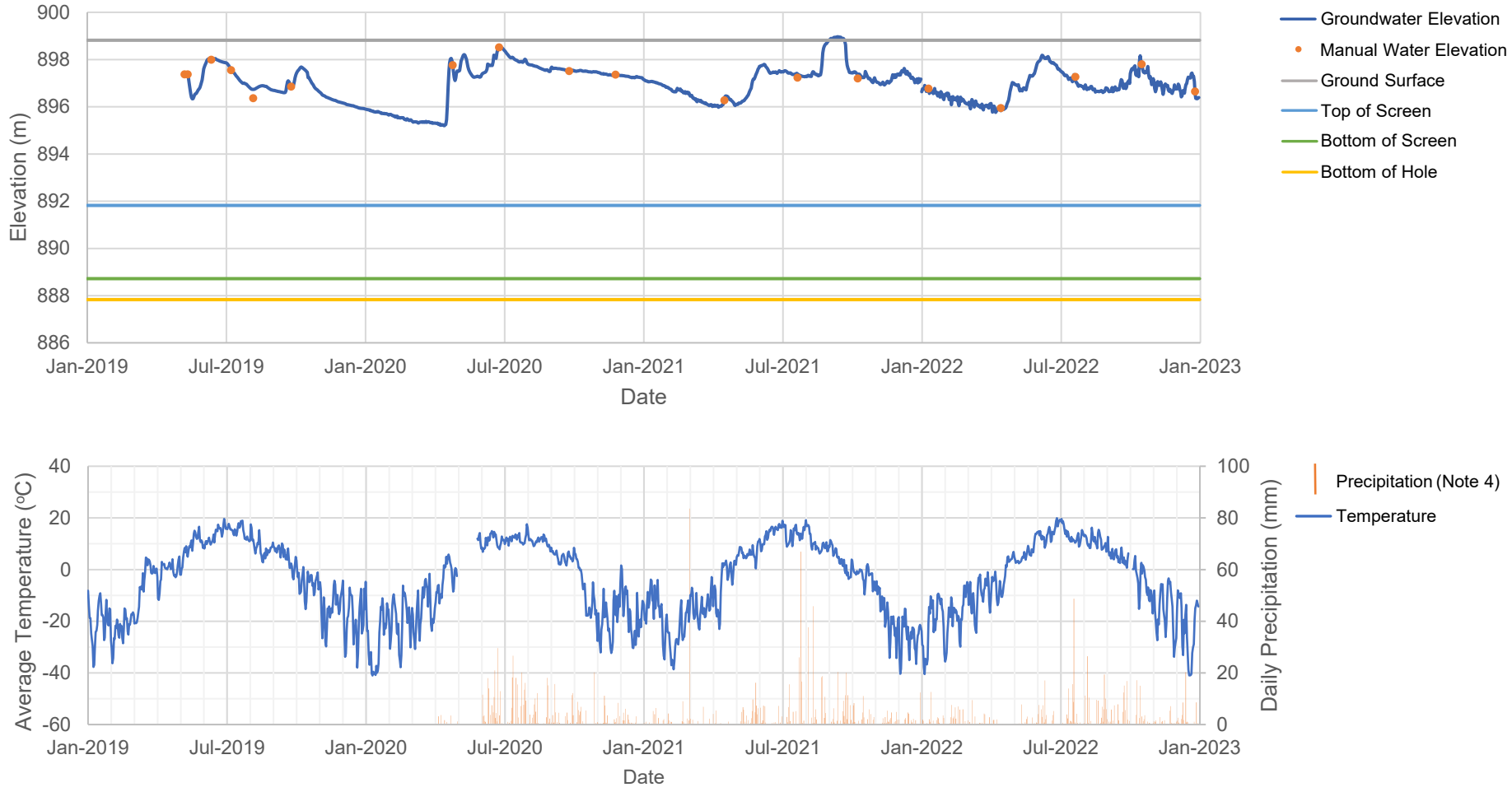
NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. 2019 PRECIPITATION DATA NOT AVAILABLE DUE TO DATALOGGER MALFUNCTION. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON JUNE 25, 2020. BOTTOM OF SCREEN DEPTH BASED ON AVAILABLE BOREHOLE LOGS. LOCATIONS WHERE THE BOTTOM OF SCREEN IS BELOW THE MEASURED BOTTOM OF HOLE MAY INDICATE INFILLING WITH SEDIMENTS, OR MODIFICATIONS TO THE WELL STICKUP THAT BGC IS NOT AWARE OF.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. MW19-DGR6B IS A NESTED MONITORING LOCATION WITH MW19-DGR6A, EACH WITH THEIR OWN BOREHOLE.
6. A READING WAS ATTEMPTED IN APRIL 2022 BUT THE WELL WAS FOUND TO BE FROZEN. A MANUAL READING WAS RE-ATTEMPTED IN JUNE 2022 AND THE WATER LEVEL WAS MEASURED SUCCESSFULLY.
7. NAMING FOR MW19-DG6RB IS CONSISTENT WITH THE BOREHOLE LOG (BGC, JUNE 26, 2019). HOWEVER, VGC FIELD STAFF MAY ALSO REFER TO THIS LOCATION AS MW19-DG6BR.

PREPARED BY:	FIGURE TITLE		
AK	MW19-DG6RB GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792031	9

0 5 10 mm in ANSI A sized paper

BGC ENGINEERING INC.



NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. 2019 PRECIPITATION DATA NOT AVAILABLE DUE TO DATALOGGER MALFUNCTION. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 25, 2020. BOTTOM OF SCREEN DEPTH BASED ON AVAILABLE BOREHOLE LOGS. LOCATIONS WHERE THE BOTTOM OF SCREEN IS BELOW THE MEASURED BOTTOM OF HOLE MAY INDICATE INFILLING WITH SEDIMENTS, OR MODIFICATIONS TO THE WELL STICKUP THAT BGC IS NOT AWARE OF.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. MW19-EPW1A IS A NESTED MONITORING LOCATION WITH MW19-EPW1B, EACH WITH THEIR OWN BOREHOLE.

PREPARED BY: AK	FIGURE TITLE: MW19-EPW1A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 10

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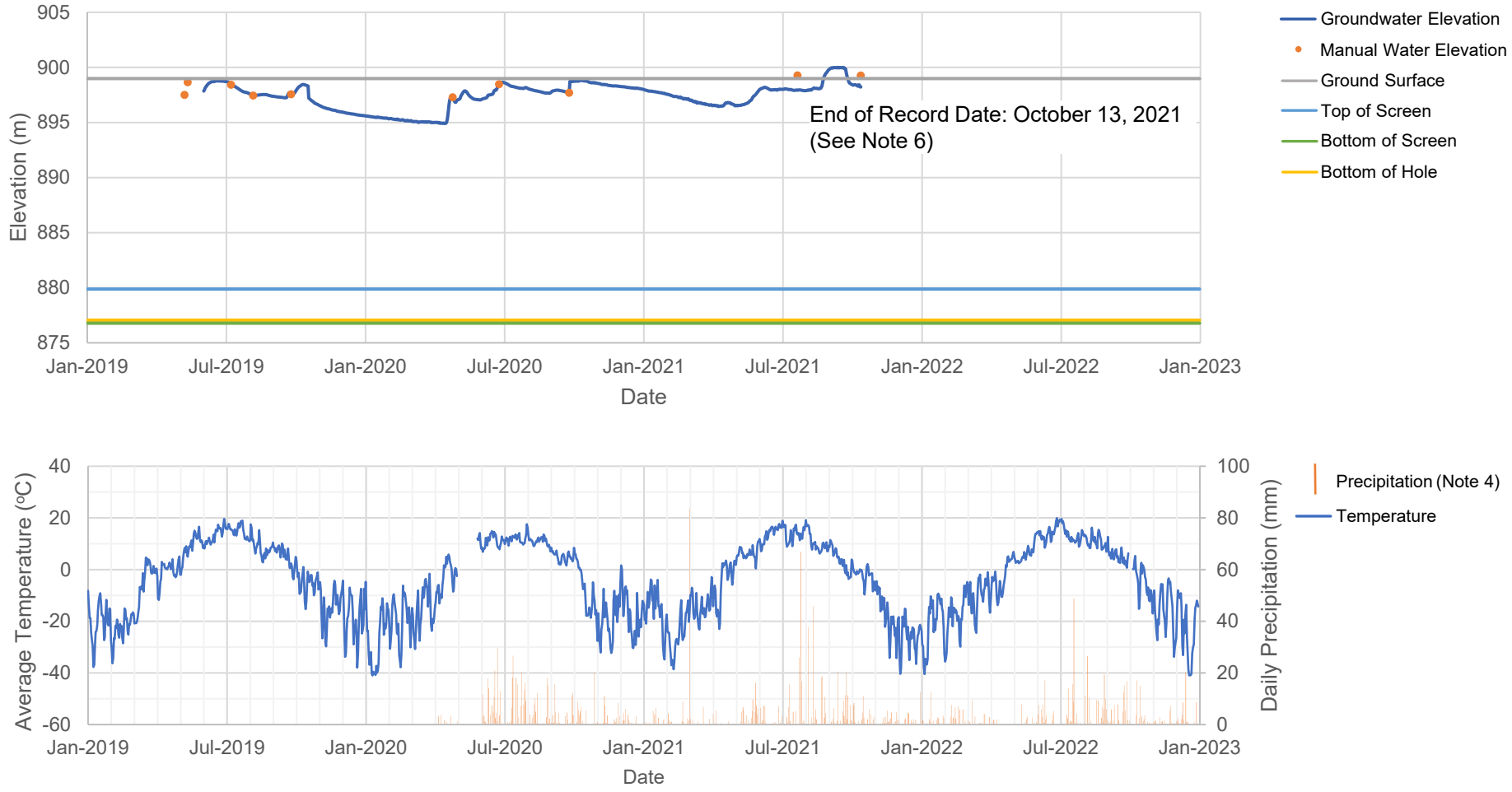
BGC ENGINEERING INC.



NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. 2019 PRECIPITATION DATA NOT AVAILABLE DUE TO DATALOGGER MALFUNCTION. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 25, 2020. BOTTOM OF SCREEN DEPTH BASED ON AVAILABLE BOREHOLE LOGS. LOCATIONS WHERE THE BOTTOM OF SCREEN IS BELOW THE MEASURED BOTTOM OF HOLE MAY INDICATE INFILLING WITH SEDIMENTS, OR MODIFICATIONS TO THE WELL STICKUP THAT BGC IS NOT AWARE OF.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. MW19-EPW1B IS A NESTED MONITORING LOCATION WITH MW19-EPW1A, EACH WITH THEIR OWN BOREHOLE.
6. NO MANUAL MEASUREMENT WAS TAKEN IN JANUARY OR APRIL 2022 DUE TO THE WELL BEING FROZEN.
7. PVC PIPE FOR MW19-EPW1B WAS DAMAGED AT END OF 2021 / EARLY 2022 AND GROUNDWATER READINGS COULD NOT BE TAKEN. THE MONITORING WELL CASING HAS BEEN CUT OFF AT GROUND SURFACE, AND BACKFILLED WITH BENTONITE OR OTHER HOLE PLUGGING MATERIALS BY VGC.

PREPARED BY: AK	FIGURE TITLE: MW19-EPW1B GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 11

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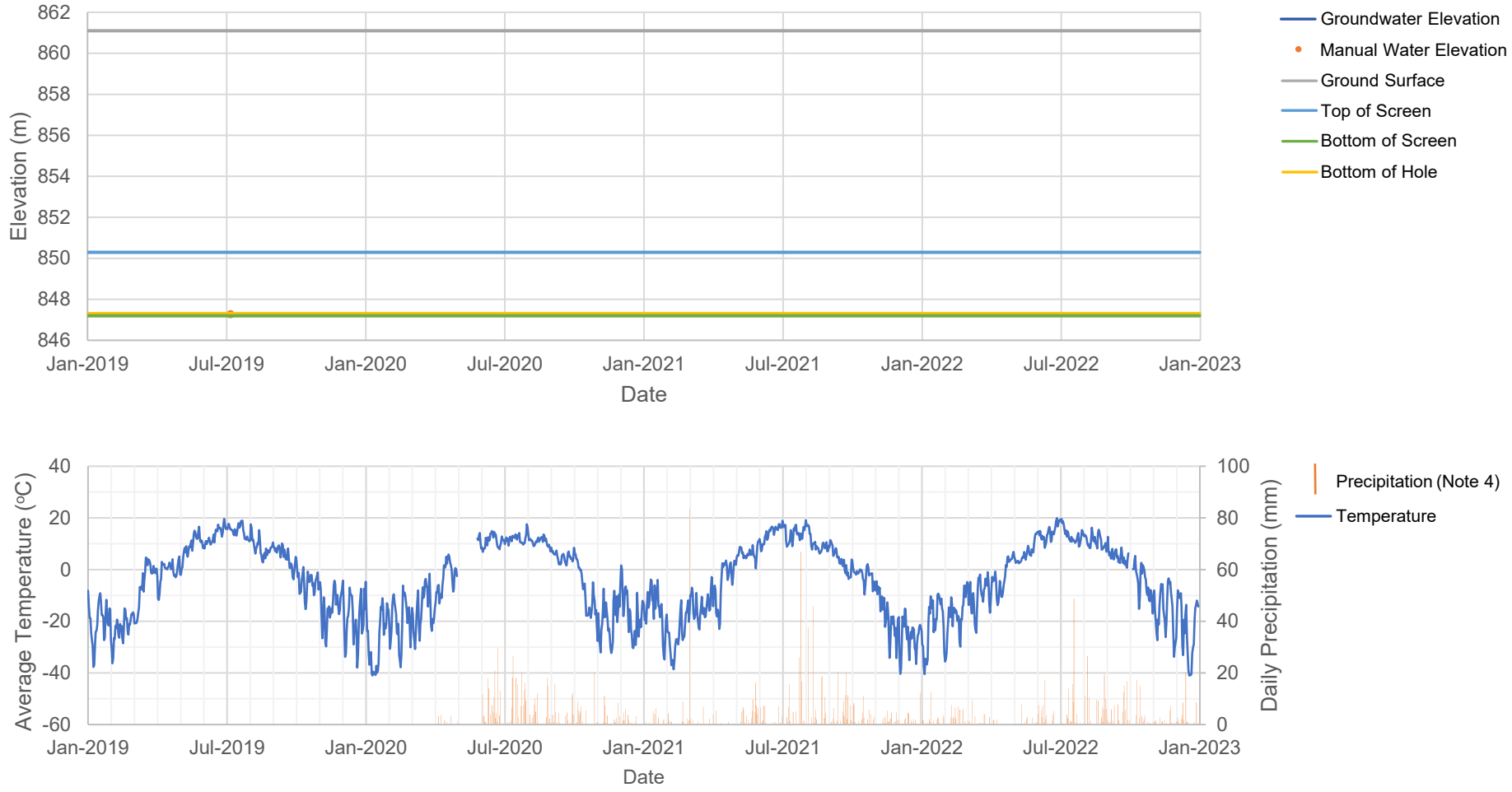
BGC ENGINEERING INC.



NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. 2019 PRECIPITATION DATA NOT AVAILABLE DUE TO DATALOGGER MALFUNCTION. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON MAY 4, 2020. BOTTOM OF SCREEN DEPTH BASED ON AVAILABLE BOREHOLE LOGS. LOCATIONS WHERE THE BOTTOM OF SCREEN IS BELOW THE MEASURED BOTTOM OF HOLE MAY INDICATE INFILLING WITH SEDIMENTS, OR MODIFICATIONS TO THE WELL STICKUP THAT BGC IS NOT AWARE OF.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. MW19-EVP1A IS A NESTED MONITORING LOCATION WITH MW19-EVP1B, EACH WITH THEIR OWN BOREHOLE.
6. WATER LEVELS WERE CHECKED 4 TIMES IN 2022; THE HOLE WAS DRY EACH TIME.

PREPARED BY: AK	FIGURE TITLE: MW19-EVP1A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 12

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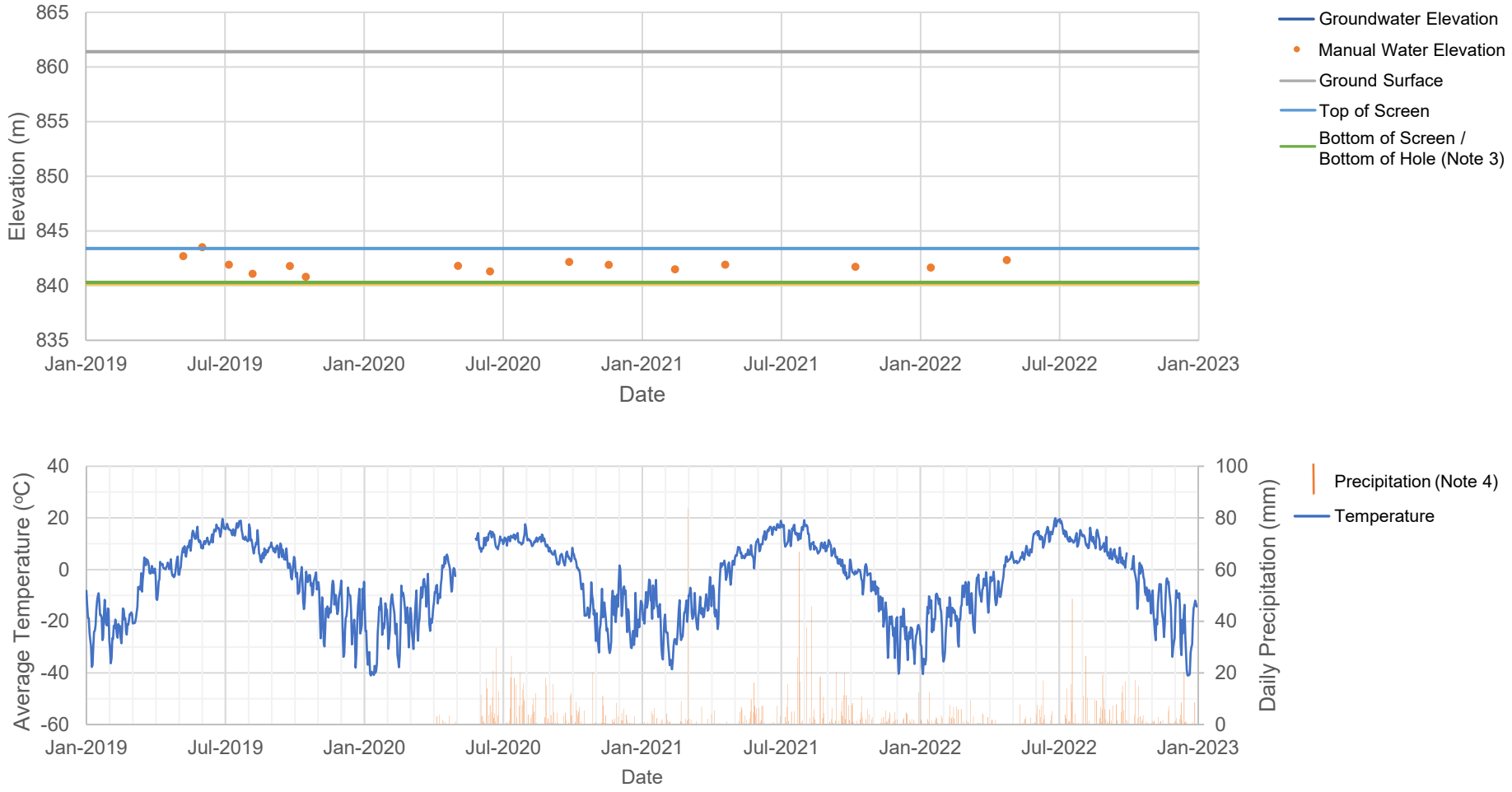
BGC ENGINEERING INC.



NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. 2019 PRECIPITATION DATA NOT AVAILABLE DUE TO DATALOGGER MALFUNCTION. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON MAY 4, 2020 (EQUAL TO BOTTOM SCREEN). BOTTOM OF SCREEN DEPTH BASED ON AVAILABLE BOREHOLE LOGS.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. MW19-EPW1B IS A NESTED MONITORING LOCATION WITH MW19-EPW1A, EACH WITH THEIR OWN BOREHOLE.
6. THE HOLE WAS DRY DURING FIELD MEASUREMENTS IN JULY AND OCTOBER 2022.

PREPARED BY: AK	FIGURE TITLE: MW19-EVP1B GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 13

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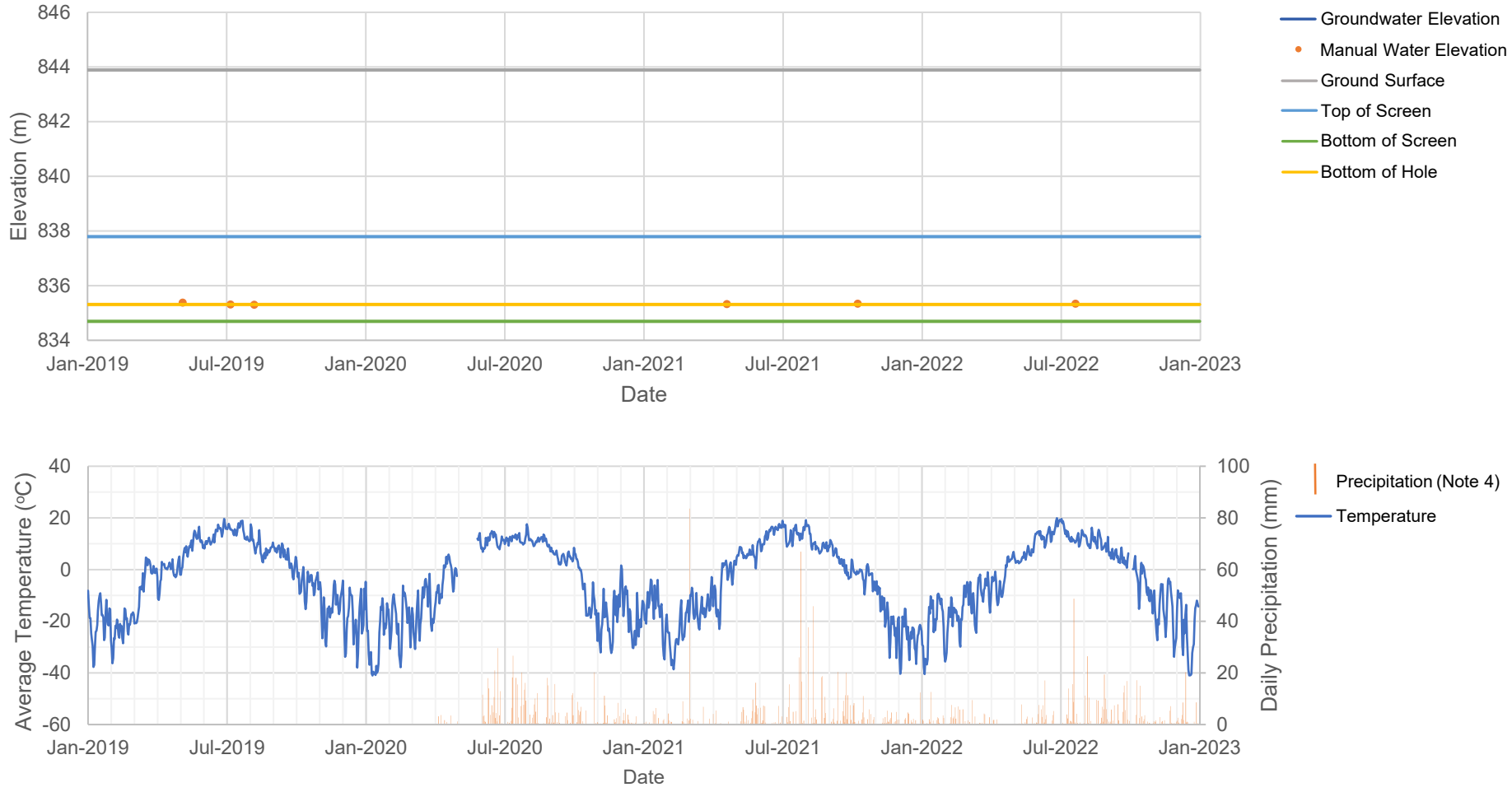
BGC ENGINEERING INC.



NOTES:

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2. 2019 PRECIPITATION DATA NOT AVAILABLE DUE TO DATALOGGER MALFUNCTION. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 29, 2020. BOTTOM OF SCREEN DEPTH BASED ON AVAILABLE BOREHOLE LOGS. LOCATIONS WHERE THE BOTTOM OF SCREEN IS BELOW THE MEASURED BOTTOM OF HOLE MAY INDICATE INFILLING WITH SEDIMENTS, OR MODIFICATIONS TO THE WELL STICKUP THAT BGC IS NOT AWARE OF.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. MW19-EVP2A IS A NESTED MONITORING LOCATION WITH MW19-EVP2B, EACH WITH THEIR OWN BOREHOLE.
6. THE HOLE WAS DRY DURING FIELD MEASUREMENTS IN JANUARY, APRIL, AND OCTOBER 2022.

PREPARED BY: AK	FIGURE TITLE: MW19-EVP2A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 14

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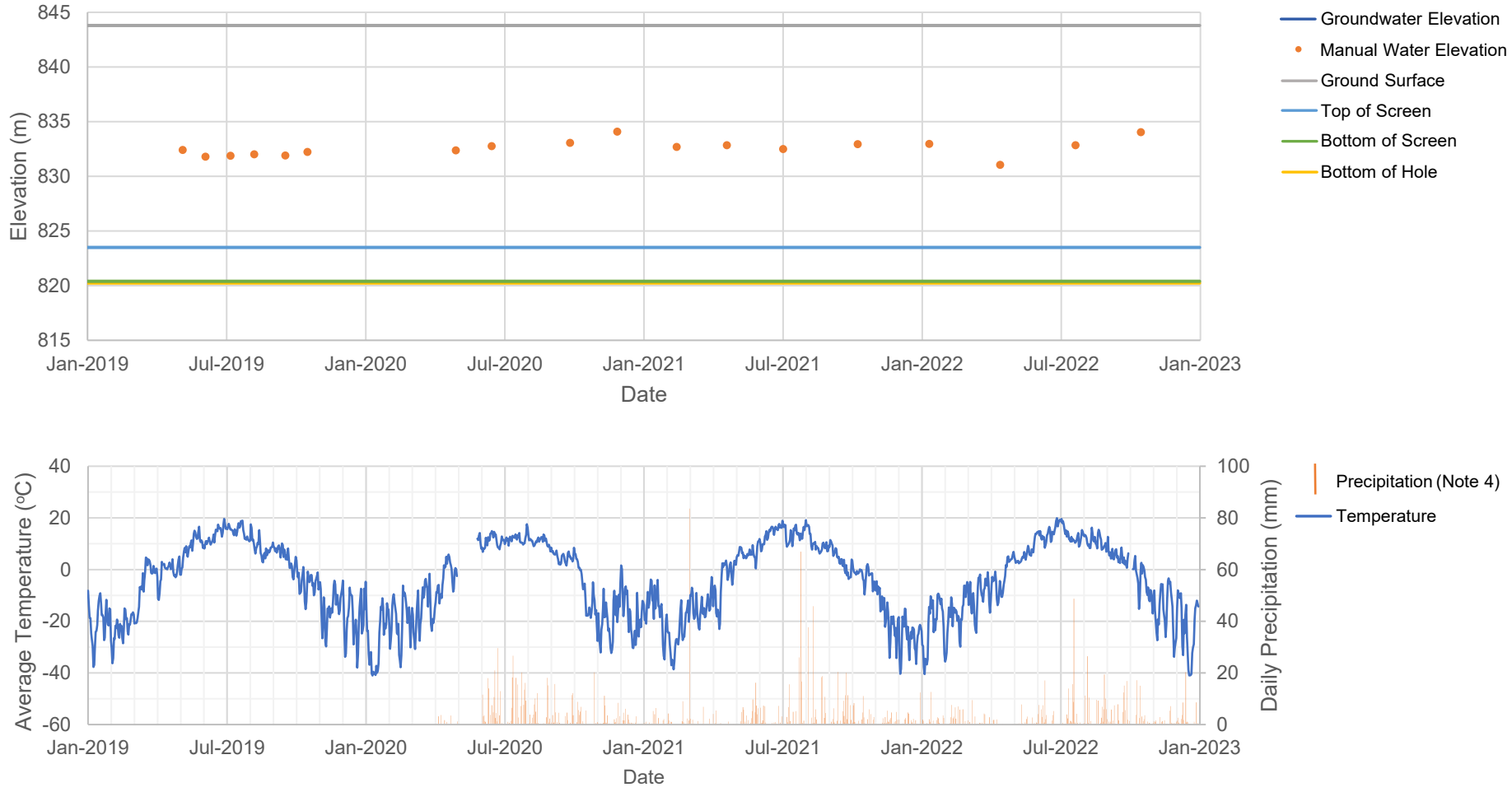
BGC ENGINEERING INC.



NOTES:

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4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. MW19-EVP2B IS A NESTED MONITORING LOCATION WITH MW19-EVP2A, EACH WITH THEIR OWN BOREHOLE.
6. A LOGGER WAS DEPLOYED IN MW19-EVP2B ON NOVEMBER 12, 2022. HOWEVER, NO DATA WERE DOWNLOADED / RECEIVED FOR 2022.

PREPARED BY: AK	FIGURE TITLE: MW19-EVP2B GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 15

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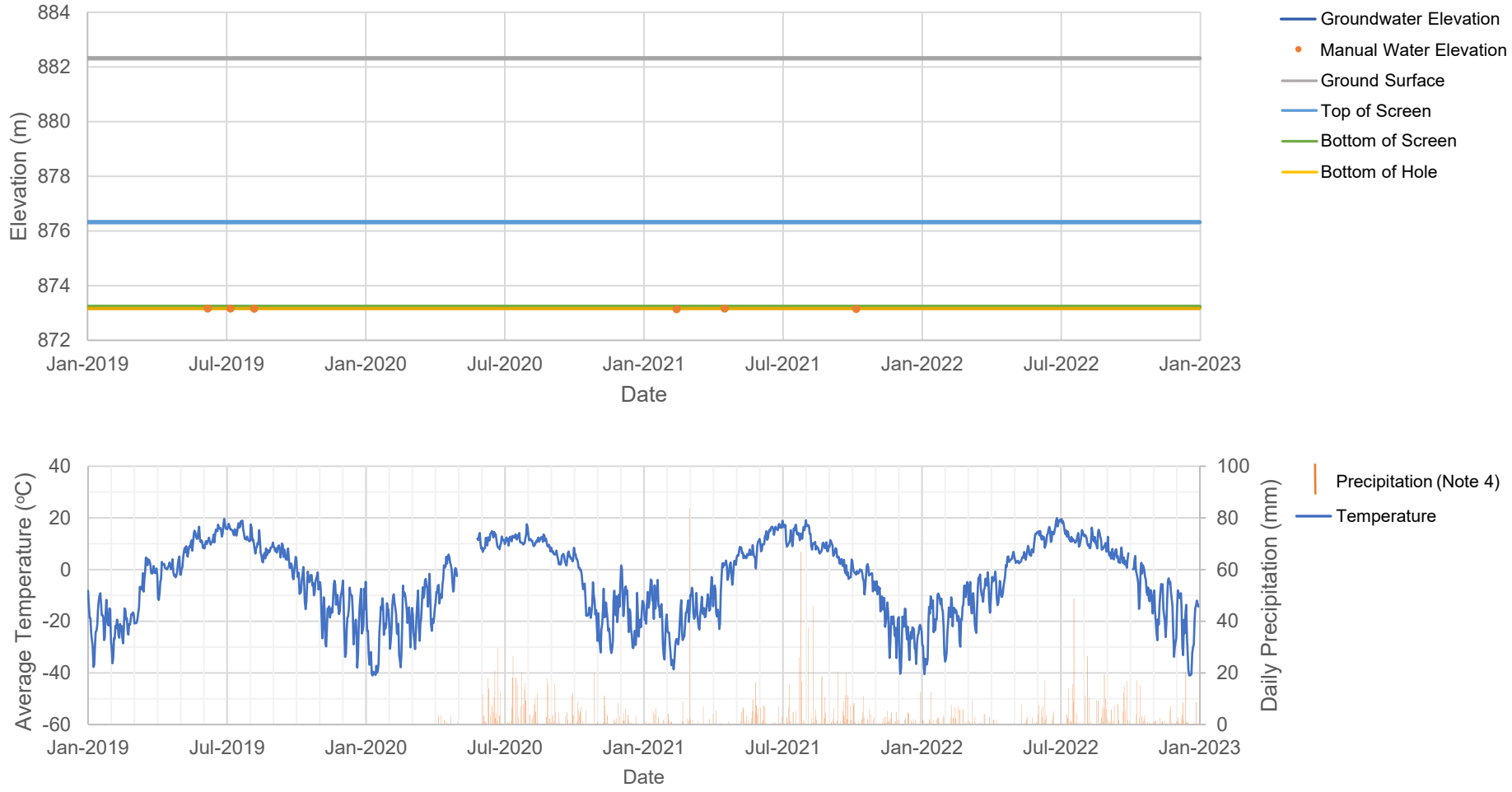
BGC ENGINEERING INC.



NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. 2019 PRECIPITATION DATA NOT AVAILABLE DUE TO DATALOGGER MALFUNCTION. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 29, 2020. BOTTOM OF SCREEN DEPTH BASED ON AVAILABLE BOREHOLE LOGS. LOCATIONS WHERE THE BOTTOM OF SCREEN IS BELOW THE MEASURED BOTTOM OF HOLE MAY INDICATE INFILLING WITH SEDIMENTS, OR MODIFICATIONS TO THE WELL STICKUP THAT BGC IS NOT AWARE OF.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. MW19-HLF1A IS A NESTED MONITORING LOCATION WITH MW19-HLF1B, EACH WITH THEIR OWN BOREHOLE.
6. WATER LEVELS WERE CHECKED 4 TIMES IN 2022; THE HOLE WAS DRY EACH TIME.

PREPARED BY: AK	FIGURE TITLE: MW19-HLF1A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 16

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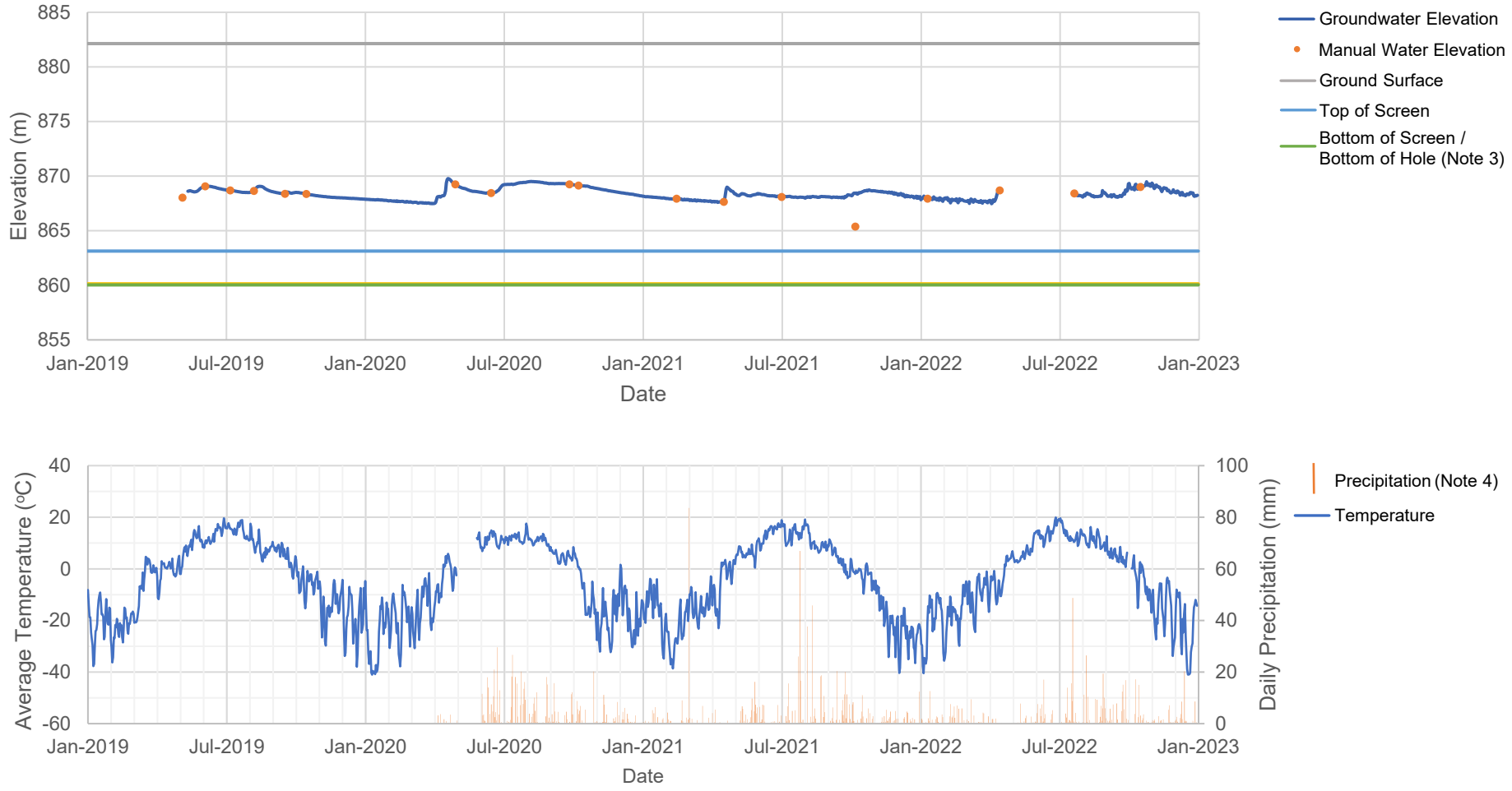
BGC ENGINEERING INC.



NOTES:

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2. 2019 PRECIPITATION DATA NOT AVAILABLE DUE TO DATALOGGER MALFUNCTION. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 29, 2020 (EQUAL TO BOTTOM SCREEN). BOTTOM OF SCREEN DEPTH BASED ON AVAILABLE BOREHOLE LOGS.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. MW19-HLF1B IS A NESTED MONITORING LOCATION WITH MW19-HLF1A, EACH WITH THEIR OWN BOREHOLE.
6. NO LOGGER DATA WERE PROVIDED FOR MW19-HLF1B FROM APRIL 15 TO JULY 22, 2022.

PREPARED BY: AK	FIGURE TITLE: MW19-HLF1B GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 17

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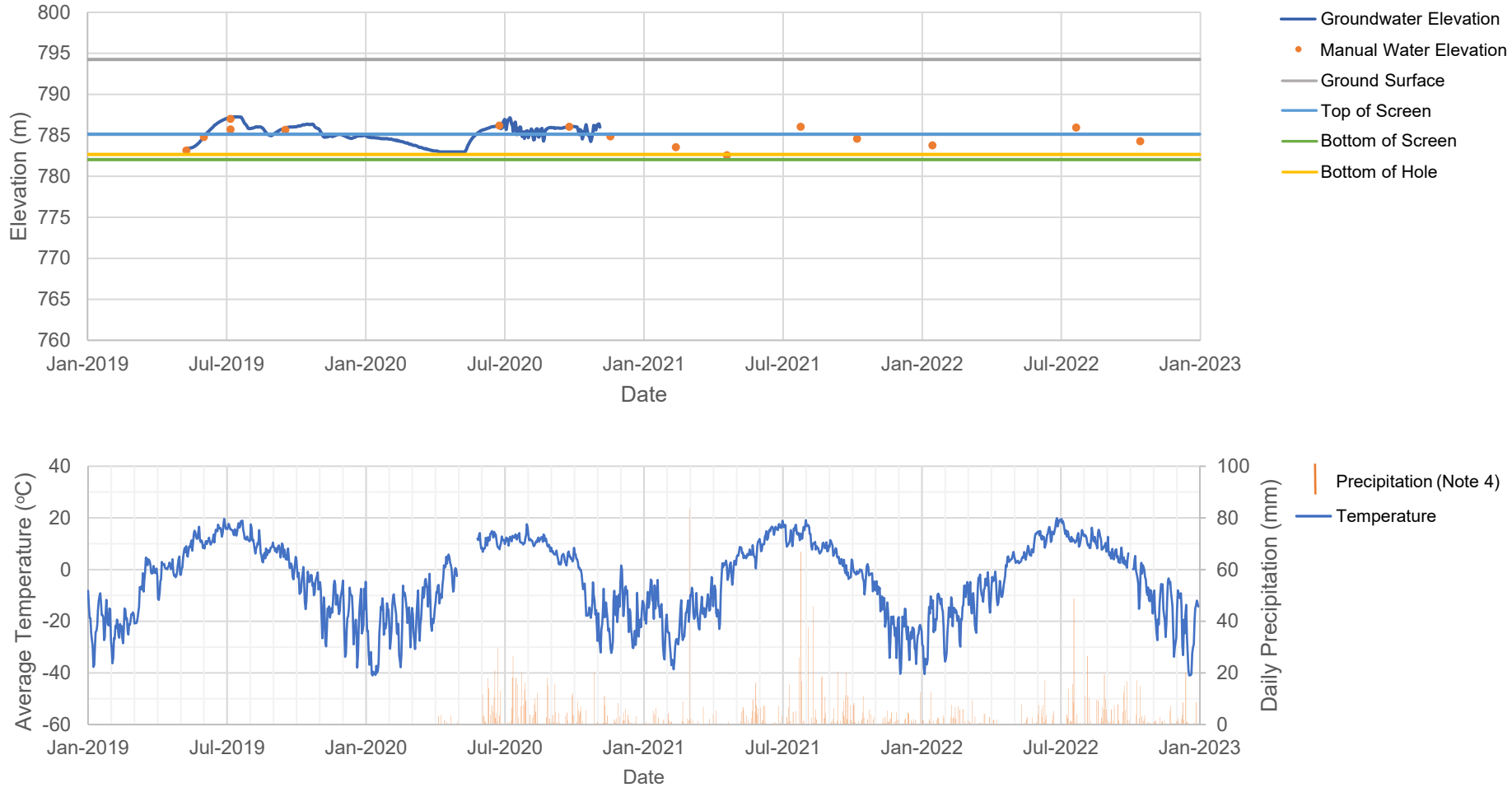
BGC ENGINEERING INC.



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3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 20, 2020. BOTTOM OF SCREEN DEPTH BASED ON AVAILABLE BOREHOLE LOGS. LOCATIONS WHERE THE BOTTOM OF SCREEN IS BELOW THE MEASURED BOTTOM OF HOLE MAY INDICATE INFILLING WITH SEDIMENTS, OR MODIFICATIONS TO THE WELL STICKUP THAT BGC IS NOT AWARE OF.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. MW19-LDSP-2A IS A NESTED MONITORING LOCATION WITH MW19-LDSP-2B, EACH WITH THEIR OWN BOREHOLE.

PREPARED BY:	FIGURE TITLE		
AK	MW19-LDSP-2A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792031	18

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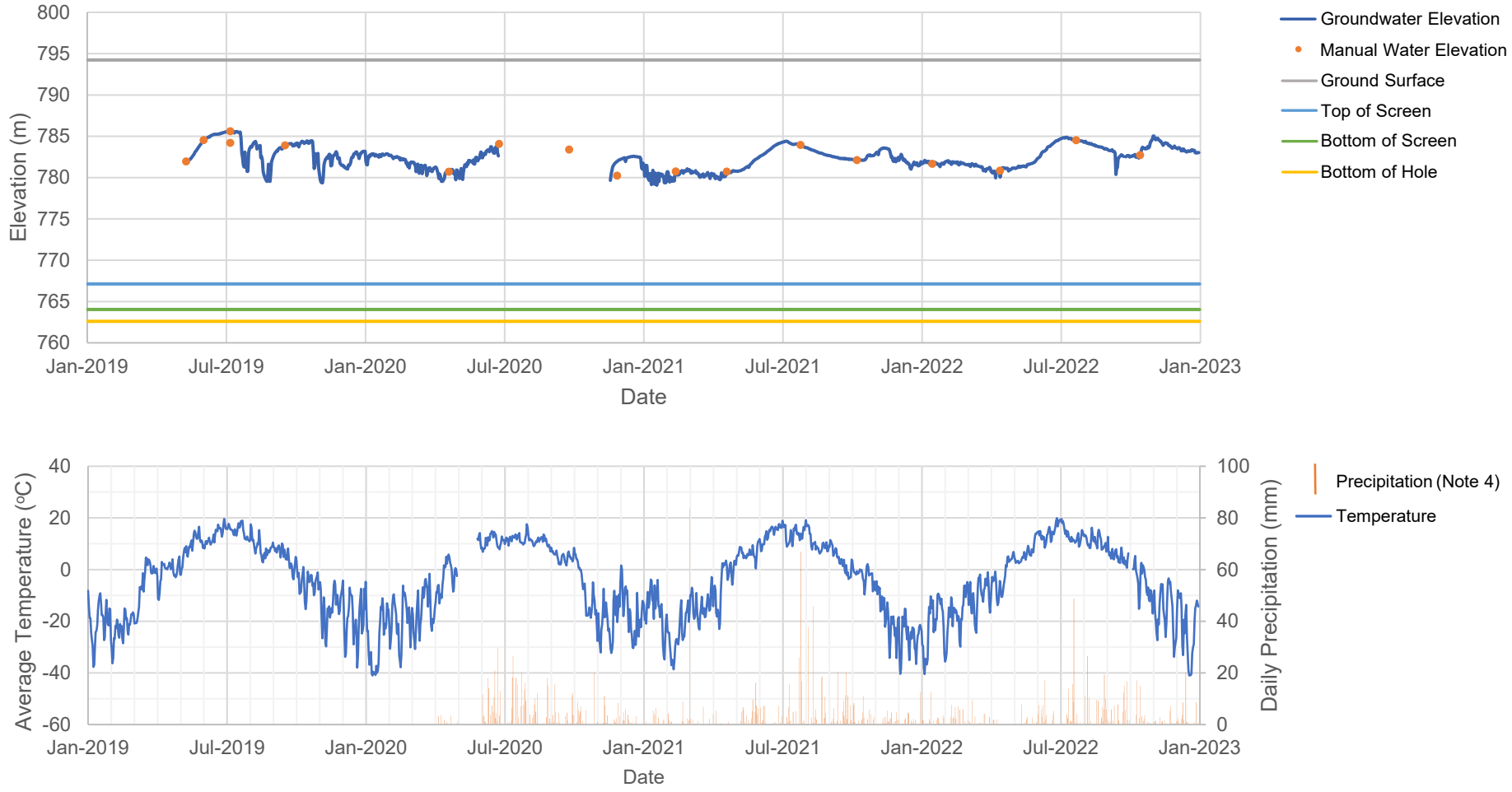
BGC ENGINEERING INC.



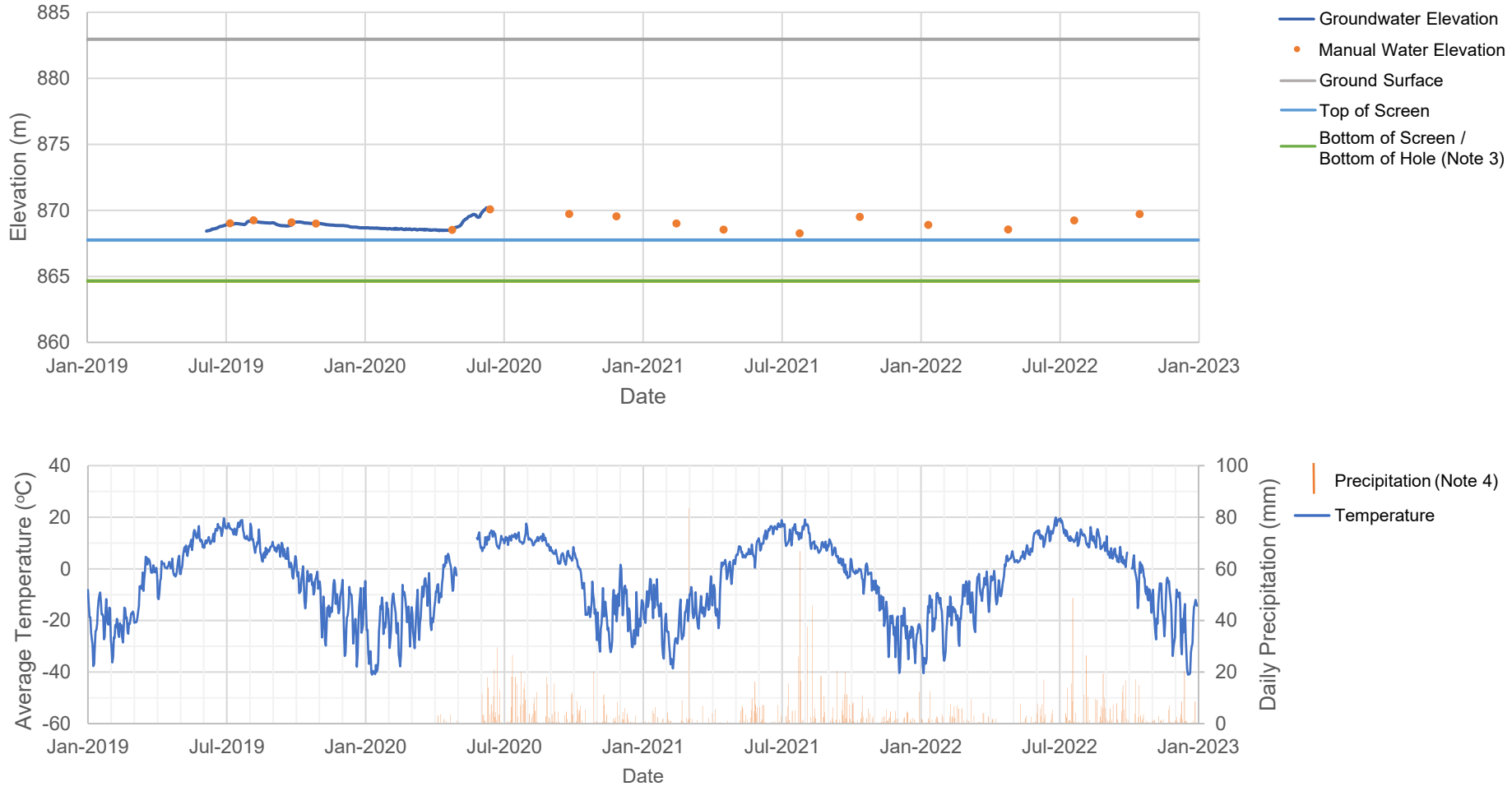
NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. 2019 PRECIPITATION DATA NOT AVAILABLE DUE TO DATALOGGER MALFUNCTION. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 20, 2020. BOTTOM OF SCREEN DEPTH BASED ON AVAILABLE BOREHOLE LOGS. LOCATIONS WHERE THE BOTTOM OF SCREEN IS BELOW THE MEASURED BOTTOM OF HOLE MAY INDICATE INFILLING WITH SEDIMENTS, OR MODIFICATIONS TO THE WELL STICKUP THAT BGC IS NOT AWARE OF.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. MW19-LDSP-2B IS A NESTED MONITORING LOCATION WITH MW19-LDSP-2A, EACH WITH THEIR OWN BOREHOLE.
6. A NEW LOGGER WAS INSTALLED AT MW19-LDSP-2B ON APRIL 25, 2022.

PREPARED BY:	FIGURE TITLE		
AK	MW19-LDSP-2B GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792031	19

0 5 10 mm in ANSI A sized paper

BGC ENGINEERING INC.



NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. 2019 PRECIPITATION DATA NOT AVAILABLE DUE TO DATALOGGER MALFUNCTION. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON APRIL 25, 2020 (EQUAL TO BOTTOM SCREEN). BOTTOM OF SCREEN DEPTH BASED ON AVAILABLE BOREHOLE LOGS.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. NO LOGGER DATA WERE PROVIDED FOR MW19-PWG1A FROM JUNE 2020 TO DECEMBER 2022.

PREPARED BY: AK	FIGURE TITLE: MW19-PGW1A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 20

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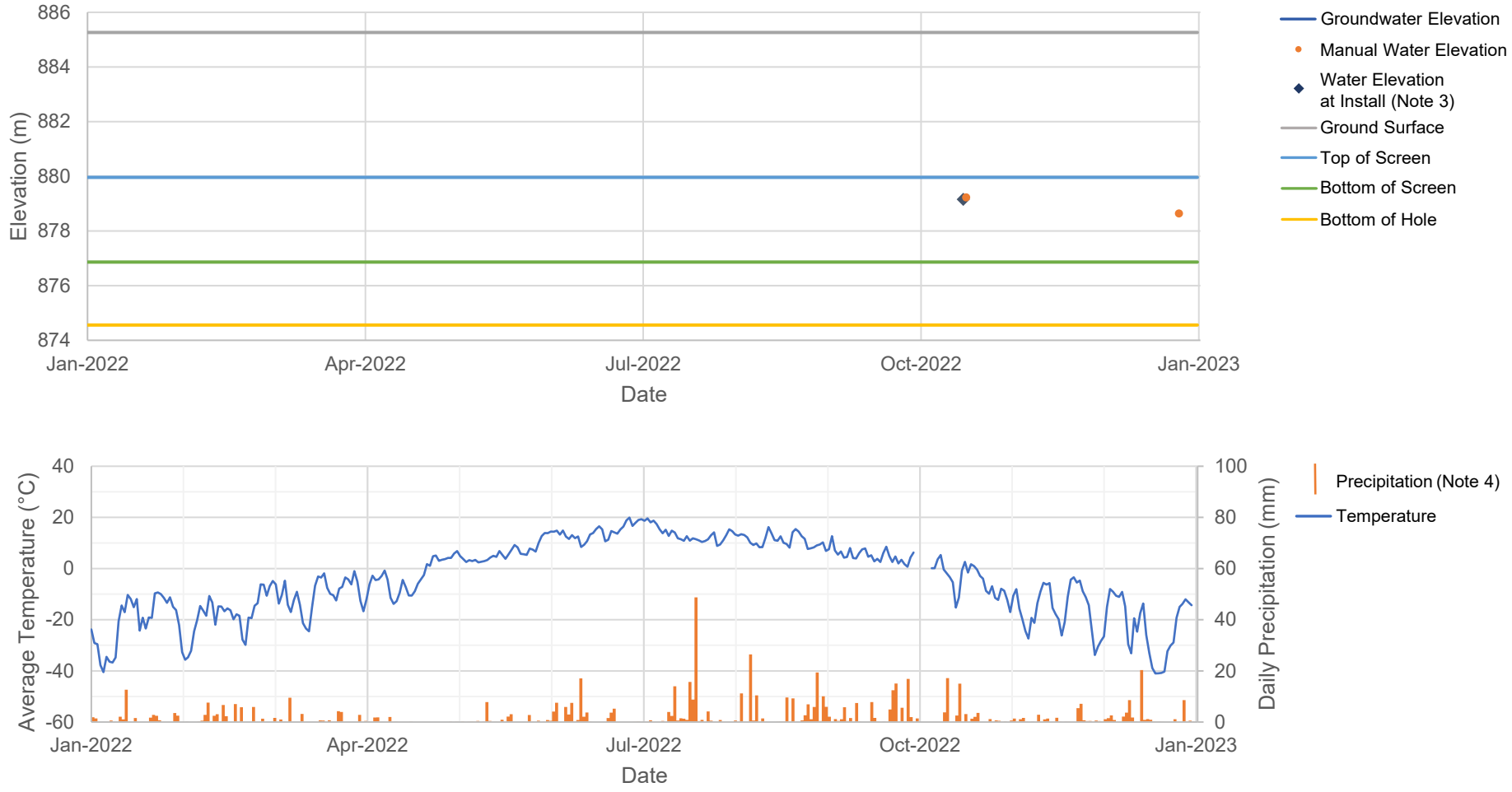
BGC ENGINEERING INC.



NOTES:
1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. THE WATER LEVEL MEASURED AT THE TIME OF INSTALLATION IS SHOWN FOR WELLS INSTALLED BY CORE GEOSCIENCE SERVICES IN 2022 (COREGEO, FEBRUARY 14, 2023). THESE WATER LEVELS ARE PROVIDED FOR REFERENCE ONLY, AND MAY NOT BE REPRESENTATIVE OF STATIC CONDITIONS.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.

PREPARED BY: AK	FIGURE TITLE: MW22-151A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 21

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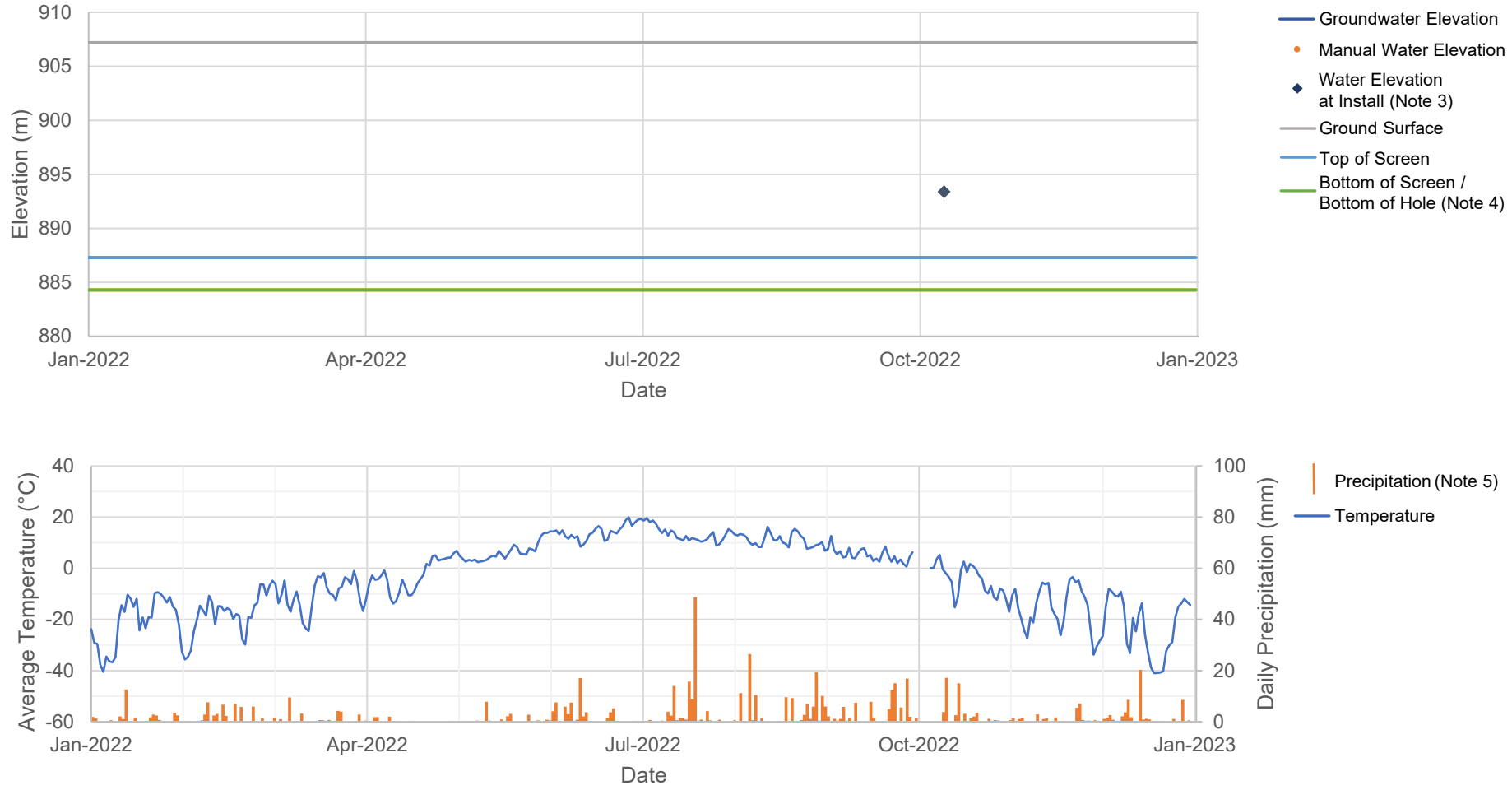
BGC ENGINEERING INC.



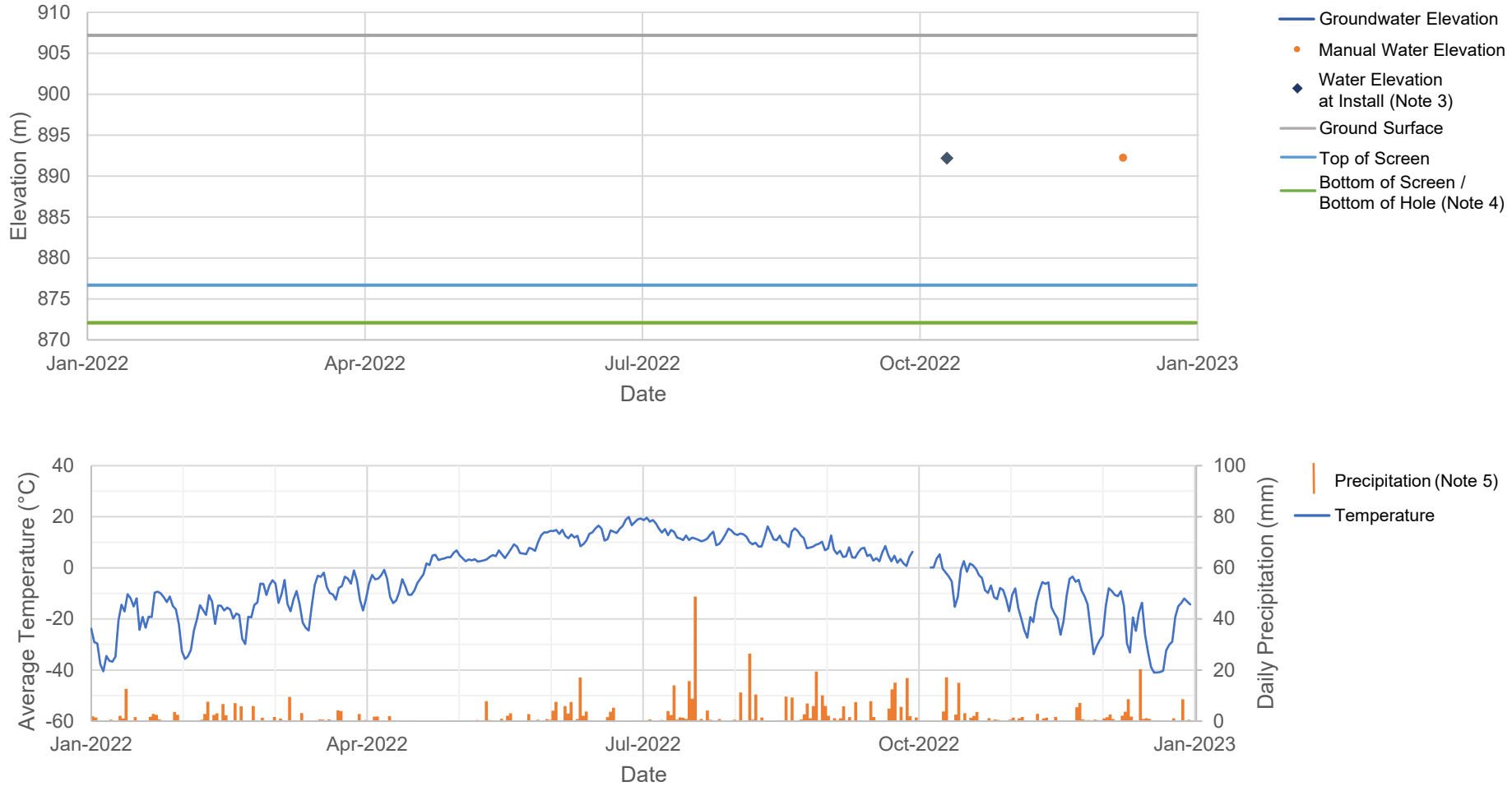
NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. THE WATER LEVEL MEASURED AT THE TIME OF INSTALLATION IS SHOWN FOR WELLS INSTALLED BY CORE GEOSCIENCE SERVICES IN 2022 (COREGEO, FEBRUARY 14, 2023). THESE WATER LEVELS ARE PROVIDED FOR REFERENCE ONLY, AND MAY NOT BE REPRESENTATIVE OF STATIC CONDITIONS.
4. BOTTOM OF HOLE DEPTH AND BOTTOM OF SCREEN DEPTH ARE EQUAL AND BASED ON AVAILABLE BOREHOLE LOGS.
5. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
6. MW22-AG6AR IS A REPLACEMENT WELL FOR MW10-AG6.
7. WELL DEVELOPMENT IN PROGRESS AT END OF 2022 AND NO MANUAL WATER ELEVATION READINGS WERE TAKEN.

PREPARED BY:	FIGURE TITLE		
AK	MW22-AG6AR GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792031	22

0 5 10 mm in ANSI A sized paper

BGC ENGINEERING INC.



NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. THE WATER LEVEL MEASURED AT THE TIME OF INSTALLATION IS SHOWN FOR WELLS INSTALLED BY CORE GEOSCIENCE SERVICES IN 2022 (COREGEO, FEBRUARY 14, 2023). THESE WATER LEVELS ARE PROVIDED FOR REFERENCE ONLY, AND MAY NOT BE REPRESENTATIVE OF STATIC CONDITIONS.
4. BOTTOM OF HOLE DEPTH AND BOTTOM OF SCREEN DEPTH ARE EQUAL AND BASED ON AVAILABLE BOREHOLE LOGS.
5. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.

PREPARED BY: AK	FIGURE TITLE: MW22-AG6B GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 23

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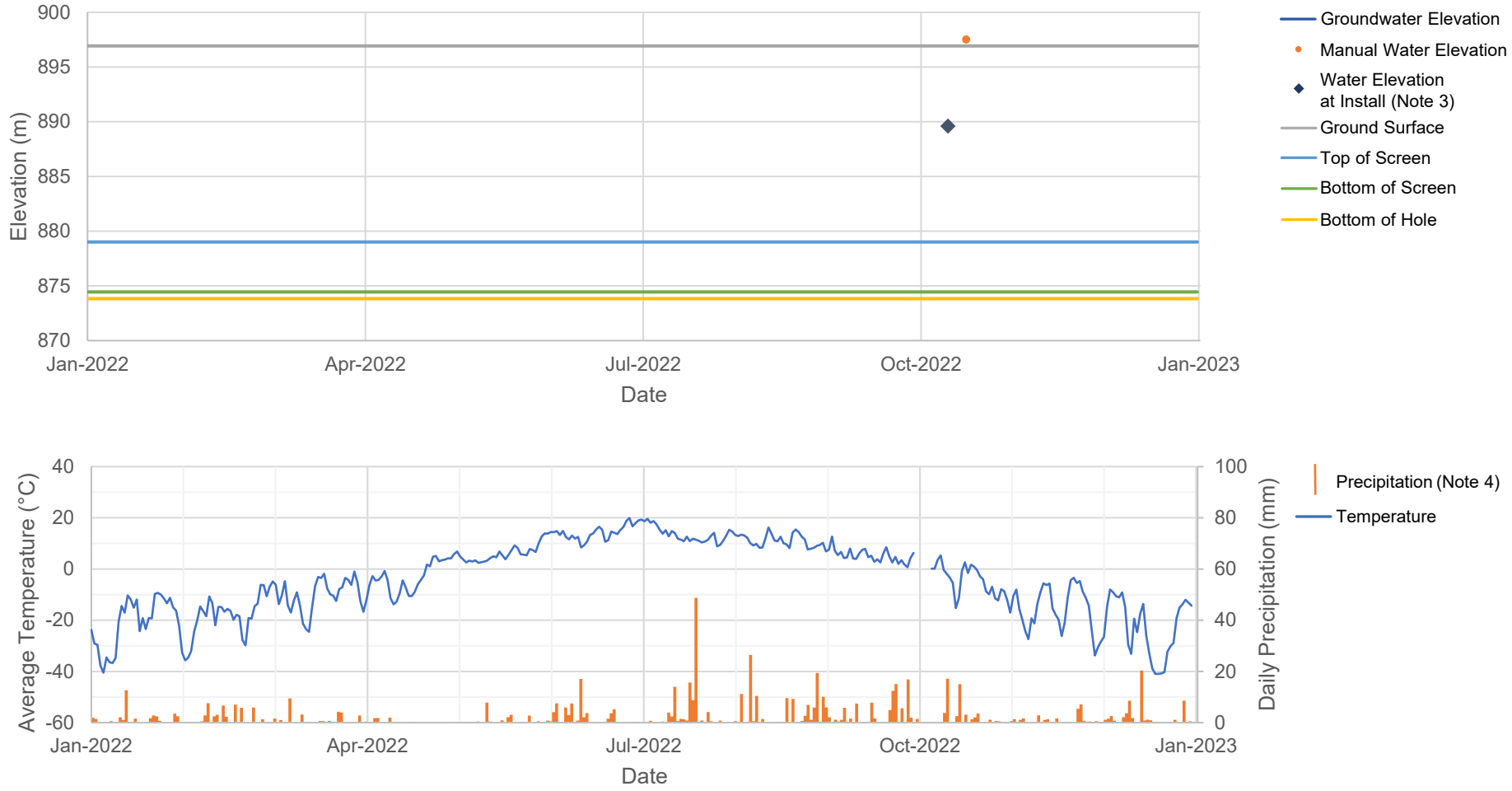
BGC ENGINEERING INC.



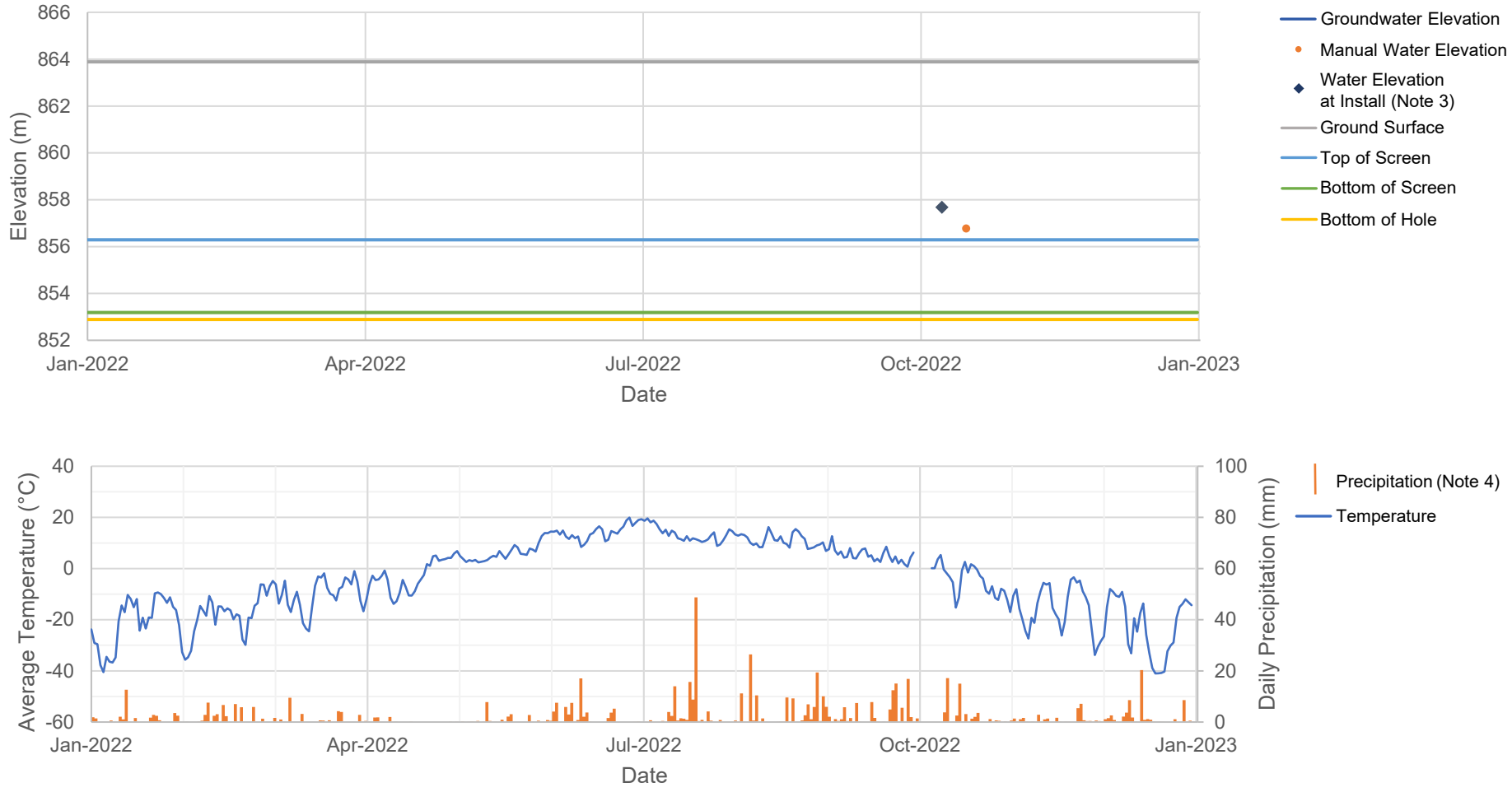
NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. THE WATER LEVEL MEASURED AT THE TIME OF INSTALLATION IS SHOWN FOR WELLS INSTALLED BY CORE GEOSCIENCE SERVICES IN 2022 (COREGEO, FEBRUARY 14, 2023). THESE WATER LEVELS ARE PROVIDED FOR REFERENCE ONLY, AND MAY NOT BE REPRESENTATIVE OF STATIC CONDITIONS.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. MW22-EPW1BR IS A REPLACEMENT WELL FOR MW19-EPW1B.

PREPARED BY: AK	FIGURE TITLE: MW22-EPW1BR GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 24

0 5 10 mm in ANSI A sized paper

BGC ENGINEERING INC.



NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. THE WATER LEVEL MEASURED AT THE TIME OF INSTALLATION IS SHOWN FOR WELLS INSTALLED BY CORE GEOSCIENCE SERVICES IN 2022 (COREGEO, FEBRUARY 14, 2023). THESE WATER LEVELS ARE PROVIDED FOR REFERENCE ONLY, AND MAY NOT BE REPRESENTATIVE OF STATIC CONDITIONS.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.

PREPARED BY: AK	FIGURE TITLE: MW22-HLF2A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 25

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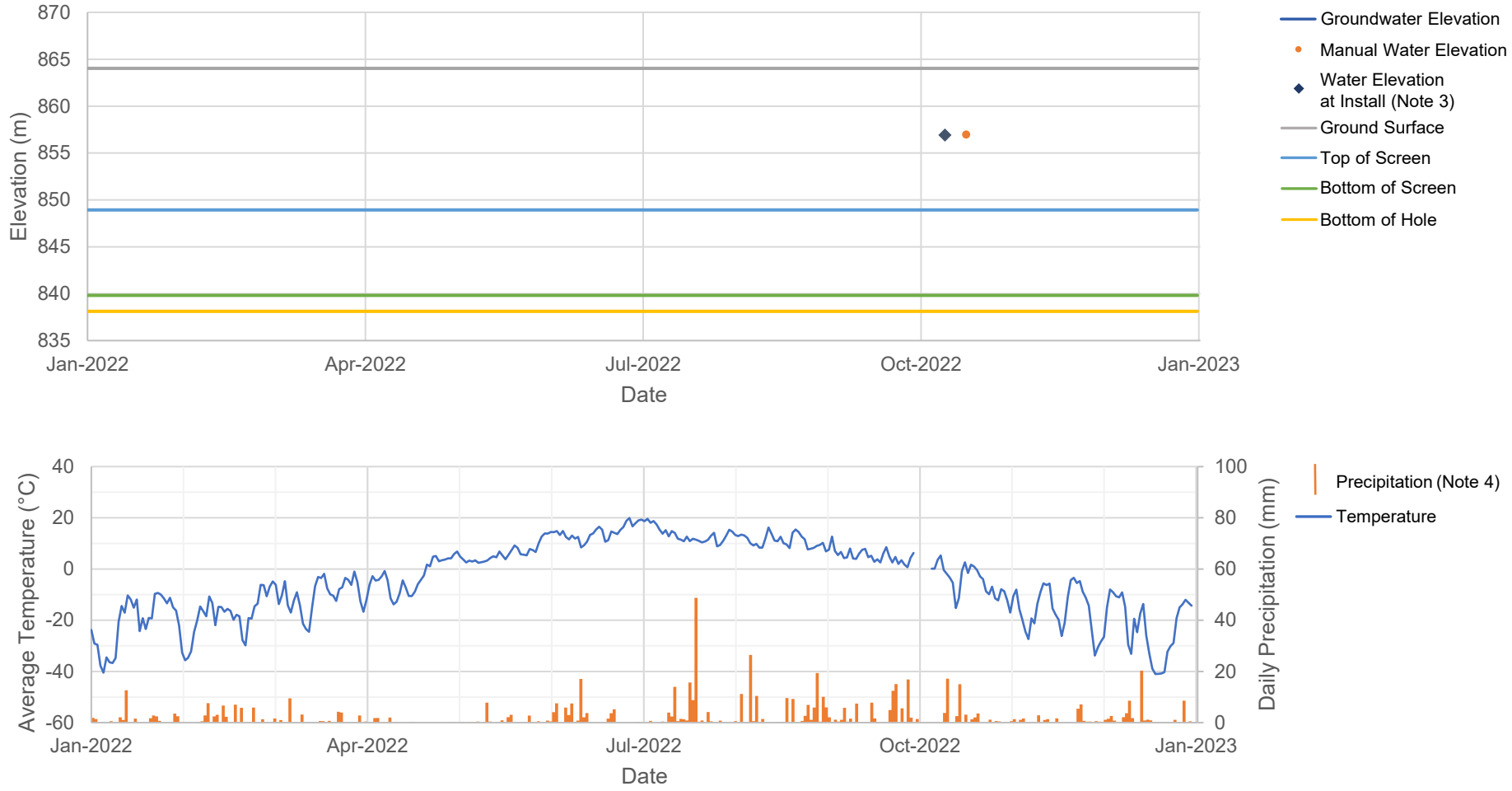
BGC ENGINEERING INC.



NOTES:
1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. THE WATER LEVEL MEASURED AT THE TIME OF INSTALLATION IS SHOWN FOR WELLS INSTALLED BY CORE GEOSCIENCE SERVICES IN 2022 (COREGEO, FEBRUARY 14, 2023). THESE WATER LEVELS ARE PROVIDED FOR REFERENCE ONLY, AND MAY NOT BE REPRESENTATIVE OF STATIC CONDITIONS.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.

PREPARED BY: AK	FIGURE TITLE: MW22-HLF2B GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 26

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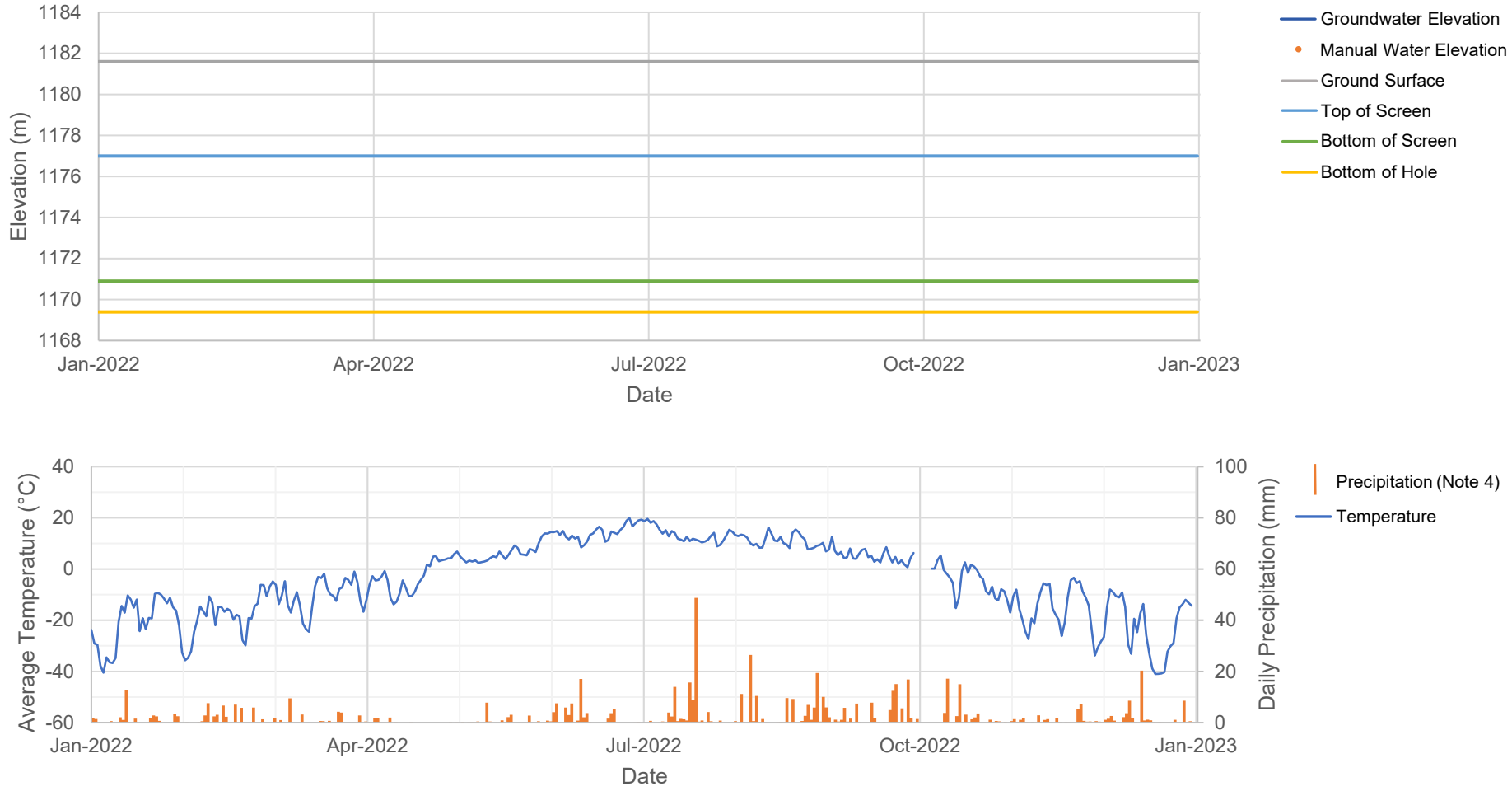
BGC ENGINEERING INC.



NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. THE WATER LEVEL MEASURED AT THE TIME OF INSTALLATION IS SHOWN FOR WELLS INSTALLED BY CORE GEOSCIENCE SERVICES IN 2022 (COREGEO, FEBRUARY 14, 2023). THESE WATER LEVELS ARE PROVIDED FOR REFERENCE ONLY, AND MAY NOT BE REPRESENTATIVE OF STATIC CONDITIONS.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. WATER LEVEL WAS CHECKED ON OCTOBER 15 (FOLLOWING INSTALLATION) AND AGAIN ON DECEMBER 6, 2022. IN BOTH CASES, THE WELL WAS DRY.
6. A LOGGER WAS INSTALLED IN MW22-HLF3A ON NOVEMBER 12, 2022; HOWEVER, NO DATA WERE DOWNLOADED / RECEIVED FOR 2022.

PREPARED BY:	FIGURE TITLE		
AK	MW22-HLF3A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792031	27

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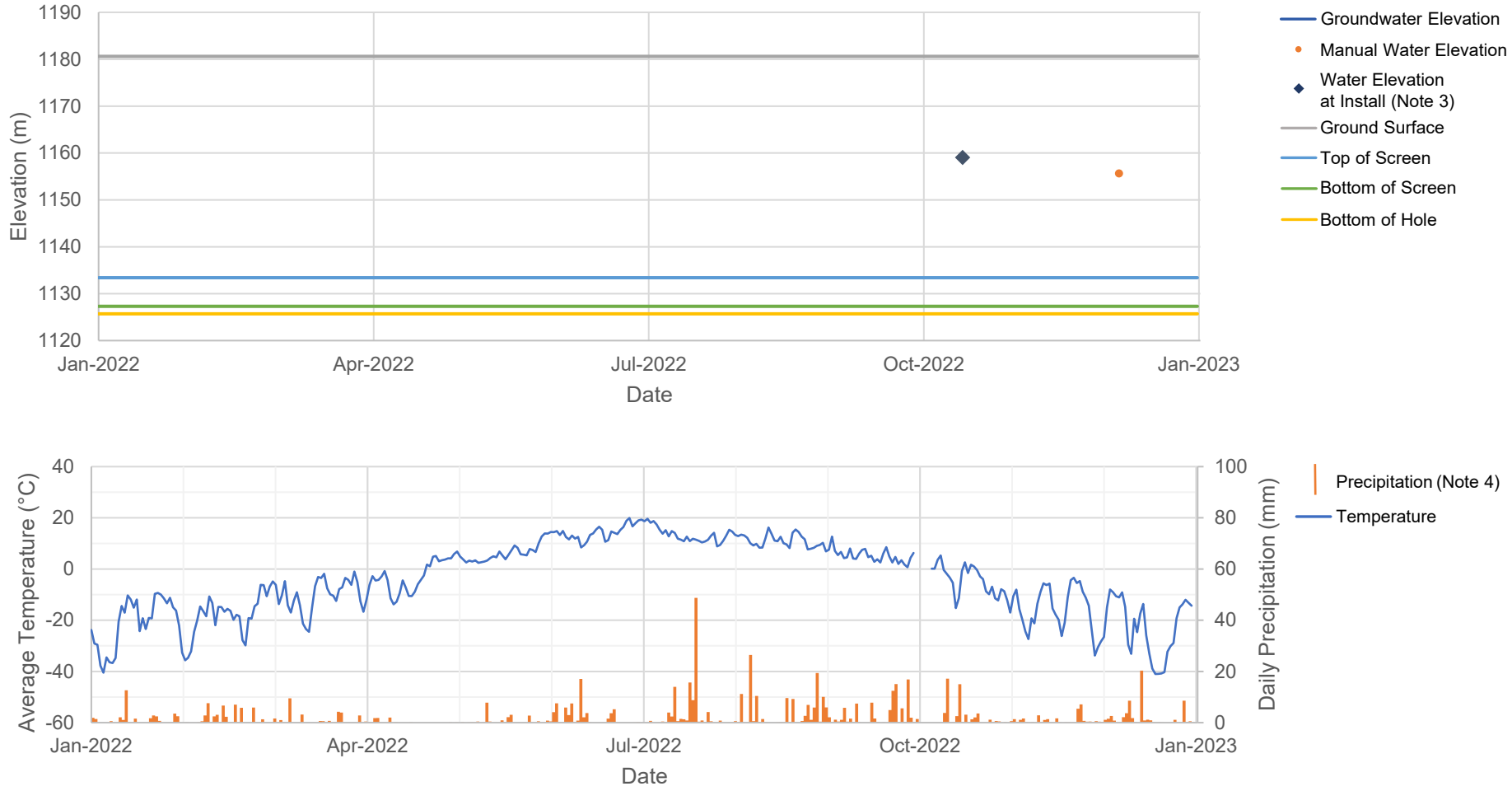
BGC ENGINEERING INC.



NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. THE WATER LEVEL MEASURED AT THE TIME OF INSTALLATION IS SHOWN FOR WELLS INSTALLED BY CORE GEOSCIENCE SERVICES IN 2022 (COREGEO, FEBRUARY 14, 2023). THESE WATER LEVELS ARE PROVIDED FOR REFERENCE ONLY, AND MAY NOT BE REPRESENTATIVE OF STATIC CONDITIONS.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. A LOGGER WAS INSTALLED IN MW22-HLF3B ON NOVEMBER 12, 2022; HOWEVER, NO DATA WERE DOWNLOADED / RECEIVED FOR 2022.

PREPARED BY:	FIGURE TITLE		
AK	MW22-HLF3B GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY:	CLIENT:		
TC	VICTORIA GOLD CORP.		
APPROVED BY:	SCALE:	PROJECT NO:	FIGURE NO:
AK	AS-SHOWN	0792031	28

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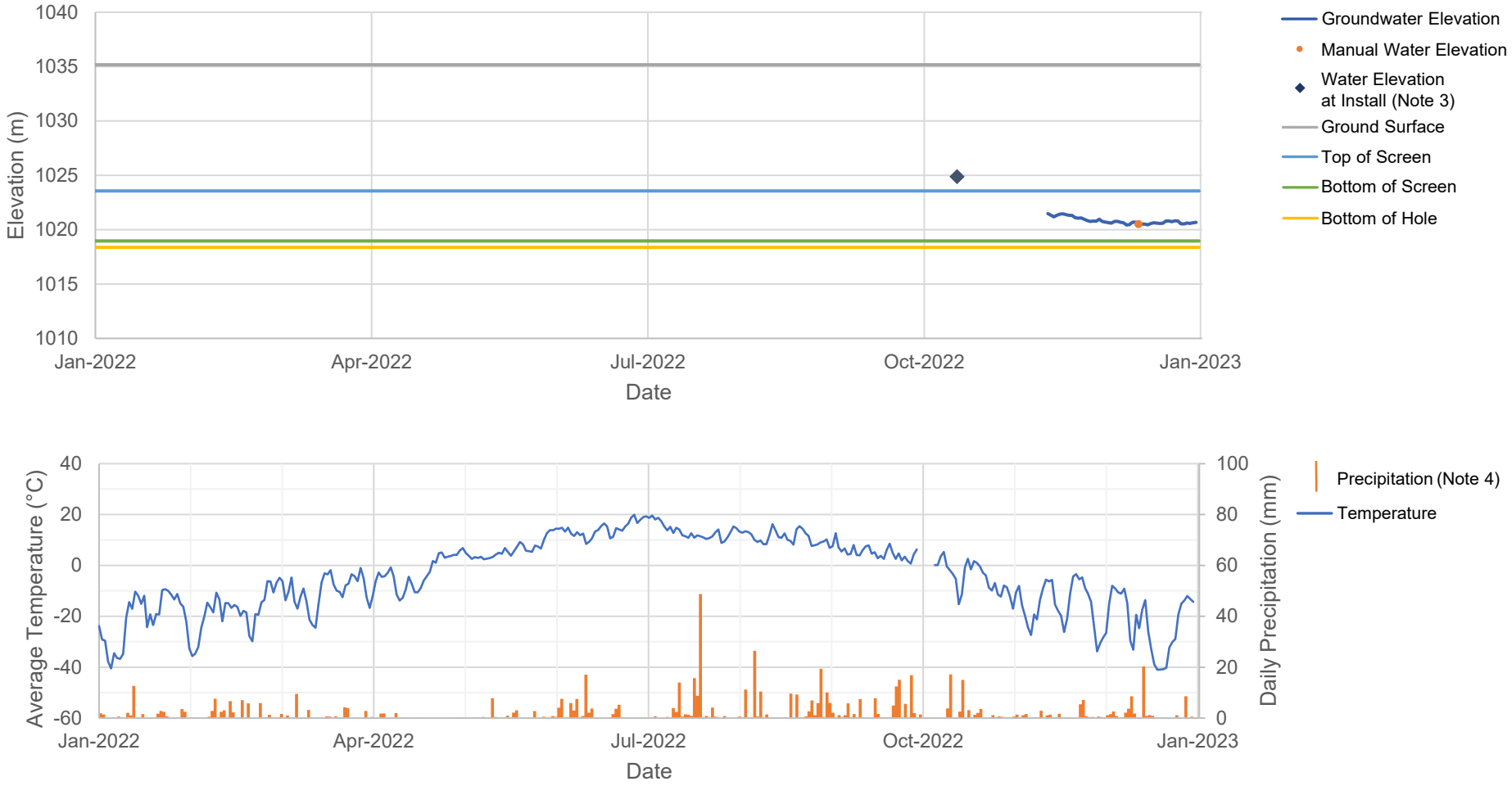
BGC ENGINEERING INC.



NOTES:
1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. THE WATER LEVEL MEASURED AT THE TIME OF INSTALLATION IS SHOWN FOR WELLS INSTALLED BY CORE GEOSCIENCE SERVICES IN 2022 (COREGEO, FEBRUARY 14, 2023). THESE WATER LEVELS ARE PROVIDED FOR REFERENCE ONLY, AND MAY NOT BE REPRESENTATIVE OF STATIC CONDITIONS.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.

PREPARED BY: AK	FIGURE TITLE: MW22-HLF4A GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 29

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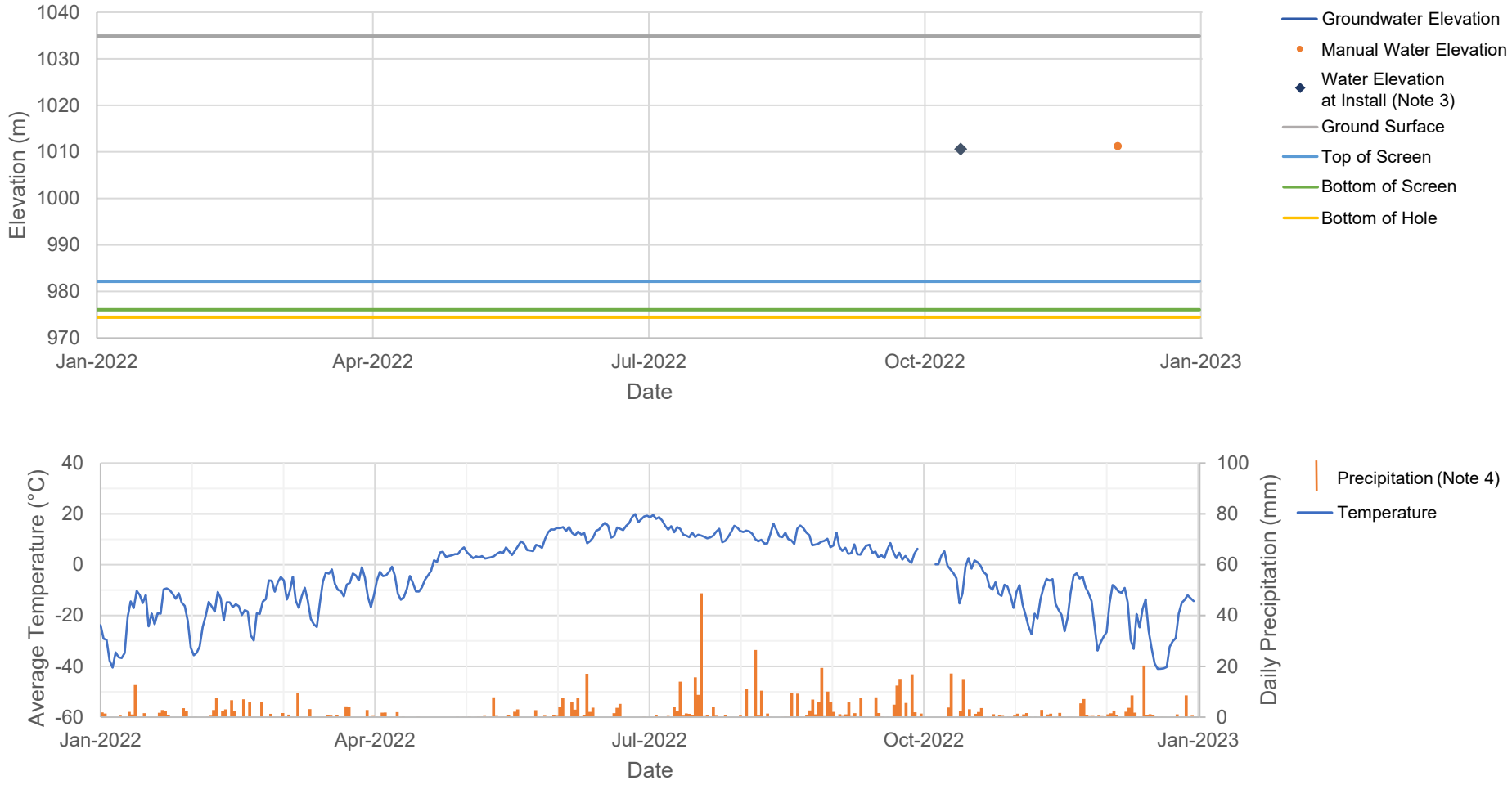
BGC ENGINEERING INC.



NOTES:
1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. THE WATER LEVEL MEASURED AT THE TIME OF INSTALLATION IS SHOWN FOR WELLS INSTALLED BY CORE GEOSCIENCE SERVICES IN 2022 (COREGEO, FEBRUARY 14, 2023). THESE WATER LEVELS ARE PROVIDED FOR REFERENCE ONLY, AND MAY NOT BE REPRESENTATIVE OF STATIC CONDITIONS.
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PREPARED BY: AK	FIGURE TITLE: MW22-HLF4B GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 30

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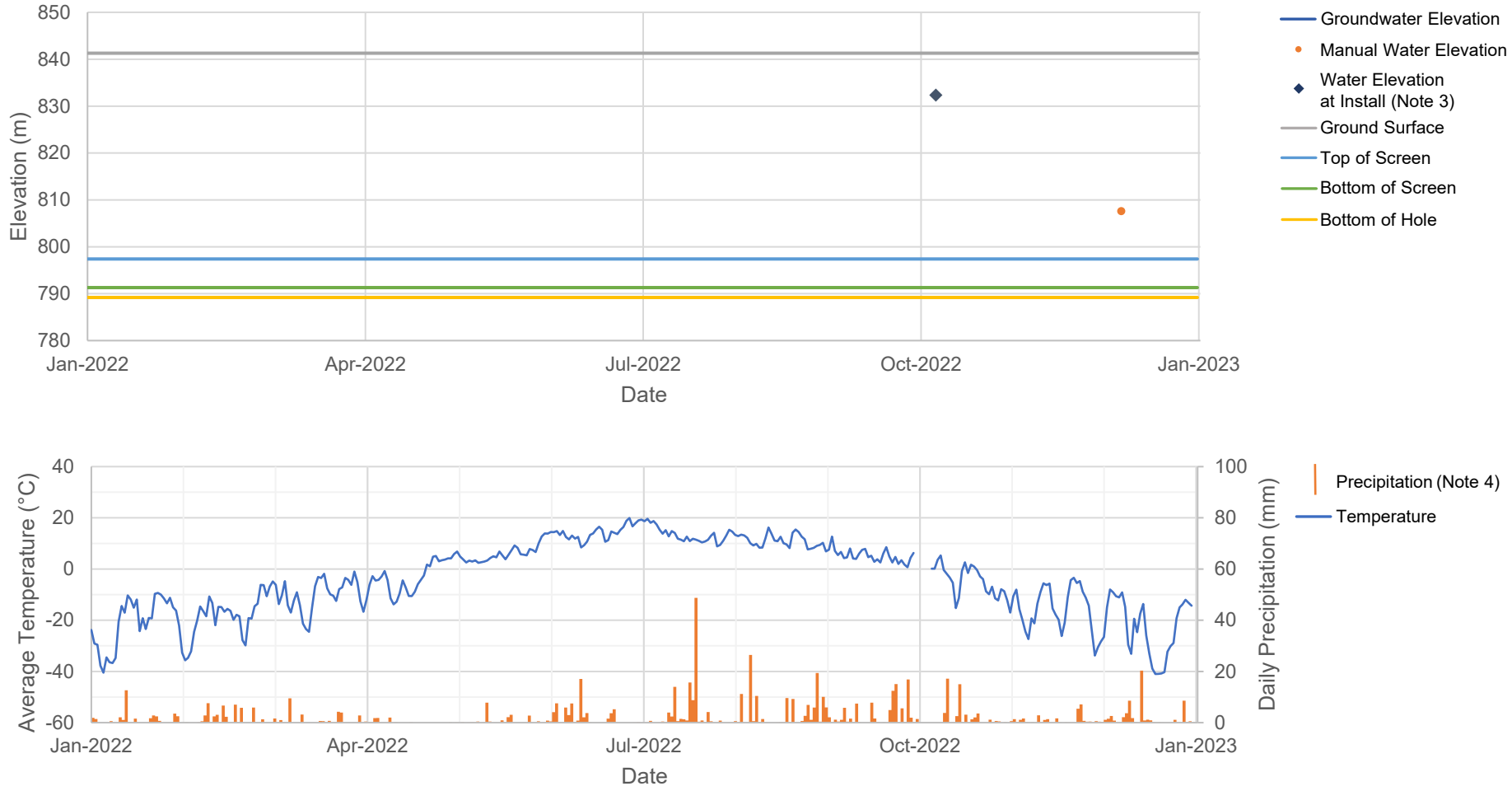
BGC ENGINEERING INC.



NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. THE WATER LEVEL MEASURED AT THE TIME OF INSTALLATION IS SHOWN FOR WELLS INSTALLED BY CORE GEOSCIENCE SERVICES IN 2022 (COREGEO, FEBRUARY 14, 2023). THESE WATER LEVELS ARE PROVIDED FOR REFERENCE ONLY, AND MAY NOT BE REPRESENTATIVE OF STATIC CONDITIONS.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.

PREPARED BY: AK	FIGURE TITLE: MW22-LPH1 GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 31

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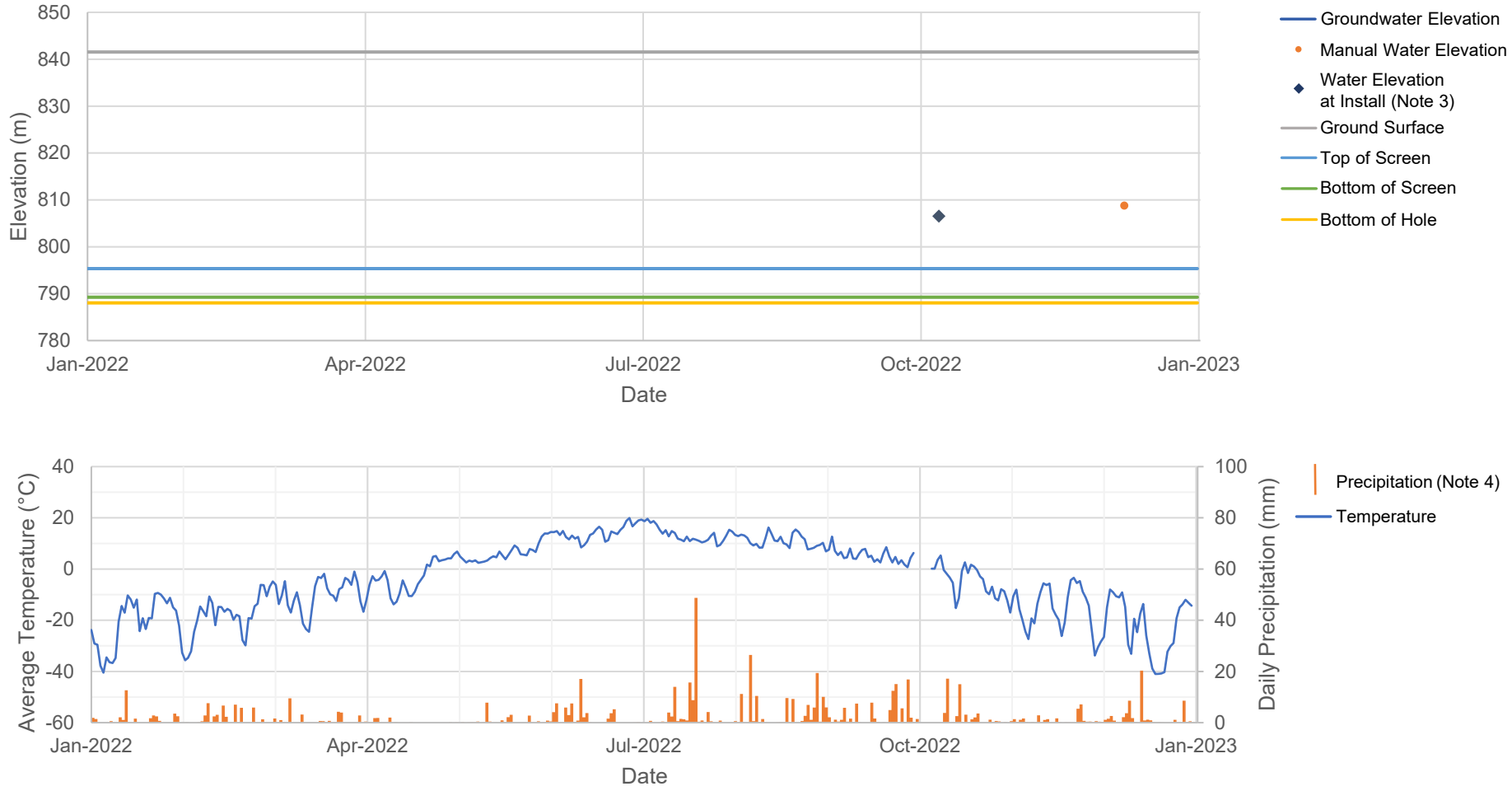
BGC ENGINEERING INC.



NOTES:
1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. THE WATER LEVEL MEASURED AT THE TIME OF INSTALLATION IS SHOWN FOR WELLS INSTALLED BY CORE GEOSCIENCE SERVICES IN 2022 (COREGEO, FEBRUARY 14, 2023). THESE WATER LEVELS ARE PROVIDED FOR REFERENCE ONLY, AND MAY NOT BE REPRESENTATIVE OF STATIC CONDITIONS.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.

PREPARED BY: AK	FIGURE TITLE: MW22-LPH2 GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 32

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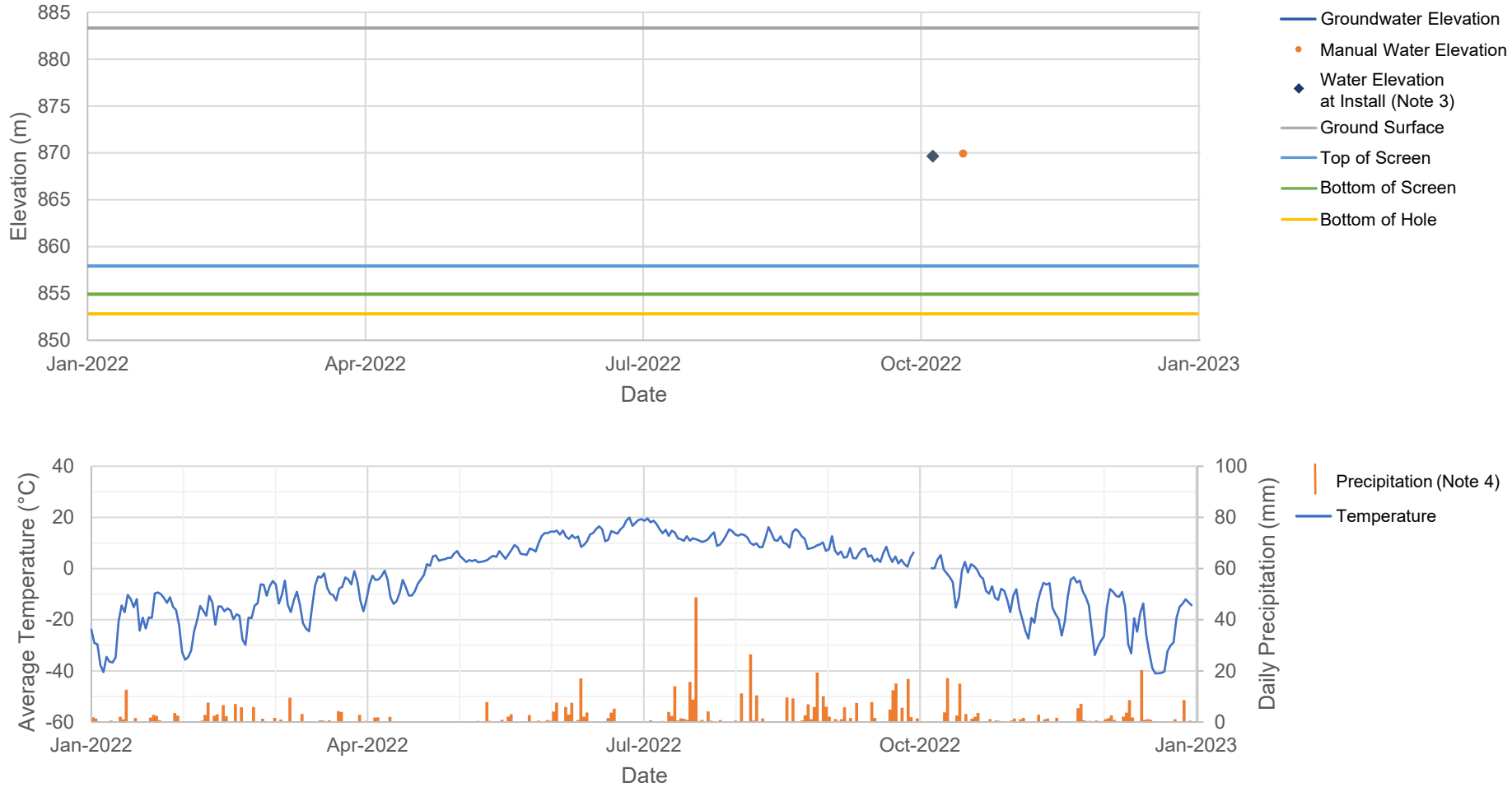
BGC ENGINEERING INC.



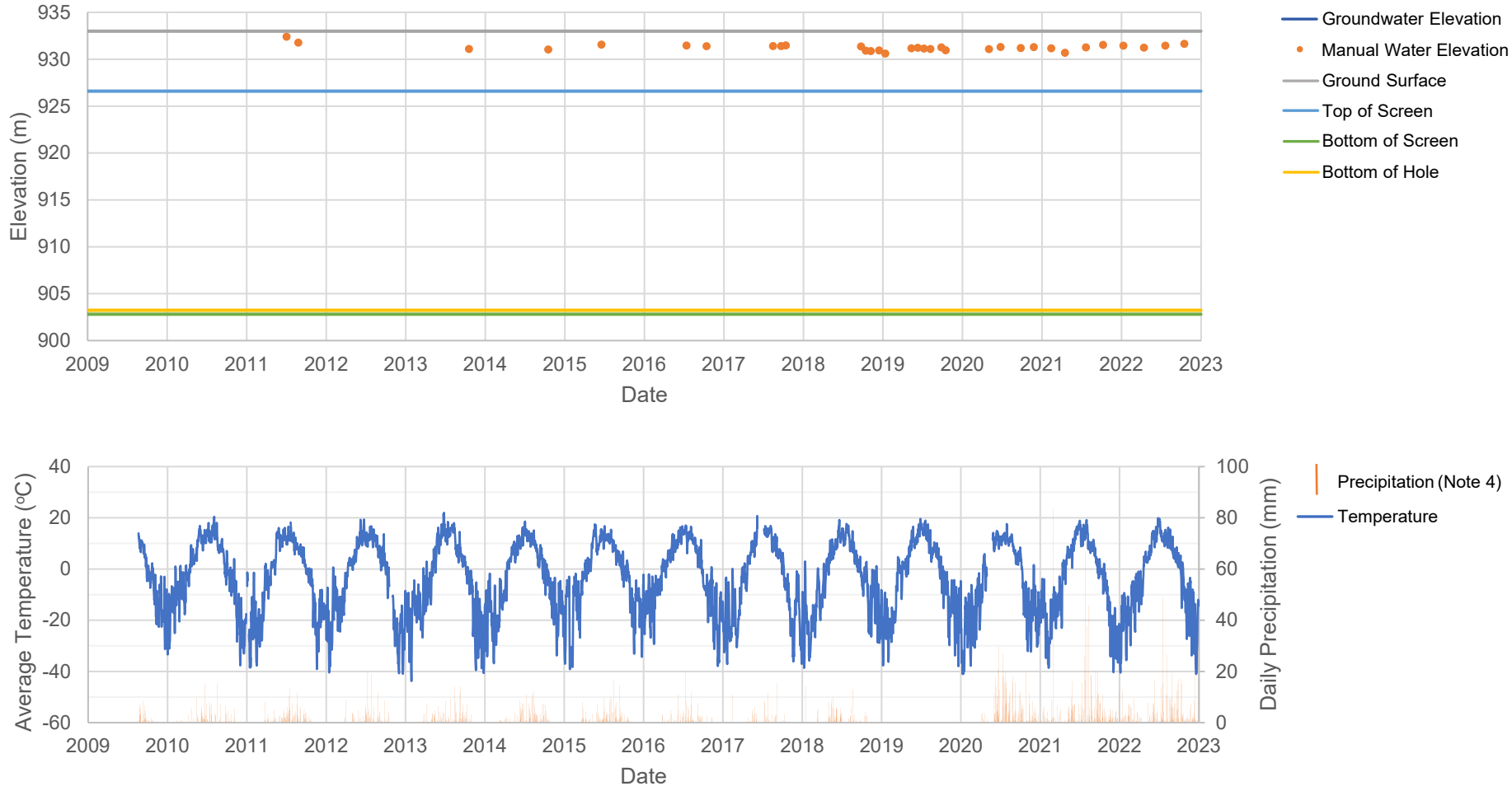
NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. THE WATER LEVEL MEASURED AT THE TIME OF INSTALLATION IS SHOWN FOR WELLS INSTALLED BY CORE GEOSCIENCE SERVICES IN 2022 (COREGEO, FEBRUARY 14, 2023). THESE WATER LEVELS ARE PROVIDED FOR REFERENCE ONLY, AND MAY NOT BE REPRESENTATIVE OF STATIC CONDITIONS.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. MW22-PWG1BR IS A REPLACEMENT WELL FOR MW19-PWG1B.

PREPARED BY: AK	FIGURE TITLE: MW22-PGW1BR GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 33

0 5 10 mm in ANSI A sized paper

BGC ENGINEERING INC.



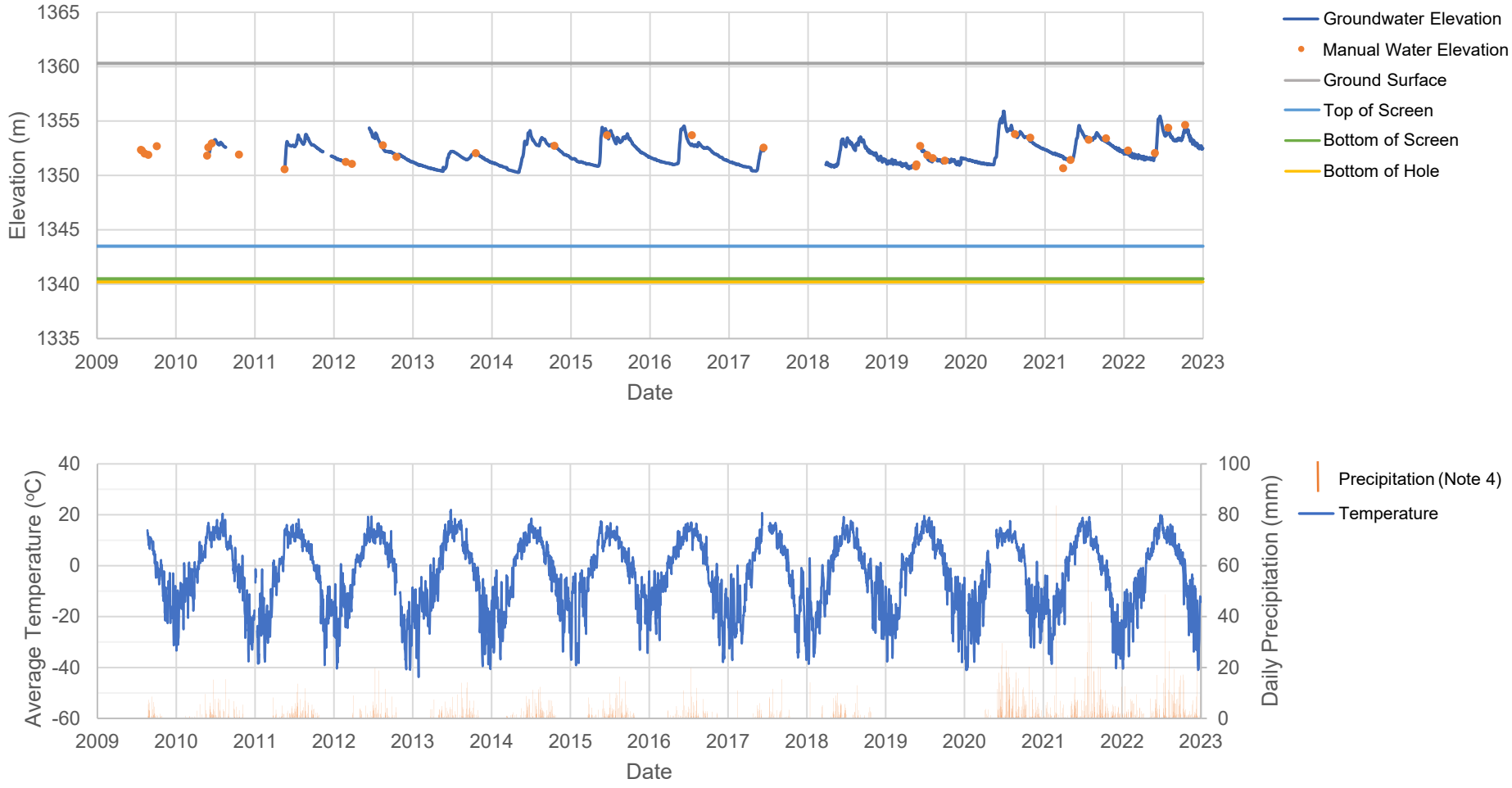
NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. 2019 PRECIPITATION DATA NOT AVAILABLE DUE TO DATALOGGER MALFUNCTION. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON SEPTEMBER 26, 2020. BOTTOM OF SCREEN DEPTH BASED ON AVAILABLE BOREHOLE LOGS. LOCATIONS WHERE THE BOTTOM OF SCREEN IS BELOW THE MEASURED BOTTOM OF HOLE MAY INDICATE INFILLING WITH SEDIMENTS, OR MODIFICATIONS TO THE WELL STICKUP THAT BGC IS NOT AWARE OF.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.
5. MW95-151 WAS PREVIOUSLY MISLABELLED AS MW96-15 BUT WAS CORRECTED IN THE EAGLE GOLD MINE HYDROGRAPH UPDATE (2021 DATA) (BGC, MARCH 19, 2021). LOCATION NAME WAS CONFIRMED BY STEPHEN WILBUR (VGC) (EMAIL, FEBRUARY 5, 2021).
6. THE ELEVATION FOR MW95-151 WAS PREVIOUSLY SURVEYED AT 884 m ASL (STANTEC, JUNE 2012). THIS VALUE IS NOT CONSIDERED REASONABLE BASED ON THE TOPOGRAPHIC DATASET PROVIDED BY VICTORIA GOLD CORPORATION, APRIL 9, 2020. THE GROUNDWATER ELEVATIONS SHOWN IN THIS FIGURE HAVE THEREFORE BEEN RECALCULATED BASED ON A TOP OF CASING ELEVATION OF 933 m, BASED ON THE TOPOGRAPHIC DATASET PROVIDED BY VICTORIA GOLD.

PREPARED BY: AK	FIGURE TITLE: MW95-151 GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 34

0 5 10 mm in ANSI A sized paper

BGC ENGINEERING INC.



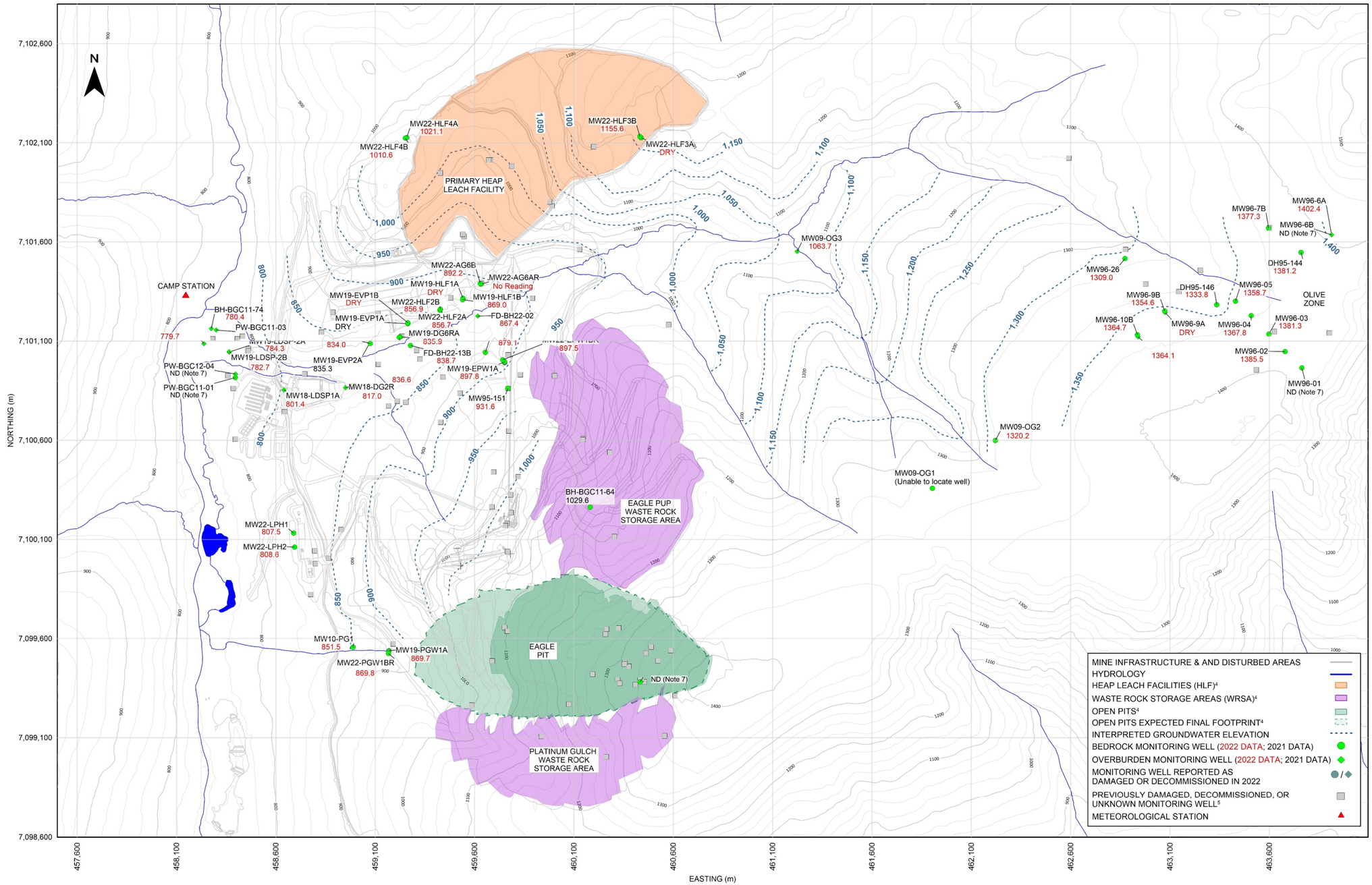
NOTES:

1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. 2019 PRECIPITATION DATA NOT AVAILABLE DUE TO DATALOGGER MALFUNCTION. CLIMATE DATA FROM CAMP STATION (SEE FIGURE 36).
3. BOTTOM OF HOLE DEPTH MEASURED BY VICTORIA GOLD FIELD STAFF ON AUGUST 15, 2020. BOTTOM OF SCREEN DEPTH BASED ON AVAILABLE BOREHOLE LOGS. LOCATIONS WHERE THE BOTTOM OF SCREEN IS BELOW THE MEASURED BOTTOM OF HOLE MAY INDICATE INFILLING WITH SEDIMENTS, OR MODIFICATIONS TO THE WELL STICKUP THAT BGC IS NOT AWARE OF.
4. AN ALL-WEATHER GAUGE WAS INSTALLED IN MARCH 2020, ALLOWING FOR THE MEASUREMENT OF BOTH RAINFALL AND SNOWFALL FOR THE DAILY TOTALS FOR PRECIPITATION. PRIOR TO THIS, ONLY RAINFALL WAS MEASURED BY MEANS OF A TIPPING BUCKET RAINFALL GAUGE.

PREPARED BY: AK	FIGURE TITLE: MW96-9B GROUNDWATER ELEVATION AND METEOROLOGICAL DATA		
CHECKED BY: TC	CLIENT: VICTORIA GOLD CORP.		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 35

0 5 10 mm in ANSI A sized paper

BGC ENGINEERING INC.



1. THIS FIGURE SHOULD BE READ IN CONJUNCTION WITH BGC'S LETTER MEMO TITLED "EAGLE GOLD MINE HYDROGRAPH UPDATE (2022 DATA)", AND DATED MARCH 2023.
2. COORDINATE SYSTEM IS NAD 1983 UTM ZONE 8N. VERTICAL DATUM IS CGVD 1928.
3. TOPOGRAPHIC DATASET PROVIDED BY VICTORIA GOLD CORPORATION APRIL 9, 2020. CONTOUR INTERVAL IS 25 m.
4. MINE INFRASTRUCTURE, MINE FOOTPRINTS AND EXPECTED FINAL FOOTPRINTS PROVIDED BY VICTORIA GOLD CORPORATION (MARCH 27, 2023).
5. LOCATIONS NOTED AS DECOMMISSIONED, DAMAGED, OR STATUS UNKNOWN BASED ON WELL RECORDS RECEIVED FROM PHIL EMERSON (VGC) (PERSONAL COMMUNICATION FROM PHIL EMERSON, APRIL 25, 2022) AND SUMMARIZED BY BGC (PERSONAL COMMUNICATION, EMAIL ATTACHMENT FROM ANDREW KRENTZ (BGC), SEPTEMBER 16, 2022).
6. GROUNDWATER LEVEL DATA SHOWN, BASED ON DATA COLLECTED IN OCTOBER 2022. WATER LEVELS WERE NOT AVAILABLE IN OCTOBER 2022 AT MW22-HLF3B, MW22-HLF4A, MW22-LDPH1B, MW22-LDPHB; VALUES SHOWN ARE FROM NOVEMBER OR DECEMBER 2022. BLACK TEXT DENOTES WATER LEVELS IN 2021, AT LOCATIONS WHERE NO MEASUREMENTS WERE AVAILABLE FROM 2022. GROUNDWATER ELEVATION CONTOUR INTERVAL IS 50 m.
7. ND = NO WATER LEVEL DATA PROVIDED FOR 2021 OR 2022.
8. GPS COORDINATES WERE UPDATED FROM PREVIOUS VERSIONS OF THIS FIGURE TO REFLECT THE COORDINATES BASED ON WELL RECORDS RECEIVED FROM PHIL EMERSON (VGC) (PERSONAL COMMUNICATION FROM PHIL EMERSON, APRIL 25, 2022) AND SUMMARIZED BY BGC (PERSONAL COMMUNICATION, EMAIL ATTACHMENT FROM ANDREW KRENTZ (BGC), SEPTEMBER 16, 2022), EXCEPT AT 09-BGC-GTH-1-D, BGC11-29, BGC11-32, AND MW09-DG5, WHERE COORDINATES FROM THE BOREHOLE LOGS WERE USED. NO WATER LEVELS WERE TAKEN FROM THESE MONITORING WELLS IN 2021 OR 2022. THE GROUND SURFACE ELEVATION AT MW95-151 WAS UPDATED FROM THE VALUE PRESENTED IN STANTEC (JUNE 2012) TO BETTER REFLECT THE TOPOGRAPHIC DATASET PROVIDED BY VICTORIA GOLD CORPORATION (SEE NOTE 3).

PREPARED BY: AK	FIGURE TITLE: GROUNDWATER LEVEL DATA AND INTERPRETED GROUNDWATER ELEVATION CONTOURS		
CHECKED BY: CN	CLIENT: VICTORIA GOLD CORPORATION		
APPROVED BY: AK	SCALE: AS-SHOWN	PROJECT NO: 0792031	FIGURE NO: 36

0 5 10 mm in ANSI D sized paper

BGC ENGINEERING INC.

MEMORANDUM

TO: Hugh Coyle, Victoria Gold Corp.

cc: Stephane Boily and Reanna Roberts, Victoria Gold Corp.

DATE: March 31, 2023

FROM: Michael Levy. P.Eng., JDS Energy & Mining Inc.

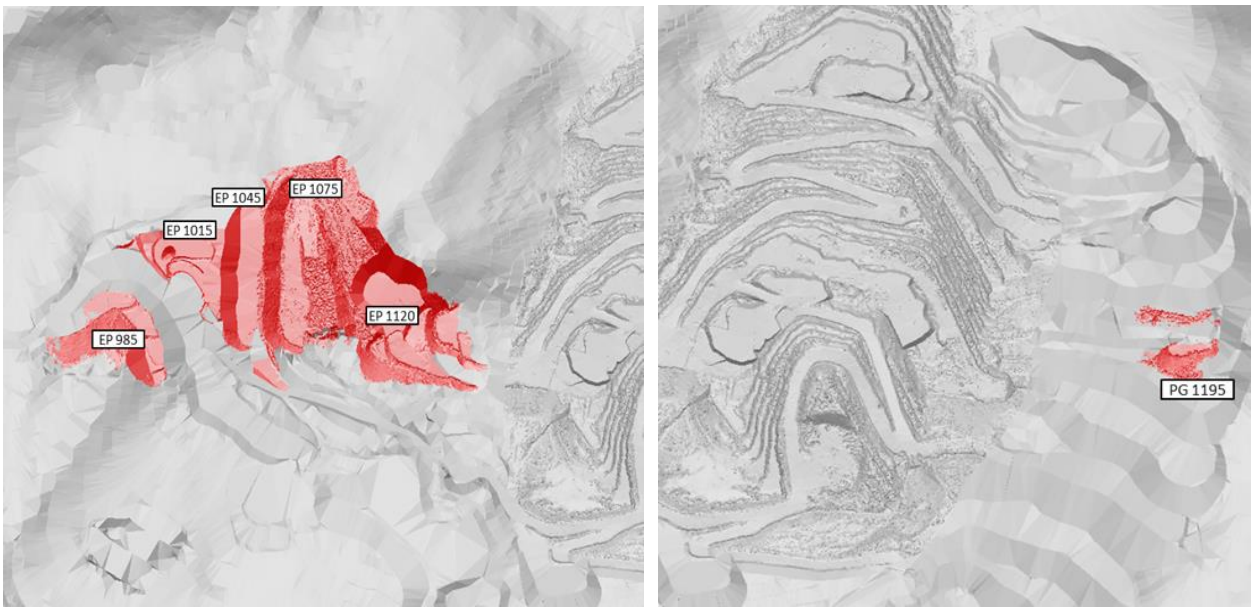
RE: **EAGLE GOLD MINE – 2022 EOR WASTE ROCK STORAGE AREA AND OPEN PIT GEOTECHNICAL ANNUAL INSPECTION REPORT**

At the request of Victoria Gold Corp. (Victoria Gold), JDS Energy & Mining Inc. (JDS) carried out an annual geotechnical inspection of the Eagle Mine open pit and the Eagle Pup (EP) and Platinum Gulch (PG) waste rock storage areas (WRSAs). This memo is intended to summarize the conclusions and recommendations from the inspection.

1 WASTE ROCK STORAGE AREAS

In 2022, approximately 17.5 million tonnes (Mt) of metasedimentary and intrusive rock were mined from the Eagle open pit by standard drill, blast, load, haul methods. Of the material mined, 10.4 Mt was classified as waste rock and placed in the EP (10.2 Mt) and PG (0.2 Mt) WRSAs. The EP and PG WRSA configurations as of January 1, 2023 are shown in Figure 1-1 with the material placed in 2022 shown in red.

Figure 1-1: Configuration of Eagle Pup (left) and Platinum Gulch (right) WRSAs (January 1, 2023)



Source: Victoria Gold (2023)

The EP and PG WRSAs have been designed using 45 m bench heights with 35°, angle of repose lift slopes. The toe of each lift is set back a minimum of 50 m from the crest of the underlying lift, resulting in a final overall angle of approximately 2.5H:1V.

Both storage facilities are built using a primarily bottom-up sequence to mitigate risk of large-scale instability due to potential ice-rich foundation materials in the upper portions of the valleys. Rock drains have been designed under both facilities to collect water that infiltrates through the waste materials and direct it out from under the ultimate toes, reducing potential development of pore water pressures.

1.1 Performance of Existing Facilities

The PG WRSA is nearing completion with a relatively small extension remaining to complete the 990 m lift. The existing rock drain will also need to be extended an additional approximately 70 m prior completing the 990 m lift. The expansion of the 990 m lift is required to reduce the overall slope angle of the facility to the final 2.5:1 (H:V) design specification. Except for minor waste rock placement (0.2 Mt) on the 1195 m - 1220 m lift, no material was placed on the PG WRSA in 2022.

Construction of Phase 1 of the EP WRSA is under way with waste rock having been placed in the 985 m, 1020 m, 1045 m, 1060 m and 1075 m lifts during 2022. Construction of the rock drain continued successfully throughout the year without any problems achieving the design particle size distributions or rock durability testing criteria. Approximately 200 m of rock drain remains to be completed at the downstream end of the Eagle Pup drainage.

Material required for the remaining portions of the EP and PG rock drains must be carefully scheduled to ensure material that meets the durability requirements is available. It is anticipated that this material must come from the Phase 3 pit as the Phase 2 rock is typically poor quality and unlikely to meet the specified durability requirements. The remaining portion of the rock drains will be directly beneath the ultimate toes and are therefore critical to preventing build up of pore water pressures and maintaining overall stability of the facilities.

Localized tension cracking parallel to lift crests has been observed near the lift faces, as is common with most angle-of-repose rock dumps. No significant displacements or signs of instability have been observed to date at either facility.

Surface water runoff and water from pit dewatering must be carefully controlled and directed away from, or off to either side of, the WRSA facilities, rather than over the face and into the waste rock. Development of pore water pressures within the waste rock may lead to instabilities. Fine-grained waste materials should be spread thinly across the faces and not concentrated in isolated areas. Concentration of fine-grained materials is likely to lead to instability.

1.2 Monitoring

Stability of the PG WRSA is not currently being monitored due primarily to access difficulties. Access to the area is very time consuming in summer months and not possible in winter months due to snow accumulation. Most large-scale mines utilize one or more robotic total stations to provide continuous monitoring and analysis of prism data for waste dumps such as PG, alarming

when significant movements are detected in near real-time. Other alternatives such as InSAR or other satellite-based systems should also be considered.

Localized tension cracking parallel to lift crests was observed near some of the EP WRSA lift faces, as is common with most angle-of-repose rock dumps. Tension cracks observed are surveyed when accessible. Movements are monitored with prisms and/or extensometers when safely accessible.

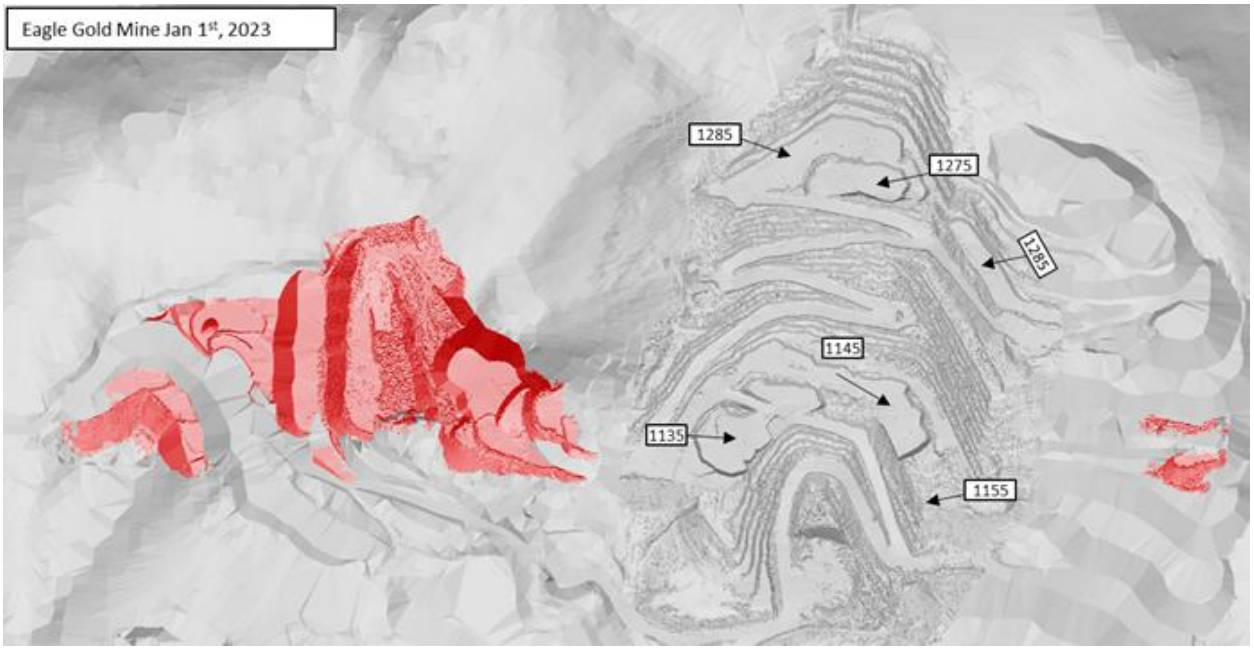
No significant displacements or signs of instability have been observed to date at either facility.

2 OPEN PIT SLOPES

Mining of the Eagle open pit in 2022 focused on Phase 2 single benching and the development of Phase 3 with double benches. Phase 2 is predominantly intrusive/granodiorite rock while Phase 3 is predominantly metasedimentary rock. The Phase 1 pit had been completed in 2021.

A total of 17.5 Mt of material was mined from the open pit by standard drill, blast, load, haul methods. Of the material mined from the pit, 7.1 Mt was ore and 10.4 Mt of was classified as waste rock. The configuration of the Eagle open pit as of January 1, 2023 is shown on Figure 2-1.

Figure 2-1: Configuration of Eagle Pup and Platinum Gulch WRSAs (January 1, 2023)



Source: Victoria Gold (2023)

Pit slope design criteria for the Eagle open pit is summarized in Table 2-1 based on the dip direction of the pit wall (i.e., for an east-west trending, south facing pit wall, the slope dip direction would be 180° azimuth).

Table 2-1: Recommended Slope Design Parameters for Final Pits

Sector	Max. Slope Height (m)	Wall Dip Direction		Bench Face Angle (°)	Bench Height (m)	Bench Width (m)	Max. ISA* (°)
		From (°)	To (°)				
North	225	130	200	70	20	10	49
Northeast	280	200	265	70	20	10	49
East (above elev.1,095 m)	280	265	305	60	20	14	38
East (below elev. 1,095 m)	210	265	305	60	20	12	40
South	375	350	85	70	20	10	49
South Wall Pushback (above elev. 1255 m)	60 to 90	-	-	70	10 and 20	15	42

* ISA indicates Interramp Slope Angle

Source: JDS (2023)

2.1 Rock Mass Quality

The Eagle deposit is contained within two primary rock types which include a granodiorite stock surrounded by metasediment country rock. The metasediments generally classify as ‘Fair’ to ‘Good’ rock mass quality according to the Bieniawski (1976) rock mass rating (RMR) system except where heavily altered or fractured due to the intrusion. To date this has been limited to two primary areas: an approximately 30 m to 50 m wide zone around the granodiorite contact and along three or more subvertical, east-northeast trending structures that extend into the east wall from the granodiorite stock. Rock quality in these zones can be ‘Poor’.

To date, granodiorite has been exposed predominantly in the internal, Phase 1 and Phase 2 pit walls where the rock quality is typically ‘Poor’ to ‘Fair’ due intense fracturing and alteration/oxidation associated with the core of the mineralization. Internal pit phases have been designed using more conservative angles with single bench heights to account for the lower rock quality.

2.2 Geologic Structure

The Eagle deposit is structurally complex. The deposit contains a high number of structural intersections, often with intense fracturing, alteration, and weathering/oxidation. Consequently, rock mass quality within pit walls is highly variable.

The rock quality domains exposed in the pit to date are reasonably similar to those anticipated from the Feasibility Study investigations but require continual updating and refinement to address local variations as mining progresses.

The dominant structural trends observed in pit walls are reasonably consistent with conclusions made from the BGC (2012) oriented core programs but are typically 20° to 30° steeper in dip angle. The steeper foliation dip has resulted in challenging conditions in portions of the upper, east and north walls.

Geologic structure exposed to date is generally consistent across much of the pit with the dominant trends described as follows:

- Dominant north-northwest trending, subvertical jointing and faulting;
- Dominant east-northeast trending, subvertical jointing and faulting;
- Moderate to shallow, west to southwest dipping jointing and occasional faulting (along foliation planes in the metasediments); and
- Less frequent, moderate north-northwest and east-northeast dipping jointing.

Geologic structure such as joints, foliation planes, faults and shears are characterized by a combination of field mapping and mapping from high resolution LiDAR scans using Maptek's PointStudio software. A significant amount of information is currently being collected by Victoria Gold but the organization and utilization of the data on site should be improved.

2.3 Slope Depressurization

Pit slope angles used for the current designs assume slopes are depressurized to a minimum distance of 125 m behind the Phase 3 pit wall. BGC (2012 and 2014) recommended the installation of 250 m long horizontal drains to depressurize the 125 m zone.

A total of 8 horizontal drains were installed during 2022 in the Phase 2 and 3 pit walls to begin depressurizing slopes and reducing risk of slope instabilities. The actual length of drains installed ranged between 167 m and 235 m due to poor ground conditions and partial collapsing of the drillholes.

All 8 drains produced water with discharge rates ranging from 10 to 400 l/min (average of 108 l/min) at the completion of drilling. Nearby piezometers showed a rapid response to the drains with decreasing water levels/pressures. Victoria Gold plans to install additional horizontal drains and piezometers during the spring and summer of 2023.

2.4 Performance of Existing Pit Walls

A prominent major structural zone (the 'Shear Zone') has been identified crossing through the central portion of the pit. The 'Shear Zone' trends north-northwest and can be characterized as a wide zone of exceptionally altered and fractured rock. This material is located mostly within the

internal, Phase 1 and 2 pits but a relatively thin ‘skin’ remains in the Phase 3 south wall. It is anticipated that the Shear Zone will extend into the north wall.

Several bench-scale sloughs occurred in 2021/2022 where the Shear Zone intersects the upper south wall due to the intersection of adversely geologic structure relative to the pit wall orientation and the weak, intensely altered nature of the rock mass. Based on observations of heavy groundwater seepage in the area, elevated pore water pressures are also suspected to have influenced the movements. Access to the area was blocked off with berm and the instability monitored regularly with prisms until the pushback could be completed.

An additional 8 geotechnical drillholes ranging between 53 m and 166 m in length were subsequently drilled in 2021/2022 to better delineate the extents of the Shear Zone in this area. A small pushback was subsequently designed down to the 1255 m bench to re-establish adequate catch benches in this area. Excavation of the remaining pushback began in February 2023 and is nearly complete.

Similar bench-scale sloughing also occurred in 2022 during mining of the upper, 1325 m and 1335 m benches of north wall. The instabilities are a result of the intersection of adversely oriented structure relative to the pit wall orientation as well as the weaker nature of the near surface, weathered rock.

Additional geotechnical drilling is planned for March/April 2023 to further delineate the extent of weathering and alteration associated with the granodiorite contact zone. Depending on the drilling results, portions of the Phase 3 pit wall may require shallower, single bench designs within the upper, weathered and altered materials.

2.5 Wall Control Blasting

Proper wall control blasting will result in a significant reduction in the frequency of bench scale instabilities and rock fall occurrences by limiting displacement or block heave on adversely oriented structures behind the face. Any significant dilation or disturbance to joints or structures behind the face reduces their strength resulting in increased crest loss, rock fall occurrences and bench instabilities.

In some areas, benches have also been compromised due to wall control blasts not being free-faced as intended or the patterns being inadvertently overloaded. This has resulted in insufficient width for adequate rock fall containment in some areas.

For the soft/weak, heavily altered and fractured rock typically encountered in Phase 2, free-faced buffer blasting without a pre-split row may be suitable to achieve design bench faces and catch bench widths with good scaling and excavation control. JDS understands that Victoria Gold will be revising wall control blast designs during 2023 to achieve better performance for Phase 3 walls.

The current pit slope design parameters assume proper pre-split wall control blasting and scaling procedures. Slopes not carefully blasted and scaled require shallower bench face angles and wider catch bench widths to account for crest loss and retain rock fall events. Reducing face angles and increasing bench widths results in lower inter-ramp and overall slope angles and higher strip ratios.

2.6 Monitoring

Pit walls are currently monitored using a combination of prisms and a high-resolution laser scanner. The Maptek laser scanner is combined with the Sentry monitoring system to provide continuous monitoring of select pit walls. As with nearly all monitoring systems, the Sentry system has a limited coverage area, depending on accessible vantage points and pit geometry.

Prisms are used by the mine operations team to monitor local areas identified as potentially unstable to provide more detailed displacement data. When tension cracks are observed, they are surveyed when accessible. Movements are monitored with prisms and/or extensometers when safely accessible. A displacement map is generated each month for the pit by comparing sequential LiDAR surveys obtained from drones.

Initial monitoring thresholds have been developed for TARPs and appear reasonable. Thresholds for the Sentry system will need further review and calibration as they can be very site and technology specific.

Permanent access is required to long term monitoring locations on the north and south walls to place and regularly access monitoring equipment. It is recommended that the south wall monitoring location be constructed on either the 1285 m or 1255 m bench at the base of the pushback due to their wide catchments. The existing location used on the north wall near switchback 6 (elev. 1220 m) will likely remain suitable for the near future.

Six piezometers were installed around the perimeter of the Phase 2 and Phase 3 pits in 2021/2022 to monitor pore water pressures within pit walls and their response to installation of the horizontal drains. Two piezometers (DG21-992/Deep05 and DG21-1002/Deep04) were subsequently destroyed by mining activities and should be replaced as soon as possible.

3 CONCLUSIONS AND RECOMMENDATIONS

Overall, both the WRSAs and open pit are being constructed, and are performing, in accordance with the design intent, performance objectives and indicators, applicable guidelines, standards and legal requirements, and relevant clauses of the Type A Water Use License QZ14-041-1.

Recommendations for work to be completed for the Eagle open pit and WRSAs include the following:

- Waste Rock Storage Areas:
    - Material required for the remaining portions of the EP and PG rock drains must be carefully scheduled to ensure material that meets the durability requirements is available. It is anticipated that this material must come from the Phase 3 metasediments;
    - A dumping sequence should be developed as soon as possible for the remaining life-of-mine EP WRSA to confirm the waste material balance;

- A monitoring system such as survey prisms or GPS monuments should be installed on the PG WRSA as soon as possible to monitor stability; and
- Permanent access is required to long term monitoring locations on the north and south walls to place and regularly access monitoring equipment. Access to the current benches will be cut off as the Phase 3 pit advances.

- Eagle Open Pit:
  - Updating pit wall sectors and design parameters on an as needed basis, dependent on additional mapping and drilling information;
  - Additional mapping of major fault structures and updating of the 3D structural model;
  - Update slope stability analyses, as needed, based on the newly interpreted 3D fault structures and structural domains;
  - A detailed review of horizontal drain flow rates and changes in piezometric levels/pressures should be completed;
  - Installation of additional piezometers, as needed, and continued monitoring of existing installations to assess drain effectiveness and to verify achievement of required depressurization levels;
  - Installation of additional horizontal drains targeting the major structural zones identified from pit mapping;
  - Continued assessment and improvement of wall control blasting quality and accuracy; and
  - Completion of the ground control management plan (GCMP).

4 Closing Remarks

JDS is pleased to have the opportunity to be of service to Victoria gold and trust that we have addressed the pertinent issues related to the WRSA and open pit geotechnical review at this time. Should you however have any queries on our visit or the contents of this report, please do not hesitate to contact us.

Yours truly,

JDS Energy & Mining Inc.

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Michael Levy, P.Eng.
Geotechnical Manager

5 References

BGC Engineering Inc., (2012). *Eagle Gold Project Dublin Gulch, Yukon – Feasibility Study Open Pit Slope Design*. Final Report. Prepared for Victoria Gold Corporation. January 20, 2012.

BGC Engineering, Inc., (2014) *Eagle Gold Project – Numerical Hydrogeologic Model*, final report prepared for Victoria Gold Corporation. April 17, 2014.