# **Mount Nansen May 2016 Groundwater Monitoring and Sampling**

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#### 1.0 INTRODUCTION

This Work was performed in accordance with Contract C00033455 between Hemmera Envirochem Inc. ("Hemmera") and Government of Yukon ("Client"), dated May 13, 2016 ("Contract"). In performing this Work, Hemmera has relied in good faith on information provided by others, and has assumed that the information provided by those individuals is both complete and accurate. This Work was performed to current industry standard practice for similar environmental work, within the relevant jurisdiction and same locale. The findings presented herein should be considered within the context of the scope of work and project terms of reference; further, the findings are time sensitive and are considered valid only at the time the Report was produced. The conclusions and recommendations contained in this Report are based upon the applicable guidelines, regulations, and legislation existing at the time the Report was produced; any changes in the regulatory regime may alter the conclusions and/or recommendations.

Hemmera Envirochem Inc. and Ecological Logistics & Research Ltd. (Hemmera/ELR) were retained by the Government of Yukon (GY), Assessment and Abandoned Mines (AAM) to conduct a groundwater monitoring and sampling program at the Mount Nansen Site (the Site) in May, 2016. Hemmera/ELR's scope of work included the monitoring of groundwater wells and collection of groundwater samples from a series of existing groundwater wells at the Site. This report summarizes the monitoring and sampling activities, a description of methodologies and field conditions encountered, a summary of field *in-situ* and laboratory analytical results including a comparison to applicable guidelines, a description of any observations and/or occurrences that may have influenced program results, and recommendations relating to sample procedures and monitoring well conditions. This report does not provide an interpretation of the results, nor does it provide recommendations relating to groundwater quality at the Site.

#### 1.1 SITE LOCATION

The Mount Nansen site is located approximately 45 kilometres (km) west of the Town of Carmacks (70 km by road). This Type II abandoned mine site consists of three (3) primary areas of existing infrastructure: the Brown McDade Pit, a Mill Complex, and a Tailings Facility (**Figure 1-1**). Groundwater monitoring wells exist throughout the Site, a subset of which were sampled during the May 2016 groundwater monitoring and sampling program. The groundwater monitoring locations included in this program are described in **Sections 1.2** and **1.3**.

#### 1.2 SCOPE OF WORK

The scope of work for this program included the coordination and execution of the May 2016 groundwater monitoring and sampling, analysis of samples, and the presentation of results in a report.

Groundwater sampling at the Site was conducted over a four (4) day period, between May 24 and May 27, 2016. Sampling was conducted by a team of four (4) qualified field staff from Hemmera/ELR (Jeremy Chua, Michelle McKay, Norbert Botca, and Kristina Beckmann). A total of 60 groundwater wells were included in the May 2016 sampling event (**Table 1-1**). It was not possible to sample two (2) of the groundwater wells listed in the scope of work as they have appeared to have been destroyed during placer mining operations in the summer of 2015 (GSI-PC-02-B and MP09-02; Hemmera, 2015).

At each well (sampling station) headspace gas concentrations were measured, well and water level parameters were measured (depth to water, depth to bottom, well diameter, and well stick-up height), the well was purged, and then prescribed *in-situ* groundwater quality parameters were measured. Lastly, groundwater samples were collected for laboratory analysis. A detailed description of the sampling methods and measured groundwater quality parameters is provided in **Section 2**.

#### 1.3 SAMPLE SITES

The groundwater wells included in the May 2016 monitoring and sampling event were grouped into six (6) main areas of the Mount Nansen Site (**Table 1-1**). The majority of groundwater wells were located around existing infrastructure including the tailings facility and seepage dam (24 wells), the Brown McDade Pit (11 wells) and the Mill Complex (9 wells). Additional wells (primarily drive-point piezometer installations) were sampled in the vicinity of Dome Creek (9 wells) and Pony Creek (7 wells). **Table 1-1** provides the location, status, and sample recovery for groundwater wells included in the May 2016 sampling program. The well locations are also illustrated in **Figures 1-2** and **1-3**. Photographs of each sample site visited in May 2016 are included in **Appendix A**.

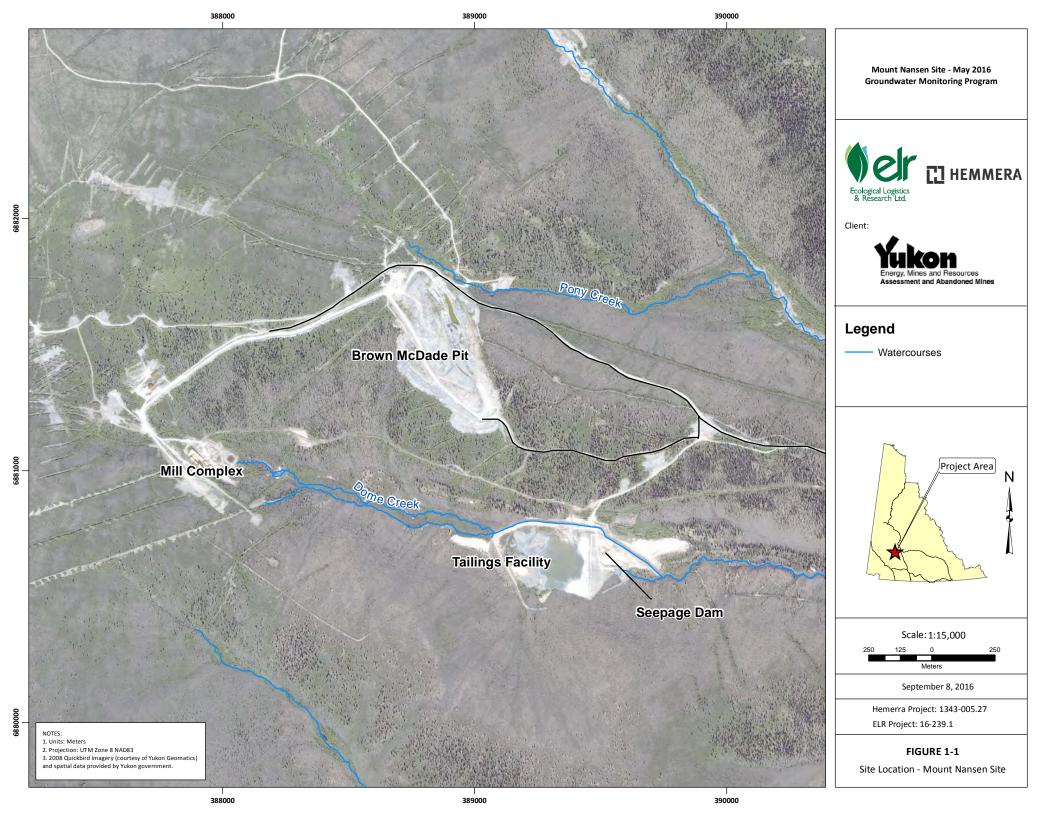


Table 1-1 Summary of Groundwater Well Locations and Samples Collected

Aron	Well Name	UTM (Z	one 08N)	Status	Sample	QA/QC Sample
Area	Well Name	Easting	Northing	Status	Collected	Collected
	GSI-DC-01B	387675	6881124	Frozen	-	-
	GSI-DC-02B	387879	6881129	Frozen	-	-
	GSI-DC-03B	388107	6881079	Frozen	-	-
	GSI-DC-05B	388725	6880836	Frozen <sup>2</sup>	-	-
Dome Creek	GSI-DC-06B	389788	6880567	Frozen	-	-
Orook	GSI-DC-07B	390065	6880641	Frozen	-	-
	GSI-DC-08-B	390311	6880583	Frozen	-	-
	GSI-DC-09-B	390614	6880494	Frozen	-	-
	GSI-DC-10-B	390859	6880447	Frozen	-	-
	GSI-HA-01A	387842	6881132	Direct Sampled 1	✓	-
	GSI-HA-02A	387861	6881135	Frozen	-	-
	GSI-HA-03A	387878	6881131	Frozen	-	-
	GSI-HA-04A	387916	6881130	Direct Sampled 1	✓	-
Mill Complex	GSI-HA-05A	387898	6881125	Frozen	-	-
Complex	MW09-16	387992	6881094	Good	✓	Field Blank
	MW09-17	388075	6880970	Frozen	-	-
	MW09-18	388054	6880986	Good	✓	-
	MW09-19	388051	6881016	Frozen	-	-
	CH-P-13-01/10	388657	6881116	Frozen	-	-
	CH-P-13-03/50	389143	6881110	Direct Sampled 1	✓	-
	CH-P-13-04/10	389138	6881472	Frozen	-	-
	CH-P-13-04/35	389138	6881472	Frozen	-	-
Brown	CH-P-13-05/50	388954	6881466	Not Accessible <sup>3</sup>	-	-
McDade	GLL07-01	388851	6881783	Frozen	-	-
Pit	GLL07-02	389069	6881703	Dry	-	-
	GLL07-03	388959	6881477	Not Accessible 3	-	-
	MW09-13	389006	6881664	Frozen	-	-
	MW09-14	389008	6881669	Frozen	-	-
	MW09-15	388920	6881727	Frozen	-	-
	GSI-PC-02-B	388907	6881786	Destroyed <sup>4</sup>	-	-
	GSI-PC-03-B	389256	6881706	Direct Sample <sup>1</sup>	✓	Field Blank
	GSI-PC-04-B	389586	6881656	Frozen	-	-
Pony Creek	GSI-PC-05-B	389713	6881661	Frozen	-	-
2.0011	MP09-02	388867	6881816	Destroyed <sup>4</sup>	-	-
	MP09-03	388956	6881739	Frozen	-	-
	MP09-08	389160	6881718	Good	✓	Duplicate

A	Mall Name	UTM (Z	one 08N)	Otatus	Sample	QA/QC Sample
Area	Well Name	Easting	Northing	Status	Collected	Collected
	W14103083BH01	389522	6880669	Frozen	-	-
Seepage Dam	W14103083BH02	389561	6880665	Frozen	-	-
Dam	W14103083BH04	389544	6880666	Frozen	-	-
	MP09-04	389575	6880609	Good	✓	-
	MP09-05	389548	6880590	Good	✓	Duplicate
	MP09-09	389240	6880681	Frozen	-	-
	MP09-10	389241	6880684	Frozen	-	-
	MP09-11	389220	6880619	Frozen	-	-
	MP09-12	389220	6880619	Frozen	-	-
	MP09-14	389138	6880722	Direct Sampled 1	✓	-
	MW09-02	389393	6880562	Good	✓	-
	MW09-03	389411	6880555	Good	✓	-
	MW09-04	389420	6880557	Good	✓	-
Tailings	MW09-05	389413	6880656	Dry	-	-
Facility	MW09-06	389411	6880653	Good	✓	-
	MW09-07	389322	6880699	Dry	-	-
	MW09-08	389620	6880576	Good	✓	-
	MW09-11	389037	6880711	Dry	-	-
	MW09-20	389592	6880586	Dry	-	-
	MW09-21	389536	6880577	Frozen	-	-
	MW09-22	389495	6880549	Direct Sampled 1	✓	-
	MW09-23	389459	6880553	Good	✓	-
	MW09-24	389561	6880624	Good	✓	Duplicate, Field Blank
	W14103083BH03	389132	6880730	Frozen	-	-

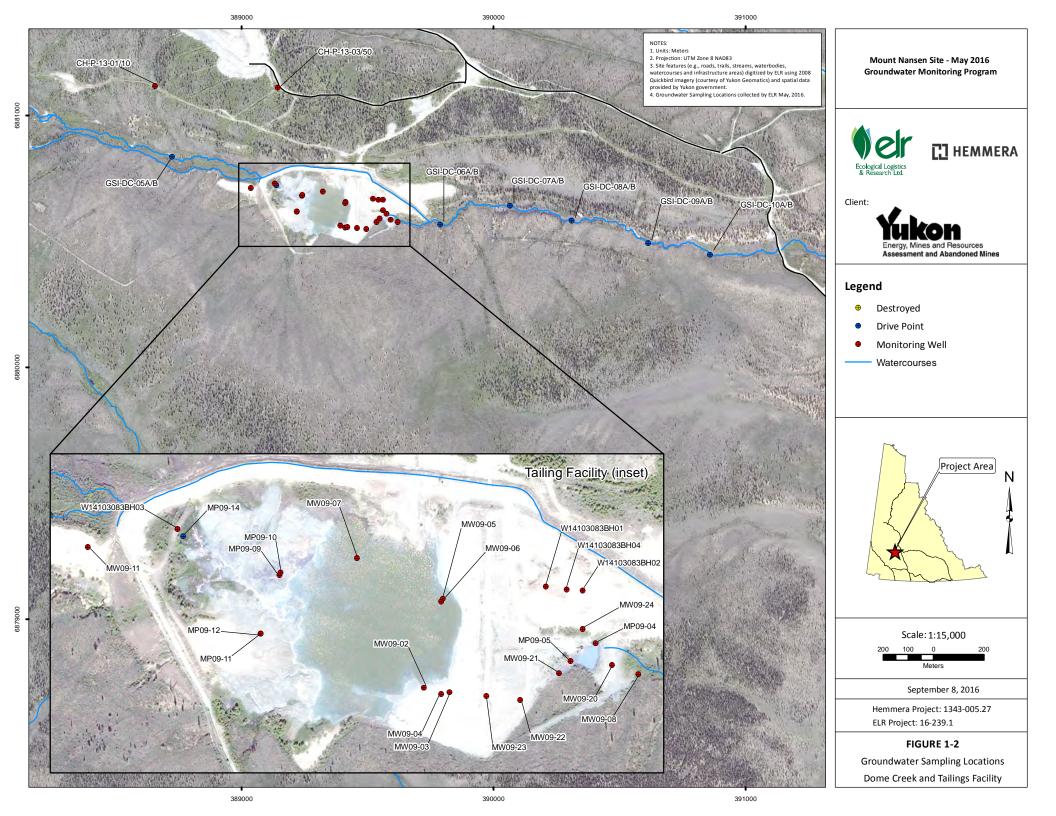
Notes: <sup>1</sup>Direct sampling was completed at sample stations where insufficient volume had been encountered during the event, which limited standard purging and sampling methodologies.

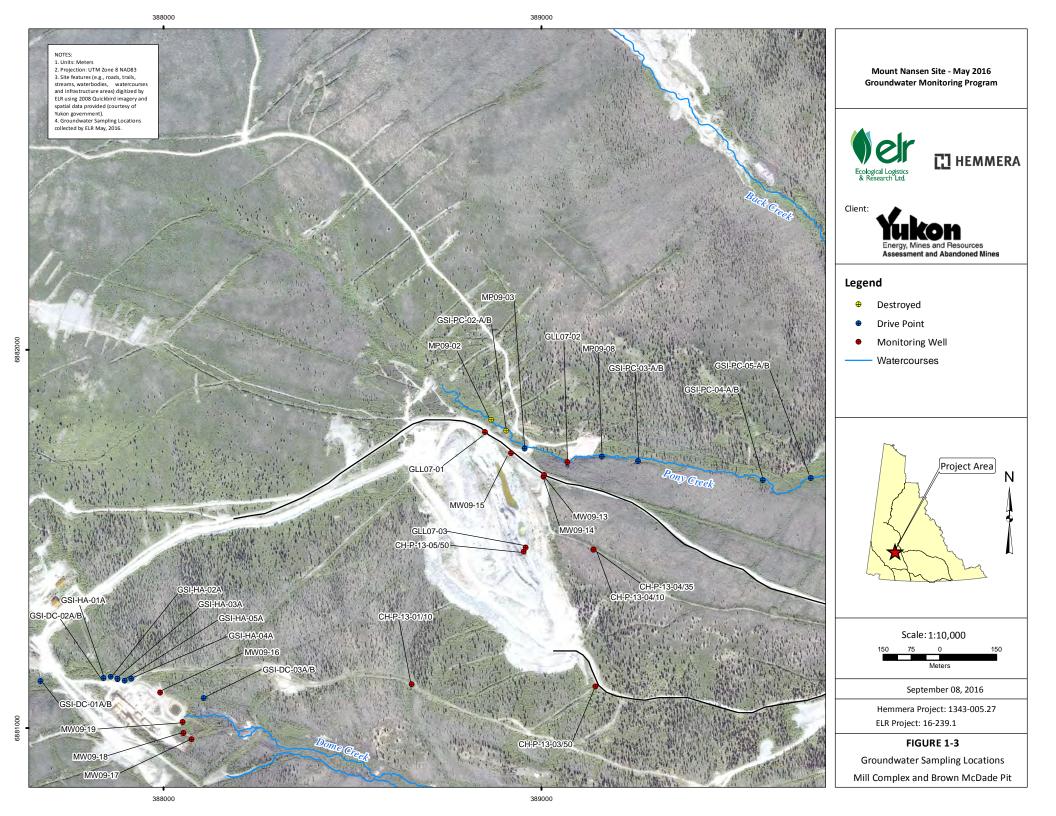
<sup>2</sup> Groundwater well was found buried beneath ice and could therefore not be monitored.

<sup>3</sup> Monitoring wells CH-P-13-05/50 and GLL07-03 were not visited during the May 2016 field event due to pit

wall stability safety concerns.

Destroyed wells are included in the scope of work and are therefore listed above in the summary table.





#### 2.0 METHODOLOGY

#### 1.4 PROTOCOLS

Groundwater purging, monitoring and sampling conducted by Hemmera/ELR were completed in accordance with the Groundwater Sampling Standard Operating Procedures included in the document Scope of Work: Mount Nansen Groundwater Scope of Work. These procedures were consistent with Environment Yukon's Protocol for the Contaminated Sites Regulation #7 - Sampling and Decommissioning (Environment Yukon, 2011). Methods used were also consistent with the ASTM D4448-01 Standard Guide for Sampling Groundwater Monitoring Wells (ASTM, 2013), and the D6452-99 Guide for Purging Methods for Wells used for Groundwater Quality Investigations (ASTM, 2012).

#### 1.5 WELL MEASUREMENTS AND PURGING

Upon arriving at each sample station, headspace gases were measured prior to any other well measurements. Oxygen (%), carbon dioxide (ppm), and methane (%LEL) were measured using a Rae Systems MultiRAE Four-Gas Monitor with photoionization detector (PID).

The well structure and casing were inspected for damage, closure, and general conditions. Depth to water (DTW; m), depth to bottom (DTB; m), well diameter (cm), and well stick-up height (m) were then recorded at each well.

DTB and DTW were measured using either a Solinst - Model 102 Water Level Meter (for 2.54 cm diameter wells) or a Solinst - Model 122 Interface Meter (for wells with diameter greater than 2.54 cm). DTB and DTW were measured from (in order of preference): 1) a black mark drawn on the top of the well; 2) the bottom of the most significant notch found on the top of the PVC if a mark was not present; or 3) a line that was drawn on the highest point of the well if no distinguishable point of measure was present. Stick-up height was measured from the lowest point on the bottom of the well casing to the highest point (or distinguishing mark) on the well. Water level meters were cleaned between each sample site using Alconox low-foaming phosphate-free detergent solution and deionized water.

Following initial inspection and measurements, groundwater wells were purged and sampled using dedicated equipment. Groundwater wells were purged and sampled using one of three (3) techniques: 1) manual purging using high density polyethylene (HDPE) Waterra tubing and a footvalve, 2) GeoPump peristaltic pump with HDPE tubing, or 3) manual purging using disposable polyethylene bailers. The purging technique chosen for each well was that which would produce the most representative groundwater sample.

Groundwater wells were determined to be sufficiently purged when either three (3) successive field parameter measurements were recorded to be within an allowable tolerance level (as summarized in **Table 2-1**, below) or when a volume of water equivalent to three (3) standing well volumes of water had been purged.

Groundwater turbidity measured in Nephelometric Turbidity Units (NTU) or Attenuation Units (AU) was also measured prior to sampling (described below in **Section 2.4**) and was used as an indication of sample quality. Where possible, samples were not collected until turbidity was less than 50 NTU. Purge volumes and purge rates were measured using a graduated container and stop watch. All well measurements, purging details, and additional field notes were recorded on customized field forms in order to minimize the potential for field errors.

Table 2-1 Groundwater Sampling – Field Parameter Purging Criteria

Field Parameter	Allowable Variance
Temperature (°C)	± 3%
рН	± 0.1
Conductivity (µS/cm)	± 3%
Specific Conductivity (µS/cm)	± 3%

#### 1.6 DIRECT SAMPLING

During previous events a select number of groundwater wells were found to have an insufficient volume of groundwater to sample using conventional methods, limiting the number of wells that were sampled during the event. An alternate sampling strategy was established in 2014 by AAM's consultant (AMEC) in order to obtain samples from low producing wells; this continued to be followed during the May 2016 sampling event. At wells identified as regularly having insufficient volume of water or insufficient recharge, Hemmera/ELR direct sampled (analytical samples collected prior to purging or collecting field parameter measurements), after which time field parameter measurements were collected if possible. Additionally, a priority ranking order for analytical sample collection previously established by AAM's consultant (AMEC) was used when collecting samples at these direct sampled wells (as summarized in **Table 2-2**). This ranking system was established to ensure that samples for the highest priority parameters were collected first at each well if limited recharge or volume was encountered. Where the volume or recharge limited sample collected, Hemmera/ELR also re-visited wells when feasible, to attempt to collect a more thorough or complete sample set.

In addition to the priority ranking order, Hemmera/ELR also adhered to minimum required sample volumes for laboratory procedures (provided to Hemmera/ELR by ALS Laboratories) where well volume was limited. This allowed the maximum number of program parameters to be collected when volumes were limited.

#### 1.7 FIELD PARAMETERS

Hemmera/ELR measured *in-situ* water quality parameters using YSI Professional Plus multi-parameter field meters, Lamotte 2020we turbidity meters, and Hach DR 890 Portable Colorimeters. Flow-through cells were used with the YSI meters to minimize field parameter variability; flow-through cells improve the precision of field measurements by limiting sample water contact with air, and by continuously moving sample water across the field meter sensors. The *in-situ* groundwater quality parameters recorded at each sample station included water temperature (°C), specific conductivity (µs/cm), conductivity (µs/cm), oxidation/reduction potential (ORP; mv), pH (pH units), sulphide (mg/l), dissolved oxygen (mg/l and percent saturation), and turbidity (NTU).

During purging, field parameters were monitored at 3 minute intervals, or at volume related intervals (e.g., every 500 mL) in the case of wells with slow recharge. In-situ measurements for reporting purposes were recorded at the conclusion of purging.

#### 1.8 GROUNDWATER SAMPLING

Groundwater quality samples were collected and preserved in accordance with laboratory directions, and using techniques consistent with *Standard Methods for the Examination of Water and Wastewater* (Rice et al., 2012). ALS Global was the analytical laboratory chosen for this project, and a summary of the sample bottle set (including parameters analysed and preservation techniques) is provided in **Table 2-2**.

Table 2-2 Groundwater Sampling Parameter Priority, Preservation, and Intended Analysis

Priority	Bottle Type	Parameters Analyzed	Minimum Volume	Sample Treatment	Preservative Added
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered and Preserved	HNO <sub>3</sub>
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered and Preserved	HCI
2	500 ml (plastic)	General Chemistry	100 ml	-	-
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	Preserved	NaOH
4	120 ml (glass amber)	Ammonia (NH3)	60 ml	Preserved	H <sub>2</sub> SO <sub>4</sub>
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	Preserved	HNO <sub>3</sub>
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-

#### 1.9 DATA MANAGEMENT AND ANALYSIS

Groundwater analytical field and laboratory results were tabulated and reviewed using Hemmera/ELR's EQWin Data Manager water quality database. Data was tabulated for the report and compared to the Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Freshwater Aquatic Life (FAL; CCME, 2014) standards using the database application. All relevant CCME FAL guidelines are presented alongside data in **Table A**.

#### 1.10 QUALITY ASSURANCE AND QUALITY CONTROL

#### 1.10.1 FIELD QA/QC

Several controls were used by Hemmera/ELR staff while in the field to ensure that sample integrity was maintained and that data were recorded completely and accurately. All equipment used during the sampling process was dedicated to individual wells, including HDPE tubing and Waterra footvalves, laboratory provided pre-cleaned sample bottles, disposable filters, disposable syringes, and disposable polyethylene bailers. Field staff used dedicated disposable nitrile gloves for all measurements, purging, and sampling. Water level meters were cleaned between well locations using Alconox low-foaming phosphate-free detergent and deionized water, and field instruments (YSI field meters, turbidity meters, and portable colorimeters) were checked and calibrated before the site visit to ensure the parameters recorded were as accurate as possible.

Project-specific field data sheets were created for the sampling event to help ensure that all required measurements were taken, and that information was recorded correctly. Field data sheets have been included as **Appendix B** of this report.

#### 1.10.2 ANALYTICAL QA/QC

Analytical QA/QC measures were included in the May 2016 sampling program as outlined in the scope of work and as per standard industry practice. This included the collection of field duplicates and field blanks, and the use of travel blanks. Duplicate samples were collected at a ratio of 10% of the regular samples (1 duplicate was collected for every 10 samples), and one (1) field blank was prepared during each day of sampling (4 field blanks collected). Two travel blanks accompanied the analytical supplies and samples from the laboratory to the field, and back to the laboratory again (1 for each shipment).

The variation between sample and duplicate results was calculated as relative percent difference (RPD). RPD provides a measure of the relative difference between two values in comparison to their mean value, and is calculated as the difference between a sample and its field duplicate over the average of two values. RPD values greater than 20% indicate a greater than expected variation in data that could potentially have affected the precision of sampling or analysis. RPD was calculated according to the following formula:

$$\%RPD = \left(\frac{\chi_1 - \chi_2}{\left(\frac{\chi_1 + \chi_2}{2}\right)}\right) x \ 100$$

Where  $X_1$  is the sample result and  $X_2$  is the corresponding duplicate result. RPD is not considered valid and is therefore not calculated if either the sample or the field duplicate concentration is less than five times the detection limit.

The analytical results for field and travel blanks were reviewed to determine whether any of the parameters tested were detected (i.e., result exceeding the detection limit). In such cases, the parameter or element in question and its concentration were reviewed to determine potential sources of contamination or error.

#### 3.0 RESULTS

A summary of laboratory analytical results in the context of CCME FAL guidelines is presented in **Table A** of this report. A summary of the QA/QC sampling results is presented in **Table B**, including analytical data for duplicates, field blanks, and travel blanks. Laboratory analytical reports are presented in **Appendix C**.

#### 3.1 GROUNDWATER SAMPLING SUMMARY

Groundwater sampling was completed between May 24 and May 27, 2016. Weather conditions varied throughout the time of sampling with ambient air temperature ranging from 2 to 12 °C. Periods of heavy to light snow and rain, and heavy to light wind occurred throughout the sampling event.

Of the sixty (60) wells specified for the May 2016 sampling event, fifty-five (55) were located and assessed during the program. As noted in **Section 1.2**, two (2) groundwater wells listed in the scope of work had previously been reported as destroyed (GSI-PC-02-B and MP09-02), two (2) were not accessible due to safety concerns at the Brown McDade Pit (GLL07-03 and CH-P-13-05/50), and one (1) was covered in ice in the Dome Creek valley and could not be monitored (GSI-DC-05-B). Further details concerning these wells are provided in **Section 3.2**.

Of the fifty-five (55) wells located, eighteen (18) wells were sampled; twelve (12) using purging and sample methods as per the program protocols, and six (6) direct sampled without purging according to the sample priority ranking (**Table 2-2**). In three (3) of the six (6) direct sampled wells, volumes were insufficient to collect a full sample set. **Table 3-1** provides a summary of limited sample set collection.

Of the remaining thirty-seven (37) wells that were assessed but not sampled during the program, thirty-two (32) wells were frozen, and five (5) wells were dry. Despite not collecting water quality samples, these wells were still assessed and water/ice depth, well depth, and headspace gas measurements were collected to the extent possible. A summary of the overall condition (status) and sampling result for groundwater wells is provided in **Table 1-1**, and a summary of all well measurements, purge details, and *in-situ* parameter results is provided in **Table 3-2**.

Table 3-1 Summary of Direct Samples Collected During May 2016 Sampling Program

Well Name	Dissolved Metals	Dissolved Mercury	Physical Parameters/Anio ns/ Nutrients	Cyanide	Ammonia	Thiocyanate	Total Inorganic Carbon
Priority	1a	1b	2	3	4	5	6
GSI-PC-03B	✓	✓	✓	-	-	-	-
GSI-HA-01A	✓	✓	✓	✓	✓	✓	✓
GSI-HA-04A	✓	✓	✓	✓	✓	✓	✓
CH-P-13-03/50	✓	✓	✓	-	-	-	-
MP09-14	✓	-	-	-	-	-	-
MW09-22	✓	✓	✓	✓	✓	✓	✓

Notes: Refer to Section 2.2 for details concerning direct sampling methodologies, including minimum volume collection. Samples were collected based on field priority ranking as specified in Table 2-2.

Table 3-2 Groundwater Field Parameters and Well Measurements for May 2016 Sampling Program

Area	Location ID	Sample Date	Status	Stick up Height (m)	Depth To Water (m)	Depth to Bottom (m)	Standing Water Volume (L)	Volume Purged (L)	Purge Start Time	Purge End Time	Elapsed Purge Time	Purge Rate (I/min)	Criteria¹ (3WV/PS/DS)	Draw Down (m)	Hd	Temperature (°C)	Conductivity (µS/cm)	Specific Conductivity (µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Field Sulphide (mg/L)	Methane (%LEL)	Oxygen (%)	Carbon Dioxide (ppm)	Field Turbidity (NTU)	Method Used	Well Diameter (cm)
	GSI-DC-01A	5/25/2016	Frozen	0.92	0.929	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	300	-	-	2.54
	GSI-DC-01B	5/25/2016	Frozen	0.94	1.345	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	300	-	-	2.54
	GSI-DC-02A	5/25/2016	Frozen	0.99	-	1.69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	400	-	-	2.54
	GSI-DC-02B	5/25/2016	Frozen	0.83	0.923	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	400	-	-	2.54
	GSI-DC-03A	5/25/2016	Frozen	0.76	1.010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	200	-	-	2.54
	GSI-DC-03B	5/25/2016	Frozen	0.79	0.929	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	200	-	-	2.54
	GSI-DC-05A	5/25/2016	Frozen	0.40	0.543	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	30.9	200	-	-	2.54
	GSI-DC-05B <sup>3</sup>	5/25/2016	Frozen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dome	GSI-DC-06A	5/26/2016	Frozen	0.84	1.433	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	49	200	-	-	2.54
Creek	GSI-DC-06B	5/26/2016	Frozen	0.25	1.213	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	49	200	-	-	2.54
	GSI-DC-07A	5/27/2016	Frozen	0.81	0.922	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	300	-	-	2.54
	GSI-DC-07B	5/27/2016	Frozen	0.86	0.922	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	1500	-	-	2.54
	GSI-DC-08A	5/27/2016	Frozen	1.00	1.317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	200	-	-	2.54
	GSI-DC-08B	5/27/2016	Frozen	0.33	0.593	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	400	-	-	2.54
	GSI-DC-09A	5/27/2016	Frozen	0.95	1.182	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	300	-	-	2.54
	GSI-DC-09B	5/27/2016	Frozen	0.89	1.155	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	300	-	-	2.54
	GSI-DC-10A	5/27/2016	Frozen	1.18	1.431	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	300	-	-	2.54
	GSI-DC-10B	5/27/2016	Frozen	1.10	1.314	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	300	-	-	2.54
	GSI-HA-01A <sup>2</sup>	5/25/2016	Direct Sample	1.16	2.219	3.122	0.286	-	-	-	-	-	DS	-	-	-	-	-	-	-	0.06	0	20.9	400	76.1	peristaltic	2.54
	GSI-HA-02A	5/25/2016	Frozen	1.55	2.391	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	300	-	-	2.54
	GSI-HA-03A	5/25/2016	Frozen	0.96	0.973	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	400	-	-	2.54
Mill	GSI-HA-04A <sup>2</sup>	5/25/2016	Direct Sample	0.61	1.615	1.854	0.12	-	-	-	-	-	DS	-	-	-	-	-	-	-	-	0	20.7	400	-	peristaltic	2.54
Complex	GSI-HA-05A	5/25/2016	Frozen	1.19	0.966	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	300	-	-	2.54
	MW09-16	5/24/2016	Good	1.38	1.956	2.727	1.542	2.5	16:20	16:45	0:25	0.10	PS	0.001	6.7	4.2	1257	2086	170.2	0.97	0	0	20.3	2800	0.71	peristaltic	5.08
	MW09-17	5/25/2016	Frozen	0.98	1.310	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	30.9	2500	-	-	5.08
	MW09-18	5/25/2016	Good	0.90	4.320	7.878	6.934	2.51	8:11	8:37	0:26	0.10	PS	0.004	6.77	0.5	1465	2750	185.9	2.27	0.02	0	20.9	200	6.16	peristaltic	5.08
	MW09-19	5/25/2016	Frozen	0.99	2.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	300	-	-	5.08

Area	Location ID	Sample Date	Status	Stick up Height (m)	Depth To Water (m)	Depth to Bottom (m)	Standing Water Volume (L)	Volume Purged (L)	Purge Start Time	Purge End Time	Elapsed Purge Time	Purge Rate (I/min)	Criteria¹ (3WV/PS/DS)	Draw Down (m)	Hd	Temperature (°C)	Conductivity (µS/cm)	Specific Conductivity (µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Field Sulphide (mg/L)	Methane (%LEL)	Oxygen (%)	Carbon Dioxide (ppm)	Field Turbidity (NTU)	Method Used	Well Diameter (cm)
	CH-P-13-01/10	5/25/2016	Frozen	0.50	6.610	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	200	-	-	3.81
	CH-P-13-03/50 <sup>2</sup>	5/25/2016	Direct Sample	0.59	49.433	50.478	0.523	-		-	-	•	DS	-	-	1	-	-	•	-	-	0	20.9	200	-	disp. bailer	3.81
	CH-P-13-04/10	5/25/2016	Frozen	0.63	6.198	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	200	-	-	3.81
	CH-P-13-04/35	5/25/2016	Frozen	0.62	6.492	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	200	-	-	3.81
Brown McDade	CH-P-13-05/50 <sup>4</sup>	5/25/2016	Not Accessible	1	-	-	-	-	1	1	-	ı	-	-	-	ı	-	-	ı	-	-	-	-	1	-	-	5.08
Pit	GLL07-01	5/25/2016	Frozen	0.78	13.853	-	-	-	ı	1	-	ı	-	-	-	ı	-	-	ı	-	-	0	20.6	700	-	-	5.08
	GLL07-02	5/27/2016	Dry	1.35	-	7.125	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	300	-	-	5.08
	GLL07-03 <sup>4</sup>	5/25/2016	Not Accessible	-	-	-	-	-	ı	ı	-	ı	-	-	-	1	-	-	ı	-	-	-	-	1	-	-	5.08
	MW09-13	5/25/2016	Frozen	0.76	5.942	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	0	39.9	300	-	-	5.08
	MW09-14	5/25/2016	Frozen	0.74	5.070	-	-	-	ı	ı	-	1	-	-	1	1	-	-	ı	-	-	0	20.9	200	-	1	5.08
	GSI-PC-02A <sup>5</sup>	5/27/2016	Destroyed	-	-	-	-	-	1	-	-	ı	-	-	-	ı	-	-	ı	-	-	-	-	i	-	-	-
	GSI-PC-03A	5/27/2016	Good	0.97	0.955	1.234	-	-	ı	ı	-	1	-	-	1	1	-	-	ı	-	-	0	20.9	300	-	1	5.08
	GSI-PC-03B <sup>2</sup>	5/27/2016	Direct Sample	1.01	1.075	2.833	0.44	-	-	-	-	-	DS	-	-	-	-	-	•	-	-	0	20.9	500	-	peristaltic	1.27
	GSI-PC-04A	5/27/2016	Frozen	0.98	1.257	-	-	-		ı	-	ı	-	-	-	ı	-	-	ı	-	-	0	20.9	300	-	1	1.27
Pony Creek	GSI-PC-04B	5/27/2016	Frozen	0.99	1.278	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	200	-	-	1.27
Orcck	GSI-PC-05A	5/27/2016	Frozen	0.92	1.119	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.8	9600	-	-	1.27
	GSI-PC-05B	5/27/2016	Frozen	-	1.152	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	0	20.9	300	-	-	1.27
	MP09-02 <sup>5</sup>	5/27/2016	Destroyed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MP09-03	5/27/2016	Frozen	0.62	1.618	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	29.9	200	-		1.27
	MP09-08	5/27/2016	Good	0.77	0.548	1.971	0.36	2.1	11:39	11:53	0:14	0.15	PS	-	6.89	2.41	405	712	-22.6	5.06	0.14	0	20.9	300	0.85		1.27
Cocres	W14103083BH01	5/25/2016	Frozen	0.63	6.529	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.6	700	-	peristaltic	1.27
Seepage Dam	W14103083BH02	5/25/2016	Frozen	0.79	6.729	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.7	400	-	peristaltic	2.54
	W14103083BH04	5/25/2016	Frozen	0.77	6.515	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.6	300	-	peristaltic	2.54

Area	Location ID	Sample Date	Status	Stick up Height (m)	Depth To Water (m)	Depth to Bottom (m)	Standing Water Volume (L)	Volume Purged (L)	Purge Start Time	Purge End Time	Elapsed Purge Time	Purge Rate (I/min)	Criteria¹ (3WV/PS/DS)	Draw Down (m)	Hd	Temperature (°C)	Conductivity (µS/cm)	Specific Conductivity (µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Field Sulphide (mg/L)	Methane (%LEL)	Oxygen (%)	Carbon Dioxide (ppm)	Field Turbidity (NTU)	Method Used	Well Diameter (cm)
	MP09-04	5/26/2016	Good	1.23	2.035	2.214	0.2	1.95	8:22	8:40	0:18	0.11	PS	0	6.93	2.10	691	1229	214.1	4.89	0.01	0	20.9	700	2.1	peristaltic	5.08
	MP09-05	5/26/2016	Good	1.05	1.447	1.829	0.42	1.65	7:58	8:13	0:15	0.11	3WV	0.016	6.79	1.5	1169	2121	-32.4	0.83	0.01	0	30.49	200	2.66	i	5.08
	MP09-09	5/26/2016	Frozen	2.55	3.052	-	-	-	-	-	-	ı	-	ı	-	-	-	-	-	-	-	0	30.9	300	ı	peristaltic	5.08
	MP09-10	5/26/2016	Frozen	2.26	3.502	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	300	-	-	2.54
	MP09-11	5/26/2016	Frozen	1.96	2.715	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	99	17.2	1600	-	peristaltic	2.54
	MP09-12	5/26/2016	Frozen	2.00	2.664	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	300	-	-	2.54
	MP09-14 <sup>2</sup>	5/26/2016	Direct Sample	0.72	1.140	1.61	0.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	300	-	-	2.54
	MW09-02	5/26/2016	Good	0.73	3.420	4.728	2.616	1.2	11:08	11:24	0:16	0.08	PS	0.53	7.22	2.53	1387	2425	-87.2	0.39	0.05	0	20.9	400	11.83	-	2.54
	MW09-03	5/26/2016	Good	0.42	7.714	9.927	4.426	1.4	12:03	12:35	0:32	0.04	PS	0.146	8.5	4.21	1519	2519	-96.9	0.32	0.02	0	20.9	300	1.61	peristaltic	2.54
	MW09-23	26/05/2016	Good	0.19	13.428	15.928	5	12	9:50	10:02	0:12	1	PS	-	6.98	0.5	865	1624	-28.7	2.72	-	0	20.9	200	50.5	Waterra	5.08
Tailings Facility	MW09-24	25/05/2016	Good	0.65	9.663	11.631	3.936	45	17:02	18:00	0:58	0.78	PS	0.022	7.41	2.06	572	1012	141.1	4.33	0.14	0	20.9	900	27.4	Waterra	5.08
	W14103083BH03	26/05/2016	Frozen	1.28	1.774	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	200	-	-	5.08
	MW09-04	5/26/2016	Good	0.33	4.983	7.666	5.366	1.5	12:54	13:18	0:24	0.06	PS	0.627	8.32	3.50	1479	2509	7.6	0.18	0	0	20.9	300	0.21		5.08
	MW09-05	5/26/2016	Dry	1.47	-	1.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	14.2	2400	-		5.08
	MW09-06	5/26/2016	Good	2.00	3.161	6.048	3.8	3.45	11:05	11:27	0:22	0.16	PS	0.269	7.11	3.3	1144	1957	118.2	0.52	0.07	0	34.9	300	24.7		5.08
	MW09-07	5/25/2016	Dry	1.40	-	3.405	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	400	-		5.08
	MW09-08	5/26/2016	Good	1.14	1.99	3.901	3.822	2.5	9:18	9:36	0:18	0.14	PS	0	6.65	1.87	373	669	-59.2	0.51	0.11	0	20.9	700	3.94		5.08
	MW09-11	5/25/2016	Dry	0.81	-	4.926	-	=	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.7	1000	-		5.08
	MW09-20	5/25/2016	Dry	0.91	-	3.692	-	=	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	200	-		5.08
	MW09-21	5/26/2016	Frozen	0.82	1.149	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	200	-		5.08
	MW09-22 <sup>2</sup>	5/26/2016	Direct Sample	0.87	5.107	5.28	0.346	-	-	-	-	1	DS	-	-	-	-	-	-	-	-	0	20.9	300	-		5.08

Notes: To maximize the sample return for analytical analysis, field parameters were not collected at all direct sampled wells. Shaded rows indicate monitoring stations where analytical samples were collected.

<sup>&</sup>lt;sup>1</sup> 3WV = Three standing well volumes purged prior to sample collection, PS = field parameters stabilized prior to sample collection, and DS = sample collected directly without purging. <sup>2</sup> Due to low well volumes (direct sampling), field parameters were not measured.

<sup>&</sup>lt;sup>3</sup>Well found frozen beneath ice and therefore could not be monitored.

Well was not accessible during the sampling event due to health and safety concerns in the Brown McDade Pit.

<sup>&</sup>lt;sup>5</sup> Well has been destroyed by placer mining activity.

#### 3.2 ANALYTICAL RESULTS

Analytical results are summarized below, including a brief summary of CCME FAL guideline exceedances and a description of any known factors that may have influenced the data. Details regarding well status, including a description of damaged or underperforming wells, are also provided.

In several instances, laboratory reportable detection limits (RDL) for parameters exceeded applicable CCME FAL standards (lightly shaded values in **Table A**). In these cases, samples having elevated levels of certain parameters required laboratory dilution prior to performing the required analyses, thereby resulting in an elevated RDL. For the purpose of this report, samples where the reported RDL is greater than the applicable guideline have not been reported as CCME FAL exceedances.

#### 3.2.1 DOME CREEK

Groundwater wells along Dome Creek were monitored between May 25 and May 27, 2016. None of the nine (9) drive-point piezometers located in this area could be sampled as they were all frozen during the time of sampling (GSI-DC-01B, GSI-DC-02B, GSI-DC-03B, GSI-DC-05B, GSI-DC-06B, GSI-DC-07B, GSI-DC-08B, GSI-DC-09B, GSI-DC-10B). Of the nine (9) wells reported to be frozen, one (1) was completely buried beneath ice and could not be inspected or monitored. A summary of field measurements, including headspace gases, is provided in **Table 3-2**.

#### 3.2.2 MILL COMPLEX

Groundwater in the Mill Complex Area was sampled on May 24 and May 25, 2016. Samples were obtained from four (4) of the nine (9) wells identified in this area. The other five (5) of the wells located in this area were found frozen during the time of sampling (GSI-HA-02A, GSI-HA-03A, GSI-HA-05A, MW09-17, and MW09-19). Drive-points GSI-HA-01A and GSI-HA-04A were direct sampled without purging, while wells MW09-16 and MW09-18 were sampled according program protocols. A summary of the samples collected is provided in **Table 3-1**, and analytical results are provide in **Table A**.

CCME FAL guideline exceedances were observed at all of the four (4) sites sampled in the Mill Complex area, including exceedances of dissolved fluoride (three sites), dissolved arsenic (four sites), dissolved copper (one site), dissolved iron (two sites) and dissolved zinc (one site). Where measured (two sites), field dissolved oxygen concentrations were below the CCME FAL minimum concentration. A summary of CCME FAL guideline exceedances is provided in **Table 3-3**.

Where measured, groundwater turbidity of three (3) of the samples collected within this area was below 50 NTU, while one (1) was measured at 76.1 NTU (GSI-HA-01A) (**Table 3-2**).

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Table 3-3 **Summary of CCME FAL Guideline Exceedances for May 2016 Sampling Program** 

Area	Sample ID	Date	Parameter	Field Dissolved Oxygen	Ammonia, Total (as N)	Fluoride (F)	Nitrite (as N)	Cyanide, Free	Dissolved Arsenic (As)	Dissolved Copper (Cu)	Dissolved Iron (Fe)	Dissolved Selenium (Se)	Dissolved Silver (Ag)	Dissolved Uranium (U)	Dissolved Zinc (Zn)
	·	Sampled	Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			CCME-FAL <sup>1</sup>	9.5	Varies	0.12	0.06	0.005	0.005	Varies	0.3	0.001	0.0001	0.015	0.03
	GSI-HA-01A	5/25/2016	Direct Sample	-	-	0.133	-	-	0.00534	-	5.07	-	-	-	-
Mill Compley	GSI-HA-04A <sup>2</sup>	5/25/2016	Direct Sample	-	-	-	-	-	0.0249	-	1.80	•	-	-	-
Mill Complex	MW09-16	5/24/2016	Good	0.97	-	0.13	-	-	0.0244	0.00575	-	-	-	-	6.94
	MW09-18	5/25/2016	Good	2.27		<0.20	-	-	0.0490	-	-	-	-	-	-
Brown McDade Pit	CH-P-13-03/50 <sup>3</sup>	5/25/2016	Direct Sample	-	-	<0.20	-	-	-	-	-	0.00717	-	-	-
Damy Creak	GSI-PC-03B	5/27/2016	Direct Sample	-	-	<0.40	-	-	0.0874	0.00541	7.28	-	-	0.0239	0.0376
Pony Creek	MP09-08	5/27/2016	Good	5.06	-	-	-	-	0.0148	-	1.11	-	-	-	-
	MP09-04	5/26/2016	Good	4.89	-	-	-	-	-	-	-	-	-	-	-
	MP09-05	5/26/2016	Good	0.83	-	-	-	-	0.0230	-	50.9	-	-	-	-
	MP09-14	5/26/2016	Direct Sample	-	-	-	-	-	0.809	-	0.600	-	-	-	-
	MW09-02	5/26/2016	Good	0.39	-	0.54	-	<0.010	8.95	-	15.4	-	-	-	0.213
	MW09-03	5/26/2016	Good	0.32	6.18	0.30	0.075	-	2.08	0.0047	-	-	-	-	-
Tailings Facility	MW09-04	5/26/2016	Good	0.18	7.04	0.32	-	-	3.55	-	-	-	-	-	0.630
	MW09-06	5/26/2016	Good	0.52	-	0.23	-	-	0.108	0.0104	-	-	0.000120	-	0.383
	MW09-08	5/26/2016	Good	0.51	-	0.124	-	-	0.208	-	80.0	-	-	-	-
	MW09-22 <sup>4</sup>	5/27/2016	Direct Sample	-	-	-	-	-	-	-	0.936				
	MW09-23	5/26/2016	Good	2.72	-	-	-	-	0.0283	-	18.0	-	-	-	-
	MW09-24	5/25/2016	Good	4.33	-	-	-	-	-	0.00579	-	-	-	-	-

<sup>&</sup>lt;sup>1</sup> CCME guideline exceedances shaded with dark grey. Light grey shading denotes reportable detection limit in exceedance of CCME guideline.

<sup>&</sup>lt;sup>2</sup>Due to slow recharge and low well volumes, samples were collected from GSI-HA-04A between May 25 and 27, 2016. Dissolved metals and dissolved mercury were collected on May 25, 2016. All other parameters were collected on May 27, 2016.

<sup>&</sup>lt;sup>3</sup> Due to slow recharge and low well volumes, samples were collected from CH-P-13-03/50 between May 25 and 27, 2016. Dissolved metals were collected on May 25, 2016. Dissolved mercury and general chemistry were collected on May 27, 2016.

<sup>&</sup>lt;sup>4</sup> Due to slow recharge and low well volumes, field parameters were measured for well MW09-22 on May 26, 2016. Laboratory analyzed samples were collected on May 27, 2016. "–" indicates either no exceedance was observed or no analysis was conducted. Refer to **Table A** for full analytical report.

#### 3.2.3 Brown McDade Pit

Groundwater wells in the Brown McDade Pit area were sampled between May 25 and May 27, 2016. Samples were obtained from only one (1) of the eleven (11) sites identified in this area (CH-P-13-03/50), which was direct sampled without purging. Seven (7) wells were frozen during the site visit (CH-P-13-01/10, CH-P-13-04/10, CH-P-13-04/35, GLL07-01, MW09-13, MW09-14, and MW09-15), and one (1) well was dry (GLL07-02). Two (2) wells (CH-P-13-05/50 and GLL07-03) were not accessible during the time of sampling due to safety concerns due to pit wall instability. Access to the Brown McDade Pit was restricted by AAM and Denison Environmental Services (DES) during the site visit. A summary of the samples collected is provided in **Table 3-1**, and analytical results are provide in **Table A**.

CCME FAL guideline exceedances were observed in the one (1) site sampled in this area, including exceedances of dissolved fluoride (one site), and dissolved selenium (one site). A summary of CCME FAL guideline exceedances is provided in **Table 3-3**.

Due to limited well volumes, groundwater turbidity was not measured at the sample location (CH-P-13-03/50) within the Brown McDade Pit area (**Table 3-2**).

#### 3.2.4 PONY CREEK

Groundwater wells along Pony Creek were monitored on May 27, 2016. Three (3) of the seven (7) groundwater wells identified in the Pony Creek area were frozen during the time of sampling (GSI-PC-04B, GSI-PC-05B, and MP09-03). Two (2) of the four (4) remaining wells identified in this area were previously destroyed by placer mining activity (GSI-PC-02B and MP09-02) and therefore could not be monitored. Of the remaining two (2) wells sampled, one (1) was sampled directly without purging (GSI-PC-03B), and one (1) was sampled according to program protocols (MP09-08). A summary of the samples collected is provided in **Table 3-1**, and analytical results are provide in **Table A**.

CCME FAL guideline exceedances were observed at the two (2) sites sampled in the Pony Creek area, including exceedances of dissolved arsenic (two sites), dissolved copper (one site), dissolved iron (two sites), dissolved uranium (one site), and dissolved zinc (one site). Where measured (one site), field dissolved oxygen concentration was below the minimum CCME FAL guideline level. A summary of CCME FAL guideline exceedances is provided in **Table 3-3**.

Where measured, groundwater turbidity of the samples collected in this area were below 50 NTU. Due to limited well volumes, groundwater turbidity was not measured at the sample location (GSI-PC-03B) within the Pony Creek area (**Table 3-2**).

#### 3.2.5 SEEPAGE DAM

Groundwater wells in the Seepage Dam area were monitored on May 25, 2016. All three (3) of the groundwater wells in this area were frozen at the time of sampling. A summary of field measurements collected for each site is provided **Table 3-2**.

#### 3.2.6 TAILINGS FACILITY

Groundwater wells in the Tailings Facility area were sampled between May 25 and 26, 2016. Samples were obtained from eleven (11) of the twenty-one (21) sample sites located in this area. Six (6) of the twenty-one (21) groundwater wells identified in the Tailings Facility area were frozen at the time of sampling (MP09-09, MP09-10, MP09-11, MP09-12, MW09-21, and W14103083BH03). Four (4) of the twenty-one (21) groundwater wells identified in the Tailings Facility were dry at the time of sampling (MW09-05, MW09-07, MW09-11, and MW09-20). Of the eleven (11) wells sampled in the Tailings Facility area, two (2) were direct sampled (MP09-14, and MW09-22), while the other nine (9) were were purged prior to sampling (MP09-04, MP09-05, MW09-02, MW09-03, MW09-04, MW09-06, MW09-08, MW09-23, and MW09-24). A summary of the samples collected is provided in **Table 3-1**, and analytical results are provide in **Table A**.

CCME FAL guideline exceedances were observed at all eleven (11) sites sampled in the Tailings Facility area, including exceedances of total ammonia (two sites), dissolved fluoride (five sites), nitrite (one site), free cyanide (one site), dissolved arsenic (eight sites), dissolved copper (three sites), dissolved iron (six sites), dissolved silver (one site), and dissolved zinc (three sites). Field dissolved oxygen concentrations were below the minimum CCME FAL guideline level at nine (9) of the sampled sites. Due to insufficient volume, field dissolved oxygen concentrations were not measured at two (2) of the eleven (11) sites sampled (MP09-14, and MW09-22). A summary of CCME FAL guideline exceedances is provided in **Table 3-3**.

Groundwater turbidity exceeded 50 NTU (50.5 NTU) at one (1) of the nine (9) sites (MW09-23) measured (**Table 3-2**).

#### 3.3 QUALITY ASSURANCE AND QUALITY CONTROL RESULTS

Three (3) duplicate groundwater samples were collected during the May 2016 sampling event. Two (2) travel blanks were provided by the laboratory and accompanied the samples throughout the sampling program, and four (4) field blanks were prepared on site during the sampling program. Detailed results of QA/QC sampling are provided in **Table B**, including RPD values for all duplicate and sample pairs.

#### 3.3.1 FIELD AND TRAVEL BLANKS

All travel blank analytical results were reported as less than the RDL with the exception of total ammonia (0.0354 mg/L) in the first of two travel blanks (**Table B**). The program analytical laboratory (ALS Global) indicated that the detection of low levels of ammonia should not be considered an indication of contamination as low concentrations of ammonia are occasionally detected in travel blanks that are prepared too early in advance of the field program. All other analytical results in both travel blanks were reported below RDL (**Table B**).

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Across three (3) of the four (4) field blanks, analytical results were all reported as less than the RDL (**Table B**). In the fourth field blank (FB1) dissolved aluminum (0.0038 mg/L) and dissolved manganese (0.00023 mg/L) were detected. Although detectable, the observed values were very close to RDL (<4x RDL of 0.001 mg/L for aluminum and <3x RDL of 0.0001 mg/L for manganese). At the time of sampling the field crew experienced moderate to high winds capable of picking up small particles, which may have accounted for the detections.

#### 3.3.2 FIELD DUPLICATES

#### 3.3.2.1 MW09-24 and DUP-1

Duplicate and duplicate pair analytical results produced an RPD value for dissolved manganese of 26.44%, which was above the acceptable range of variability (i.e. 20%). Field notes and measurements do not identify any potential source of contamination or suggest variability in groundwater quality during the purging process (**Table 3-2**).

All other parameter duplicate and sample analytical results for MW09-24 and DUP-1 produced RPD values below the 20% RPD threshold limit (**Table B**).

#### 3.3.2.2 MP09-05 and DUP-2

All sample and duplicate pair analytical results produced RPD values for samples MP09-05 and DUP-2 below the 20% RPD threshold limit (**Table B**).

#### 3.3.2.3 MP09-08 and DUP-3

All sample and duplicate pair analytical results produced RPD values for samples MP09-08 and DUP-3 were below the 20% RPD threshold limit (**Table B**).

#### 3.3.3 QUALITY ASSURANCE AND QUALITY CONTROL SUMMARY

Results for the QA/QC analytical program show minimal evidence of sampling variation or contamination during the field collection process and transportation, and that program results are acceptable.

Travel blank analytical results suggest no external sources of contamination during the transportation process. Although low levels of total ammonia were detected in one of the travel blanks, ALS has indicated that these results do not suggest an external source of contamination.

The detection of low levels (near RDL) of aluminum and manganese suggests that slight contamination from the field environment may have occurred, although the concentrations suggest that this type of contamination would not affect program results. The lack of detections in the other three field blanks also suggests that it is not a systematic occurrence.

Across the results for three sample and duplicate pairs, the occurrence of only one RDL exceedance suggests that overall variability was very low. Field notes for that result did not identify any potential sources of contamination or suggest variability in groundwater quality during the sampling process, and therefore a systematic or site-specific bias is not believed to have occurred (**Table 3-2**). The observed RPD value is considered to be most likely the result of small variations in groundwater quality during sampling, in particular because this site was sampled manually using Waterra tubing in a shallow water column (1.968 m), and groundwater turbidity at this site was observed to be moderately high (27.4 NTU). Therefore, the motion of the sampling technique could have stirred up fine sediments at the bottom of the well.

#### 4.0 RECOMMENDATIONS

Hemmera/ELR do not have program recommendations based on the observations and results of the May 2016 groundwater sampling program.

#### 5.0 CLOSURE

We have appreciated the opportunity of working with you on this project and trust that this report is satisfactory to your requirements. Please feel free to contact the undersigned regarding any questions or further information that you may require.

Report prepared by:

ELR

### ORIGINAL SIGNED

Michelle McKay, B.Sc. Environmental Scientist michelle@elr.ca

Report senior reviewed by:

**ELR** 

### ORIGINAL SIGNED

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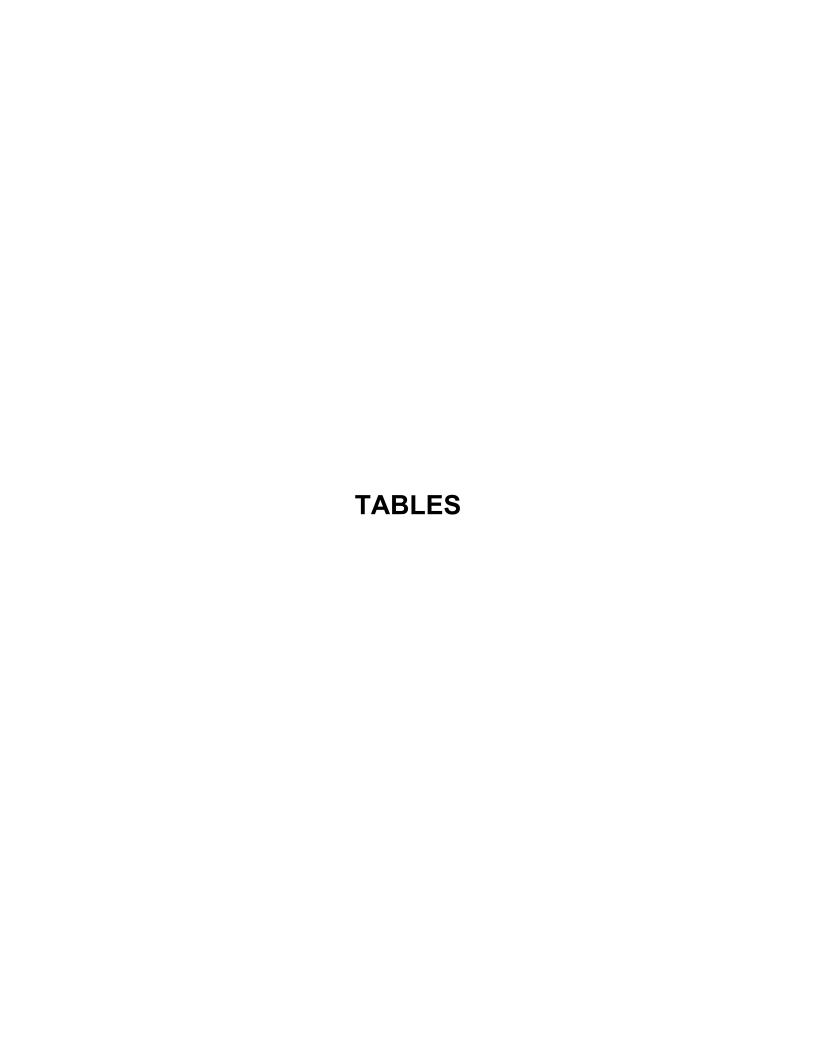
### ORIGINAL SIGNED

Jason Wilkins, P.Ag., EP, CSAP Director, Land Development and Projects jwilkins@hemmera.com

This document represents an electronic version of the original hard copy document, signed by Michelle McKay, B.Sc., Chris Jastrebaski, M.Sc., R.P.Bio., P.Biol. and Jason Wilkins, P.Ag., EP, CSAP and retained on file. The content of the electronically transmitted document can be confirmed by referring to the original hard copy and file. This document is provided in electronic format for convenience only. Hemmera Envirochem Inc. shall not be liable in any way for errors or omissions in any electronic version of its report document.

#### 6.0 REFERENCES

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		Site Location					Dome Creek									Mill Complex				
		Sample ID	GSI-DC-01B	GSI-DC-02B	GSI-DC-03B	GSI-DC-05B	GSI-DC-06B	GSI-DC-07B	GSI-DC-08B	GSI-DC-09B	GSI-DC-10B	GSI-HA-01A	GSI-HA-02A	GSI-HA-03A	GSI-HA-04A 13	GSI-HA-05A	MW09-16	MW09-17	MW09-18	MW09-19
		Date Sampled	25/05/2016	25/05/2016	25/05/2016	25/05/2016	26/05/2016	27/05/2016	27/05/2016	27/05/2016	27/05/2016	25/05/2016	25/05/2016	25/05/2016	25/05/2016	25/05/2016	24/05/2016	25/05/2016	25/05/2016	25/05/201
		ALS Work Number										L1774699			L1775300		L1774699		L1774699	
		Station Status	Frozen	Direct Sample	Frozen	Frozen	Direct Sample	Frozen	Good	Frozen	Good	Frozen								
Parameter	Units	CCME-FAL <sup>1, 2, 3, 4</sup>																		
Physical Tests																				
_ab pH	pH units	6.5-9.0 <sup>5</sup>	-	-	-	-	-	-	-	-	-	8.16	-	-	7.59	-	7.44	-	7.80	-
Field pH	pH units	6.5-9.0 <sup>5</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7	-	6.77	-
Field Temperature	С	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2	-	0.5	-
_ab Conductivity	uS/cm	-	-	-	-	-	-	-	-	-	-	823	-	-	347	-	2060	-	2740	-
Field Conductivity	uS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1257	-	1465	-
Field Specific Conductivity	uS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2086	-	2750	-
Total Hardness (as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	528	-	-	262	-	1390	-	1870	-
Field Dissolved Oxygen	mg/L	9.5 <sup>6</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.97	-	2.27	
Field Oxidation - Redox Potent	mV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	170.2	-	185.9	-
Field Turbidity	NTU	-	-	-	-	-	-	-	-	-	-	76.1	-	-	-	-	0.71	-	6.16	-
Anions and Nutrients																				
Alkalinity, Total (CaCO3)	mg/L	-	_	-	-	-	-	-	-	-	-	243	-	-	136	-	195	-	423	-
Alkalinity, Total (CaCO3, filtered)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia, Total (as N)	mg/L	Varies 7	_	_	_	_	-	_	_	-	-	0.0384	_	_	0.0641	-	0.0267	_	0.0118	-
Ammonia CCME-FAL	mg/L	-	_	-	-	-	-	-	_	-	-	_	-	_	_	-	32.5	-	37.59	_
Chloride (CI)	mg/L	-	-	-	-	-	-	-	-	-	-	0.97	-	-	<0.50	-	<2.5	-	<5.0	-
Fluoride (F)	mg/L	0.12	-	-	-	-	-	-	-	-	-	0.133	-	-	0.097	-	0.13	-	<0.20	-
Nitrate (as N)	mg/L	13	-	-	-	-	-	-	-	-	-	0.0123	-	-	0.0059	-	<0.025	-	0.077	-
Nitrite (as N)	mg/L	0.06	_	-	_	_	-	_	_	-	-	0.0036	_	-	<0.0010	-	<0.0050	_	<0.010	-
Total Kjeldahl Nitrogen	mg/L	-	_	-	_	_	-	_	_	-	-	0.566	_	-	1.38	-	0.167	_	0.108	-
Sulfate (SO4)	mg/L	-	_	-	_	_	-	_	_	-	-	220	_	-	68.3	-	1100	_	1390	-
Field Sulphide	mg/L	-	_	-	_	_	-	-	_	_	-	0.06	_	_	-	-	0	-	0.02	-
Anion Sum	meq/L	-	_	-	-	_	-	-	_	_	-	9.47	-	-	-	-	26.8	-	37.3	-
Cation Sum	meg/L	-	_	-	-	_	-	-	_	_	-	11.1	-	-	-	-	28.5	-	38.1	-
Cation - Anion Balance	%	-	_	-	-	-	-	-	_	-	-	8.0	-	-	-	-	3.0	-	1.1	-
Cyanides												-								
Cyanide, Total	mg/L	-	_	-	_	_	-	_	_	_	-	<0.0050	_	_	<0.0050	-	<0.010	_	<0.0050	_
Cyanide, Free	mg/L	0.005	_	_	_	_	-	_	_	_	-	<0.0050	_	_	<0.0050	-	<0.0050	_	<0.0050	_
Cyanide, Weak Acid Diss	mg/L	-	_	-	_	_	-	_	_	_	-	<0.0050	_	_	<0.0050	-	<0.0050	_	<0.0050	_
Thiocyanate (SCN)	mg/L	-	_	_	_	_	-	_	_	_	-	<0.50	_	_	<0.50	-	<0.50	_	<0.50	-
Organic/Inorganic Carbon	9.2											.0.00							10.00	
Fotal Inorganic Carbon	mg/L	_	_	_	_	_	_	_	_	_	_	60.4	_	_	30.8	_	53.2	_	118	_
Total Organic Carbon	mg/L	_								1		13.6	1		18.0		3.78		3.20	

		Site Location				· · · · · · · · · · · · · · · · · · ·		Brown McDade P	'it	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·				· · · · · · · · · · · · · · · · · · ·		Pony Creek		· · · · · · · · · · · · · · · · · · ·			Seepage Dam	
		Sample ID	CH-P-13-01/10	CH-P-13-03/50	CH-P-13-04/10	CH-P-13-04/35	CH-P-13-05/50	GLL07-01	GLL07-02	GLL07-03	MW09-13	MW09-14	MW09-15	GSI-PC-02B	GSI-PC-03B	GSI-PC-04B	GSI-PC-05B	MP09-02	MP09-03	MP09-08	W14103083BH01	W14103083BH02	2 W14103083BH0
		Date Sampled	25/05/2016	25/05/2016	25/05/2016	25/05/2016	25/05/2016	25/05/2016	27/05/2016	25/05/2016	25/05/2016	25/05/2016	25/05/2016	27/05/2016	27/05/2016	27/05/2016	27/05/2016	27/05/2016	27/05/2016	27/05/2016	25/05/2016	25/05/2016	25/05/2016
		ALS Work Number		L1774699											L1775300					L1775300			
		Station Status	Frozen	Direct Sample	Frozen	Frozen	Not Accessible	Frozen	Dry	Not Accessible	Frozen	Frozen	Frozen	Destroyed	Direct Sample	Frozen	Frozen	Destroyed	Frozen	Good	Frozen	Frozen	Frozen
Parameter	Units	CCME-FAL <sup>1, 2, 3, 4</sup>																					
Physical Tests																							
_ab pH	pH units	6.5-9.0 <sup>5</sup>	-	7.98	-	-	-	-	-	-	-	-	-	-	8.12	-	-	-	-	7.53	-	-	-
Field pH	pH units	6.5-9.0 <sup>5</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.89	-	-	-
Field Temperature	С	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.41	-	-	-
Lab Conductivity	uS/cm	-	-	3300	-	-	-	-	-	-	-	-	-	-	3920	-	-	-	-	726	-	-	-
Field Conductivity	uS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	405	-	-	-
Field Specific Conductivity	uS/cm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	712	-	-	-
Total Hardness (as CaCO3)	mg/L	-	-	1760	-	-	-	-	-	-	-	-	-	-	2790	-	-	-	-	413	-	-	-
Field Dissolved Oxygen	mg/L	9.5 <sup>6</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.06		-	-
Field Oxidation - Redox Potent	mV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-22.6	-	-	-
Field Turbidity	NTU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.85	-	-	-
Anions and Nutrients																							
Alkalinity, Total (CaCO3)	mg/L	-	-	374	-	-	-	-	-	-	-	-	-	-	900					225	-	-	-
Alkalinity, Total (CaCO3, filtered)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia, Total (as N)	mg/L	Varies 7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0318	-	-	-
Ammonia CCME-FAL	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.33	-	-	-
Chloride (CI)	mg/L	-	-	30.2	-	-	-	-	-	-	-	-	-	-	<10	-	-	-	-	<0.50	-	-	-
Fluoride (F)	mg/L	0.12	-	<0.20	-	-	-	-	-	-	-	-	-	-	<0.40	-	-	-	-	0.077	-	-	-
Nitrate (as N)	mg/L	13	-	0.964	-	-	-	-	-	-	-	-	-	-	<0.10	-	-	-	-	<0.0050	-	-	-
Nitrite (as N)	mg/L	0.06	-	0.016	-	-	-	-	-	-	-	-	-	-	<0.020	-	-	-	-	<0.0010	-	-	-
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.233	-	-	-
Sulfate (SO4)	mg/L	-	-	1550	-	-	-	-	-	-	-	-	-	-	2030	-	-	-	-	172	-	-	-
Field Sulphide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.14	-	-	-
Anion Sum	meq/L	-	-	-	-	-	-	-	-	-	-	-	-	-	60.3	-	-	-	-	8.08	-	-	-
Cation Sum	meq/L	-	-	-	-	-	-	-	-	-	-	-	-	-	62.0	-	-	-	-	8.65	-	-	-
Cation - Anion Balance	%	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3	-	-	-	-	3.4	-	-	-
Cyanides																							
Cyanide, Total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0050	-	-	-	-	<0.0050	-	-	-
Cyanide, Free	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	<0.0050	-	-	-	-	<0.0050	-	-	-
Cyanide, Weak Acid Diss	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0050	-	-	-	-	<0.0050	-	-	-
Thiocyanate (SCN)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		<0.50	-	-	-
Organic/Inorganic Carbon																							
Total Inorganic Carbon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60.4	-	-	-
Total Organic Carbon	mg/L	_	_	_	_	_	_	_	_	_	_	_	1 _	_	_	_	_	_	_	5.99	_	_	_

		Site Location											Tailings Facility	,									
		Sample ID	MP09-04	MP09-05	MP09-09	MP09-10	MP09-11	MP09-12	MP09-14	MW09-02	MW09-03	MW09-04	MW09-05	MW09-06	MW09-07	MW09-08	MW09-11	MW09-20	MW09-21	MW09-22	MW09-23	MW09-24	W14103083BH03
		Date Sampled	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	25/05/2016	26/05/2016	25/05/2016	25/05/2016	26/05/2016	27/05/2016	26/05/2016	25/05/2016	26/05/2016
		ALS Work Number	L1774699	L1774699					L1775300	L1774699	L1774699	L1774699		L1774699		L1774699				L1775300	L1774699	L1774699	
		Station Status	Good	Good	Frozen	Frozen	Frozen	Frozen	Direct Sample	Good	Good	Good	Dry	Good	Dry	Good	Dry	Dry	Frozen	Direct Sample	Good	Good	Frozen
Parameter	Units	CCME-FAL <sup>1, 2, 3, 4</sup>																					
Physical Tests																							
Lab pH	pH unit		8.06	7.51	-	-	-	-	-	7.45	8.08	8.13	-	8.08	-	6.77	-	-	-	7.03	8.02	8.08	-
Field pH	pH unit	s 6.5-9.0 <sup>5</sup>	6.93	6.79	-	-	-	-	-	7.22	8.5	8.32	-	7.11	-	6.65	-	-	-		6.98	7.41	-
Field Temperature	С	-	2.10	1.5	-	-	-	-	-	2.53	4.21	3.50	-	3.3	-	1.87	-	-	-		0.5	2.06	-
Lab Conductivity	uS/cm	-	1240	1990	-	-	-	-	-	2510	2610	2570	-	1960	-	487	-	-	-	937	1590	1020	-
Field Conductivity	uS/cm	-	691	1169	-	-	-	-	-	1387	1519	1479	-	1144	-	373	-	-	-		865	572	-
Field Specific Conductivity	uS/cm	-	1229	2121	-	-	-	-	-	2425	2519	2509	-	1957	-	669	-	-	-		1624	1012	-
Total Hardness (as CaCO3)	mg/L	-	755	1150	-	-	-	-	144	1520	1650	1600	-	1220	-	245	-	-	-	471	955	661	-
Field Dissolved Oxygen	mg/L	9.5 <sup>6</sup>	4.89	0.83	-	-	-	-	-	0.39	0.32	0.18	-	0.52		0.51	-	-	-		2.72	4.33	-
Field Oxidation - Redox Potent	mV	-	214.1	-32.4	-	-	-	-	-	-87.2	-96.9	7.6	-	118.2	-	-59.2	-	-	-		-28.7	141.1	-
Field Turbidity	NTU	-	2.1	2.66	-	-	-	-	-	11.83	1.61	0.21	-	24.7	-	3.94	-	-	-		50.5	27.4	-
Anions and Nutrients																							
Alkalinity, Total (CaCO3)	mg/L	-	167	252	-	-	-	-	-	70.1	111	116	-	189	-	171	-	-	-	165	395	239	-
Alkalinity, Total (CaCO3, filtered)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia, Total (as N)	mg/L	Varies 7	<0.0050	8.39	-	-	-	-	-	7.35	6.18	7.04		0.300	-	2.64	-	-	-	0.702	2.69	0.0119	-
Ammonia CCME-FAL	mg/L	-	22.76	33.02	-	-	_	-	-	11.28	0.5336	0.8445	-	13.63	-	44.20	-	-	-		23.19	7.576	-
Chloride (CI)	mg/L	-	<1.0	<2.5	-	-	-	-	-	<2.5	<5.0	<5.0	-	<2.5	-	<0.50	-	-	-	<1.0	<2.5	<1.0	-
Fluoride (F)	mg/L	0.12	<0.040	<0.10	-	-	-	-	-	0.54	0.30	0.32		0.23		0.124	-	-	-	0.046	0.12	<0.040	-
Nitrate (as N)	mg/L	13	0.797	0.050	-	-	-	-	-	0.153	0.452	0.050	-	0.703	-	<0.0050	-	-	-	0.330	<0.025	1.91	-
Nitrite (as N)	mg/L	0.06	<0.0020	<0.0050	-	-	-	-	-	<0.0050	0.075	0.027	-	0.0496	-	<0.0010	-	-	-	0.0188	<0.0050	0.0020	-
Total Kjeldahl Nitrogen	mg/L	-	0.229	9.48	-	-	-	-	-	8.08	5.66	7.04	-	0.870	-	3.02	-	-	-	2.45	3.38	0.539	-
Sulfate (SO4)	mg/L	-	541	949	-	-	-	-	-	1440	1450	1340	-	996	-	91.9	-	-	-	343	592	331	-
Field Sulphide	mg/L	-	0.01	0.01	-	-	-	-	-	0.05	0.02	0	-	0.07	-	0.11	-	-	-			0.14	-
Anion Sum	meq/L	-	14.7	24.8	_	_	_	-	_	31.3	32.6	30.2	_	24.6	_	5.33	_	_	_		20.2	11.8	_
Cation Sum	meq/L	-	15.5	28.6	_	_	_	_	_	34.4	35.9	34.8	_	25.7	-	9.78	_	_	_		21.7	13.6	_
Cation - Anion Balance	%	-	2.7	7.1	_	_	_	_	_	4.6	4.9	7.2	_	2.3	-	29.5	_	_	_		3.6	7.1	_
Cyanides																							
Cyanide, Total	mg/L	-	0.0084	0.0078	-	_	_	_	_	<0.020	0.0142	<0.0050	-	<0.0050	_	<0.0050	_	_	_	0.0177	0.114	<0.0050	-
Cyanide, Free	mg/L	0.005	<0.0050	<0.0050	-	_	_	_	_	<0.010	<0.0050	<0.0050	_	<0.0050	_	<0.0050	_	_	_	<0.0050	<0.0050	<0.0050	_
Cyanide, Weak Acid Diss	mg/L	-	<0.0050	0.0051	-	_	_	_	_	<0.010	0.0054	<0.0050	_	<0.0050	_	<0.0050	_	_	_	<0.0050	<0.0050	<0.0050	_
Thiocyanate (SCN)	mg/L	_	<0.50	0.70	_	_	_	_	_	<0.50	<0.50	<0.50	_	<0.50	_	0.72	_	_	_	<0.50	0.54	<0.50	_
Organic/Inorganic Carbon			3.00		1	1			1	3.00	3.00	3.00	1	3.00				1		3.00	2.0.	0.00	
Total Inorganic Carbon	mg/L	_	42.5	72.1	_	_	_	_	_	17.6	23.4	24.6	_	47.2	_	59.9	_	_	_	59.2	101	59.6	_
Total Organic Carbon	mg/L		5.83	22.4					1	6.42	6.41	5.95	1	6.12		18.3		1		18.5	19.7	8.88	1

		Site Location					Dome Creek									Mill Complex				
		Sample ID	GSI-DC-01B	GSI-DC-02B	GSI-DC-03B	GSI-DC-05B	GSI-DC-06B	GSI-DC-07B	GSI-DC-08B	GSI-DC-09B	GSI-DC-10B	GSI-HA-01A	GSI-HA-02A	GSI-HA-03A	GSI-HA-04A 13	GSI-HA-05A	MW09-16	MW09-17	MW09-18	MW09-19
		Date Sampled	25/05/2016	25/05/2016	25/05/2016	25/05/2016	26/05/2016	27/05/2016	27/05/2016	27/05/2016	27/05/2016	25/05/2016	25/05/2016	25/05/2016	25/05/2016	25/05/2016	24/05/2016	25/05/2016	25/05/2016	25/05/2016
		ALS Work Number										L1774699			L1775300		L1774699		L1774699	
		Station Status	Frozen	Direct Sample	Frozen	Frozen	Direct Sample	Frozen	Good	Frozen	Good	Frozen								
Parameter	Units																			
Dissolved Metals																				
Aluminum (Al)-Dissolved	mg/L	Varies 8	_	-	_	_	-	-	-	-	-	0.0030	-	_	0.0232	_	<0.0020	_	<0.0020	-
Aluminum CCME-FAL	mg/L	-	-	-	-	_	-	_	-	-	_	0.1	-	-	0.1	-	0.1	-	0.1	-
Antimony (Sb)-Dissolved	mg/L	-	-	-	-	-	-	-	-	-	-	0.00015	-	-	0.00090	-	0.0891	-	0.00035	-
Arsenic (As)-Dissolved	mg/L	0.005	-	-	-	-	-	-	-	-	-	0.00534	-	-	0.0249	-	0.0244	-	0.0490	-
Barium (Ba)-Dissolved	mg/L	-	-	-	-	-	-	-	-	-	-	0.126	-	-	0.0531	-	0.0149	-	0.00851	-
Beryllium (Be)-Dissolved	mg/L	-	-	-	-	-	-	-	-	-	-	<0.000020	-	-	<0.000020	-	<0.000040	-	<0.000040	-
Bismuth (Bi)-Dissolved	mg/L	-	-	-	-	-	-	-	-	-	-	<0.000050	-	-	<0.000050	-	<0.00010	-	<0.00010	-
Boron (B)-Dissolved	mg/L	1.5	-	-	-	-	-	-	-	-	-	<0.010	-	-	<0.010	-	0.051	-	<0.020	-
Cadmium (Cd)-Dissolved	mg/L	Varies 9	-	-	-	-	-	-	-	-	-	0.0000066	-	-	0.0000330	-	0.0503	-	0.000048	-
Cadmium CCME-FAL	mg/L	-	-	-	-	-	-	-	-	-	-	0.00037	-	-	0.00035	-	0.00037	-	0.00037	-
Calcium (Ca)-Dissolved	mg/L	-	-	-	-	-	-	-	-	-	-	136	-	-	67.0	-	320	-	332	-
Chromium (Cr)-Dissolved	mg/L	-	-	-	-	-	-	-	-	-	-	0.00438	-	-	0.00114	-	<0.00020	-	<0.00020	-
Cobalt (Co)-Dissolved	mg/L	-	-	-	-	-	-	-	-	-	-	0.00022	-	-	0.00025	-	0.00402	-	<0.00020	-
Copper (Cu)-Dissolved	mg/L	Varies 10	-	-	-	-	-	-	-	-	-	0.00044	-	-	0.00164	-	0.00575	-	<0.00040	-
Copper CCME-FAL	mg/L	-	-	-	-	-	-	-	-	-	-	0.004	-	-	0.004	-	0.004	-	0.004	-
Iron (Fe)-Dissolved	mg/L	0.3	-	-	-	-	-	-	-	-	-	5.07	-	-	1.80	-	0.023	-	0.014	-
Lead (Pb)-Dissolved	mg/L	Varies 11	-	-	-	-	-	-	-	-	-	0.000095	-	-	0.000315	-	0.00502	-	<0.00010	-
Lead CCME-FAL	mg/L	-	-	-	-	-	-	-	-	-	-	0.007	-	-	0.007	-	0.007	-	0.007	-
Lithium (Li)-Dissolved	mg/L	-	-	-	-	-	-	-	-	-	-	0.0061	-	-	0.0020	-	0.0099	-	0.0228	-
Magnesium (Mg)-Dissolved	mg/L	-	-	-	-	-	-	-	-	-	-	45.9	-	-	23.1	-	143	-	254	-
Manganese (Mn)-Dissolved	mg/L	-	-	-	-	-	-	-	-	-	-	0.118	-	-	1.24	-	0.943	-	0.352	-
Mercury (Hg)-Dissolved	mg/L	0.000026	-	-	-	-	-	-	-	-	-	<0.0000050	-	-	<0.0000050	-	0.0000053	-	<0.0000050	-
Molybdenum (Mo)-Dissolved	mg/L	0.073	-	-	-	-	-	-	-	-	-	0.000456	-	-	0.000770	-	0.00024	-	<0.00010	-
Nickel (Ni)-Dissolved	mg/L	Varies 12	-	-	-	-	-	-	-	-	-	0.00360	-	-	0.00172	-	0.0061	-	<0.0010	-
Nickel CCME-FAL	mg/L	-	-	-	-	-	-	-	-	-	-	0.15	-	-	0.15	-	0.15	-	0.15	-
Phosphorus (P)-Dissolved	mg/L	-	-	-	-	-	-	-	-	-	-	<0.050	-	-	<0.050	-	<0.050	-	<0.050	-
Potassium (K)-Dissolved	mg/L	0.001	-	-	-	-	-	-	-	-	-	3.53	-	-	2.24	-	6.59	-	7.81	-
Selenium (Se)-Dissolved	mg/L	0.001	-	-	-	-	-	-	-	-	-	<0.000050	-	-	0.000061	-	<0.00010	-	0.00084	-
Silicon (Si)-Dissolved	mg/L	-	-	-	-	-	-	-	-	-	-	6.24	-	-	4.66	-	4.34	-	4.65	-
Silver (Ag)-Dissolved	mg/L	0.0001	-	-	-	-	-	-	-	-	-	<0.000010	-	-	<0.000010	-	0.000064	-	<0.000020	-
Sodium (Na)-Dissolved	mg/L	-	-	-	-	-	-	-	-	-	-	4.53	-	-	2.79	-	7.08	-	11.4	-
Strontium (Sr)-Dissolved	mg/L	-	_	-	-	-	-	-	-	-	-	0.315	-	-	0.165	-	0.706	-	1.03	-
Sulfur (S)-Dissolved	mg/L	-	-	-	-	-	-	-	-	-	-	88.7	-	-	38.9	-	389	-	466	-
Thallium (TI)-Dissolved	mg/L	0.0008	-	-	-	-	-	-	-	-	-	<0.000010	-	-	<0.000010	-	0.000423	-	0.000290	-
Tin (Sn)-Dissolved	mg/L	-	-	-	-	-	-	-	-	-	-	<0.00010	-	-	<0.00010	-	<0.00020	-	<0.00020	-
Titanium (Ti)-Dissolved	mg/L	-	-	-	-	-	-	-	-	-	-	0.00034	-	-	0.00095	-	<0.00060	-	<0.00060	-
Uranium (U)-Dissolved	mg/L	0.015	_	_	_	-	-	_	-	-	-	0.000043	_	-	0.000367	-	0.00261	-	0.00702	-
Vanadium (V)-Dissolved	mg/L	-	_	_	_	-	-	_	-	-	-	<0.00050	_	-	0.00084	-	<0.0010	_	<0.0010	-
Zinc (Zn)-Dissolved	mg/L	0.03	_	_	_	-	-	_	-	-	-	0.0033	-	-	0.0037	-	6.94	-	0.0023	-
Zirconium (Zr)-Dissolved	mg/L	-	_	_	_	_	_	_	_	_	_	<0.00030	_	_	<0.00030	_	<0.00060	_	<0.00060	_

		Site Location						Brown McDade Pi									Pony Creek				1	Seepage Dam	
		Sample ID	CH-P-13-01/10	CH-P-13-03/50	CH-P-13-04/10	CH-P-13-04/35	CH-P-13-05/50	GLL07-01	GLL07-02	GLL07-03	MW09-13	MW09-14	MW09-15	GSI-PC-02B	GSI-PC-03B	GSI-PC-04B	GSI-PC-05B	MP09-02	MP09-03	MP09-08	W14103083BH01	W14103083BH02	2 W14103083BH04
					<b>†</b>		+			_										<b>-</b>	-		
		Date Sampled	25/05/2016	25/05/2016	25/05/2016	25/05/2016	25/05/2016	25/05/2016	27/05/2016	25/05/2016	25/05/2016	25/05/2016	25/05/2016	27/05/2016	27/05/2016	27/05/2016	27/05/2016	27/05/2016	27/05/2016	27/05/2016	25/05/2016	25/05/2016	25/05/2016
		ALS Work Number		L1774699			N							<b>—</b>	L1775300			5		L1775300			<del></del>
Dama markan	Linita	Station Status  CCME-FAL <sup>1, 2, 3, 4</sup>	Frozen	Direct Sample	Frozen	Frozen	Not Accessible	Frozen	Dry	Not Accessible	Frozen	Frozen	Frozen	Destroyed	Direct Sample	Frozen	Frozen	Destroyed	Frozen	Good	Frozen	Frozen	Frozen
Parameter	Units	CCIVIE-FAL	-																				+
Dissolved Metals	//	Varies 8		0.0054											0.0045					0.0040			
Aluminum (Al)-Dissolved  Aluminum CCME-FAL	mg/L	varies	-	0.0051	-	-	-	-	-	-	-	-	-	-	0.0315	-	-	-	-	0.0046	-	-	-
Antimony (Sb)-Dissolved	mg/L mg/L		-	0.00032	_	_	_	-	_	_	-	_	-	_	0.00296	-	-	-	-	<0.00010	-	-	_
Arsenic (As)-Dissolved	mg/L	0.005	-	0.00032	-	-	-	-	-	_	-	-	-	-	0.00290	_	-	-	_	0.0148		-	_
Barium (Ba)-Dissolved		-	-	0.00079	-	-	-	-	_	_	-	-	_	-	0.0074	_	-	-	_	0.0146	1	-	_
Beryllium (Be)-Dissolved	mg/L mg/L		-	<0.000040	-	-	-	-	-	_	-	-	-		<0.000040	-	-	-	-	<0.000020	_	-	_
Bismuth (Bi)-Dissolved	mg/L	-	-	<0.000040	-	-	-		_	_	-	-	-	-	<0.00010	-	-	-	_	<0.000020	_	-	_
Boron (B)-Dissolved		1.5	-	0.026	-	-	-	-	-		-	-		_	0.036	-	-	-	_	<0.000	_	-	_
Cadmium (Cd)-Dissolved	mg/L mg/L	Varies 9	-	0.0026	_	_	] <u> </u>	-	_		1 -	-	-	_	0.036	-	-	1 -	-	<0.010	1	-	-
Cadmium (Cd)-Dissolved  Cadmium CCME-FAL	mg/L mg/L	100	-	0.000256	_	_	] <u> </u>	-	1 -	1	1 -	_	-	-	0.000135	Ī .	_	1 -	_	0.00037	1	-	_
Calcium (Ca)-Dissolved	mg/L		_	438	_	_		-	1	-	1	_	_	_	125		_	_	-	114	-	-	-
Chromium (Cr)-Dissolved			-	<0.00020	-	-	-	-	-	-	-	-	-		0.0290	-	-	-	-	<0.00010	-	-	-
Cobalt (Co)-Dissolved	mg/L mg/L	-	-	0.00020	-	-	-	-	-	_	-	-	-	-	0.00579	-	-	-	_	0.00010	_	-	_
Copper (Cu)-Dissolved	mg/L	Varies 10	-	0.00007	-	-	-	-	_	_	-	_	-	_	0.00579	-	-	-	_	<0.00020	_	-	_
Copper CCME-FAL	mg/L	Valled	-	0.004	-	-	-	-	-	_	-	-	-	_	0.00341	-	-	-	-	0.00020	_	-	_
Iron (Fe)-Dissolved	mg/L	0.3	_	0.004	_		_	-	_	_	_	_	_	_	7.28	_	_	_	_	1.11			
Lead (Pb)-Dissolved	mg/L	Varies 11	_	<0.00010				-	_					_	0.00080	_			_	<0.000050			
Lead CCME-FAL	mg/L	-		0.007		_		_	_				_	_	0.007					0.007			
Lithium (Li)-Dissolved	mg/L	_	_	0.0029	_	_	_	_	_		_	_	_	_	0.0469	_	_	_	-	0.0036		_	
Magnesium (Mg)-Dissolved	mg/L	_	_	163	_	_	_	_	_	_	_	_	-	_	603	_	_	_	-	30.9		_	
Manganese (Mn)-Dissolved	mg/L	_	_	0.318	_	_	_	-	_	_	_	_	-	_	2.10	_	_	_	_	0.804	_	_	_
Mercury (Hg)-Dissolved	mg/L	0.000026	_	<0.0000050	_	_	_	-	_	_	_	_	-	_	<0.000050	_	_	_	_	<0.0000050	_	_	_
Molybdenum (Mo)-Dissolved	mg/L	0.073	_	0.00069	_	_	_	-	_	_	_	_	-	_	0.0153	_	_	_	_	0.000406	_	-	_
Nickel (Ni)-Dissolved	mg/L	Varies 12	_	0.0199	_	_	_	-	_	_	_	_	-	_	0.0743	_	_	_	_	<0.00050	_	-	_
Nickel CCME-FAL	mg/L	-	_	0.15	_	_	_	_	_	_	_	_	-	_	0.15	-	_	_	_	0.15	_	_	_
Phosphorus (P)-Dissolved	mg/L	-	_	<0.050	_	_	_	_	_	_	_	_	-	_	<0.050	-	_	-	_	<0.050	_	-	_
Potassium (K)-Dissolved	mg/L	0.001	_	11.8	_	_	_	-	_	_	_	_	-	_	24.6	_	-	_	-	1.12	_	-	_
Selenium (Se)-Dissolved	mg/L	0.001	-	0.00717		-	_	-	_	-	_	_	-	-	0.00039	-	-	-	-	0.000100	-	-	-
Silicon (Si)-Dissolved	mg/L	-	-	6.10	-	-	_	-	_	-	_	_	-	-	8.84	-	-	-	-	7.39	-	-	-
Silver (Ag)-Dissolved	mg/L	0.0001	-	<0.000020	-	-	-	-	-	-	-	-	-	-	<0.000020	-	-	-	-	<0.000010	-	-	-
Sodium (Na)-Dissolved	mg/L	-	-	203	-	-	-	-	-	-	-	-	-	-	117	-	-	-	-	6.32	-	-	-
Strontium (Sr)-Dissolved	mg/L	-	-	1.24	-	-	-	-	-	-	-	-	-	-	2.18	-	-	-	-	1.15	-	-	-
Sulfur (S)-Dissolved	mg/L	-	-	554	-	-	-	-	-	-	-	-	-	-	629	-	-	-	-	59.6	-	-	-
Thallium (TI)-Dissolved	mg/L	0.0008	-	0.000087	-	-	-	-	-	-	-	-	-	-	<0.000020	-	-	-	-	<0.000010	-	-	-
Tin (Sn)-Dissolved	mg/L	-	-	0.00281	-	-	-	-	-	-	-	-	-	-	0.00025	-	-	-	-	<0.00010	-	-	-
Titanium (Ti)-Dissolved	mg/L	-	-	<0.00060	-	-	-	-	-	-	-	-	-	-	0.00336	-	-	-	-	<0.00030	-	-	-
Uranium (U)-Dissolved	mg/L	0.015	-	0.0124	-	-	-	-	-	-	-	-	-	-	0.0239	-	-	-	-	0.00246	-	-	-
Vanadium (V)-Dissolved	mg/L	-	-	<0.0010	-	-	-	-	-	-	-	-	-	-	0.0033	-	-	-	-	<0.00050	-	-	-
Zinc (Zn)-Dissolved	mg/L	0.03	-	0.0159	-	-	-	-	-	-	-	-	-	-	0.0376	-	-	-	-	0.0026	-	-	-
Zirconium (Zr)-Dissolved	mg/L	-	-	<0.00060	-	-	_	-	_	-	-	-	-	-	0.00114	-	-	-	-	<0.00030	-	-	-

		Site Location											Tailings Facility	,									
		Sample ID	MP09-04	MP09-05	MP09-09	MP09-10	MP09-11	MP09-12	MP09-14	MW09-02	MW09-03	MW09-04	MW09-05	MW09-06	MW09-07	MW09-08	MW09-11	MW09-20	MW09-21	MW09-22	MW09-23	MW09-24	W14103083BH03
		Date Sampled	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	25/05/2016	26/05/2016	25/05/2016	25/05/2016	26/05/2016	27/05/2016	26/05/2016	25/05/2016	26/05/2016
		ALS Work Number	L1774699	L1774699	20/00/2010	20/00/2010	20,00,2010	20,00,2010	L1775300	L1774699	L1774699	L1774699	20,00,2010	L1774699	20/00/2010	L1774699	20,00,2010	20/00/2010	20,00,2010	L1775300	L1774699	L1774699	20,00,2010
		Station Status	Good	Good	Frozen	Frozen	Frozen	Frozen	Direct Sample	Good	Good	Good	Dry	Good	Dry	Good	Dry	Dry	Frozen	Direct Sample	Good	Good	Frozen
Parameter	Units	CCME-FAL <sup>1, 2, 3, 4</sup>	0000	3553	1102011	1102011	1102011	1102011	Birock Gampio	3333	3333	3000	2.,	5554	2.,	0000	2.,	5.,	1102011	Birot campio	0000	5554	1102011
Dissolved Metals	-																						
Aluminum (AI)-Dissolved	mg/L	Varies 8	0.0024	0.0243	_	-	_	_	0.0021	<0.0050	<0.0050	0.0027	-	<0.0020	-	0.0607	-	_	_	0.0275	0.0230	0.0271	_
Aluminum CCME-FAL	mg/L	-	0.1	0.1	-	-	-	-	-	0.1	0.1	0.1	-	0.1	-	0.1	_	_	-	0.1	0.1	0.1	_
Antimony (Sb)-Dissolved	mg/L	-	0.00138	0.00031	-	-	-	-	0.00481	0.00401	0.401	0.339	-	0.201	-	0.00024	-	-	-	0.00031	<0.00050	0.00019	-
Arsenic (As)-Dissolved	mg/L	0.005	0.00061	0.0230	-	-	-	-	0.809	8.95	2.08	3.55	-	0.108	-	0.208	-	-	-	0.00206	0.0283	0.00135	-
Barium (Ba)-Dissolved	mg/L	-	0.0735	0.0410	-	-	-	-	0.0237	0.00462	0.0176	0.00857	-	0.00531	-	0.238	-	-	-	0.0829	0.0490	0.0928	-
Beryllium (Be)-Dissolved	mg/L	-	<0.000020	<0.000040	-	-	-	-	<0.000020	<0.00010	<0.00010	<0.000040	-	<0.000040	-	0.000021	-	-	-	<0.000020	<0.00010	<0.000020	-
Bismuth (Bi)-Dissolved	mg/L	-	<0.000050	<0.00010	-	-	-	-	<0.000050	<0.00025	<0.00025	<0.00010	-	<0.00010	-	<0.000050	-	-	-	<0.000050	<0.00025	<0.000050	-
Boron (B)-Dissolved	mg/L	1.5	0.012	0.052	-	-	-	-	0.020	0.058	0.172	0.204	-	0.100	-	<0.010	-	-	-	0.029	0.062	0.014	-
Cadmium (Cd)-Dissolved	mg/L	Varies 9	0.0000462	0.000149	-	-	-	-	0.0000467	0.000917	0.00181	0.000023	-	0.00720	-	0.0000053	-	-	-	0.0000550	<0.000025	0.0000653	-
Cadmium CCME-FAL	mg/L	-	0.00037	0.00037	-	-	-	-	0.00021	0.00037	0.00037	0.00037	-	0.00037	-	0.00033	-	-	-	0.00037	0.00037	0.00037	-
Calcium (Ca)-Dissolved	mg/L	-	180	330	-	-	-	-	44.7	477	493	482	-	389	-	73.7	-	-	-	167	252	194	-
Chromium (Cr)-Dissolved	mg/L	-	0.00024	0.00048	-	-	-	-	0.00015	<0.00050	<0.00050	<0.00020	-	<0.00020	-	0.00070	-	-	-	0.00047	<0.00050	0.00033	-
Cobalt (Co)-Dissolved	mg/L	-	0.00043	0.0153	-	-	-	-	0.00040	0.00995	0.00156	0.00086	-	0.00191	-	0.00161	-	-	-	0.00884	0.0130	0.00012	-
Copper (Cu)-Dissolved	mg/L	Varies 10	0.00250	0.00099	-	-	-	-	0.00043	<0.0010	0.0047	<0.00040	-	0.0104	-	<0.00020	-	-	-	0.00348	<0.0010	0.00579	-
Copper CCME-FAL	mg/L	-	0.004	0.004	-	-	-	-	0.00323	0.004	0.004	0.004	-	0.004	-	0.004	-	-	-	0.004	0.004	0.004	-
Iron (Fe)-Dissolved	mg/L	0.3	<0.010	50.9	-	-	-	-	0.600	15.4	0.036	<0.010	-	<0.010	-	80.0	-	-	-	0.936	18.0	<0.010	-
Lead (Pb)-Dissolved	mg/L	Varies 11	<0.000050	<0.00010	-	-	-	-	0.000650	<0.00025	0.00061	0.00045	-	0.00036	-	0.000086	-	-	-	0.000081	<0.00025	<0.000050	-
Lead CCME-FAL	mg/L	-	0.007	0.007	-	-	-	-	0.00506	0.007	0.007	0.007	-	0.007	-	0.007	-	-	-	0.007	0.007	0.007	-
Lithium (Li)-Dissolved	mg/L	-	<0.0010	<0.0020	-	-	-	-	0.0022	0.0120	<0.0050	0.0120	-	0.0123	-	<0.0010	-	-	-	<0.0010	<0.0050	0.0011	-
Magnesium (Mg)-Dissolved	mg/L	-	74.1	78.1	-	-	-	-	7.83	79.0	101	95.6	-	59.0	-	14.7	-	-	-	13.0	79.2	42.9	-
Manganese (Mn)-Dissolved	mg/L	-	0.00046	10.1	-	-	-	-	0.115	19.8	19.5	7.76	-	3.04	-	6.89	-	-	-	3.49	22.4	0.0275	-
Mercury (Hg)-Dissolved	mg/L	0.000026	<0.0000050	<0.0000050	-	-	-	-	-	<0.0000050	<0.0000050	<0.0000050	-	0.0000167	-	<0.0000050	-	-	-	<0.0000050	<0.0000050	<0.0000050	-
Molybdenum (Mo)-Dissolved	mg/L	0.073	0.000212	0.00067	-	-	-	-	0.000727	0.00684	0.00554	0.00384	-	0.00163	-	0.000107	-	-	-	0.000195	0.00221	0.000270	-
Nickel (Ni)-Dissolved	mg/L	Varies 12	<0.00050	0.0052	-	-	-	-	0.00523	<0.0025	<0.0025	<0.0010	-	0.0033	-	<0.00050	-	-	-	0.00127	<0.0025	<0.00050	-
Nickel CCME-FAL	mg/L	-	0.15	0.15	-	-	-	-	0.126	0.15	0.15	0.15	-	0.15	-	0.15	-	-	-	0.15	0.15	0.15	-
Phosphorus (P)-Dissolved	mg/L	-	<0.050	<0.050	-	-	-	-	<0.050	<0.050	0.060	0.082	-	<0.050	-	0.110	-	-	-	<0.050	<0.050	<0.050	-
Potassium (K)-Dissolved	mg/L	0.001	1.89	8.70	-	-	-	-	9.49	32.4	29.6	42.2	-	19.3	-	1.92	-	-	-	3.01	6.83	1.90	-
Selenium (Se)-Dissolved	mg/L	0.001	0.000181	0.00017	-	-	-	-	<0.000050	<0.00025	<0.00025	<0.00010	-	0.00022	-	0.000096	-	-	-	0.000148	<0.00025	0.000840	-
Silicon (Si)-Dissolved	mg/L	-	5.68	5.49	-	-	-	-	0.932	7.24	12.8	15.6	-	8.35	-	10.7	-	-	-	4.35	6.56	7.38	-
Silver (Ag)-Dissolved	mg/L	0.0001	<0.000010	<0.000020	-	-	-	-	<0.000010	<0.000050	<0.000050	0.000054	-	0.000120	-	<0.000010	-	-	-	0.000019	<0.000050	<0.000010	-
Sodium (Na)-Dissolved	mg/L	-	8.02	41.2	-	-	-	-	4.80	27.3	24.8	24.3	-	18.6	-	2.36	-	-	-	22.5	11.5	7.63	-
Strontium (Sr)-Dissolved	mg/L	-	0.594	1.01	-	-	-	-	0.158	0.848	1.35	1.23	-	0.880	-	0.319	-	-	-	0.448	0.621	0.623	-
Sulfur (S)-Dissolved	mg/L	-	187	328	-	-	-	-	31.4	517	531	512	-	348	-	32.0	-	-	-	108	202	122	-
Thallium (TI)-Dissolved	mg/L	0.0008	<0.000010	<0.000020	-	_	-	-	<0.000010	0.000199	0.000085	0.000116	-	0.000240	-	<0.000010	_	-	-	<0.000010	<0.000050	<0.000010	-
Tin (Sn)-Dissolved	mg/L	-	<0.00010	<0.00020	-	-	-	-	<0.00010	<0.00050	<0.00050	<0.00020	-	<0.00020	-	<0.00010	-	-	-	<0.00010	<0.00050	<0.00010	-
Titanium (Ti)-Dissolved	mg/L	- 0.045	<0.00030	0.00094	-	-	-	-	<0.00030	<0.0015	<0.0015	<0.00060	-	<0.00060	-	0.00275	-	-	-	0.00069	<0.0015	<0.00030	-
Uranium (U)-Dissolved	mg/L	0.015	0.00214	0.00167	-	-	-	-	0.000129	0.00109	0.00127	0.000303	-	0.00176	-	0.000067	-	-	-	0.000684	0.00285	0.00259	-
Vanadium (V)-Dissolved	mg/L		<0.00050	0.0017	-	· -	· -	-	<0.00050	<0.0025	<0.0025	<0.0010	-	<0.0010	-	0.00238	· -	-	1 -	0.00053	<0.0025	<0.00050	-
Zinc (Zn)-Dissolved	mg/L	0.03	0.0024	0.0156	-	-	-	-	0.0059	0.213	0.0062	0.630	-	0.383	-	0.0038	· -	-	1 -	0.0020	0.0289	0.0055	- I
Zirconium (Zr)-Dissolved	mg/L	-	<0.00030	0.00079	-	-	-	-	<0.00030	<0.0015	<0.0015	<0.00060	-	<0.00060	-	0.00064	-	-	-	0.00031	<0.0015	<0.00030	-

#### Table B: QA/QC Analytical Data

		Site Location	MWG	19-16	<u> </u>	NAVA/	09-24		CH-P-13-03/50	Cert	PC-03B		MP09-05			MP09-08		Field Blank	Travel	l Blanks
		Sample ID	FB-1	MW09-16	FB-2	DUP-1	MW09-24		CH-P-13-03/50	FB-4	GSI-PC-03B	DUP-2	MP09-05	I	DUP-3	MP09-08		FB-3	TRAVEL BLANK	TRAVEL BLANK
		Date Sampled	24/05/2016	24/05/2016	25/05/2016	25/05/2016	25/05/2016		25/05/2016	27/05/2016	27/05/2016	26/05/2016	26/05/2016	†	27/05/2016	27/05/2016		26/05/2016	26/05/2016	27/05/2016
		ALS Work Number	L1774699	L1774699	L1774699	L1774699	L1774699	RPD (%) 14	L1774699	L1775300	L1775300	L1774699	L1774699	RPD (%) <sup>14</sup>	L1775300	L1775300	RPD (%) <sup>14</sup>	L1774699	L1774699	L1775300
		Station Status	Good	Good	Good	Good	Good	()	Direct Sample	Direct Sample	Direct Sample	Good	Good	(**/	Good	Good	()			
Parameter	Units	CCME-FAL <sup>1, 2, 3, 4</sup>																		
Physical Tests																				
Lab pH	pH units	6.5-9.0 <sup>5</sup>	5.47	7.44	5.28	8.15	8.08	0.86	7.98	5.41	8.12	7.41	7.51	1.34	7.45	7.53	1.07	5.34	5.34	5.47
Field pH	pH units	6.5-9.0 <sup>5</sup>	6.7	6.7	7.41	7.41	7.41	-	-	-	-	6.79	6.79	-	6.89	6.89	-	i -	-	-
Field Temperature	С	-	4.2	4.2	2.06	2.06	2.06	-	-	-	-	1.5	1.5	-	2.41	2.41	-	i -	-	-
Lab Conductivity	uS/cm	-	<2.0	2060	<2.0	1010	1020	0.99	3300	<2.0	3920	1990	1990	-	728	726	0.28	<2.0	<2.0	<2.0
Field Conductivity	uS/cm	-	1257	1257	572	572	572	-	-	-	-	1169	1169	-	405	405	-	-	-	-
Field Specific Conductivity	uS/cm	-	2086	2086	1012	1012	1012	-	-	-	-	2121	2121	-	712	712	-	-	-	-
Total Hardness (as CaCO3)	mg/L	-	<0.50	1390	<0.50	612	661	7.70	1760	<0.50	2790	1150	1150	-	414	413	0.24	<0.50	<0.50	<0.50
Field Dissolved Oxygen	mg/L	9.5 <sup>6</sup>	0.97	0.97	4.33	4.33	4.33	-	-	-	-	0.83	0.83	-	5.06	5.06	-	-	-	-
Field Oxidation - Redox Potent	mV	-	170.2	170.2	141.1	141.1	141.1	-	-	-	-	-32.4	-32.4	-	-22.6	-22.6	-	-	-	-
Field Turbidity	NTU	-	0.71	0.71	27.4	27.4	27.4	-	-	-	-	2.66	2.66	-	0.85	0.85	-	-	-	-
Anions and Nutrients																				
Alkalinity, Total (CaCO3)	mg/L	-	<1.0	195	<1.0	248	239	3.70	374	<1.0	900	252	252	-	225	225	-	<1.0	<1.0	<1.0
Alkalinity, Total (CaCO3, filtered)	mg/L	-	-	-	-	-	-	nc	-	-	-	-	-	nc	-	-	nc	-	-	-
Ammonia, Total (as N)	mg/L	Varies 7	<0.0050	0.0267	<0.0050	0.0164	0.0119	nc	-	<0.0050	-	9.33	8.39	10.61	0.0345	0.0318	8.14	<0.0050	0.0354	<0.0050
Ammonia CCME-FAL	mg/L	-	-	32.5	-	7.576	7.576	-	-	-	-	33.02	33.02	-	24.33	24.33	-	-	-	-
Chloride (CI)	mg/L	-	<0.50	<2.5	<0.50	<1.0	<1.0	nc	30.2	<0.50	<10	<2.5	<2.5	nc	0.75	<0.50	nc	<0.50	<0.50	<0.50
Fluoride (F)	mg/L	0.12	<0.020	0.13	<0.020	<0.040	<0.040	nc	<0.20	<0.020	<0.40	<0.10	<0.10	nc	0.088	0.077	13.33	<0.020	<0.020	<0.020
Nitrate (as N)	mg/L	13	<0.0050	<0.025	<0.0050	1.97	1.91	3.09	0.964	<0.0050	<0.10	0.059	0.050	16.51	<0.0050	<0.0050	nc	<0.0050	<0.0050	<0.0050
Nitrite (as N)	mg/L	0.06	<0.0010	<0.0050	<0.0010	<0.0020	0.0020	nc	0.016	<0.0010	<0.020	<0.0050	<0.0050	nc	<0.0010	<0.0010	nc	<0.0010	<0.0010	<0.0010
Total Kjeldahl Nitrogen	mg/L	-	<0.050	0.167	<0.050	0.468	0.539	14.10	-	<0.050	-	9.38	9.48	1.06	0.265	0.233	12.85	<0.050	<0.050	<0.050
Sulfate (SO4)	mg/L	-	<0.30	1100	<0.30	330	331	0.30	1550	<0.30	2030	940	949	0.95	172	172	-	<0.30	<0.30	<0.30
Field Sulphide	mg/L	-	0	0	-	0.14	0.14	-	-	-	-	0.01	0.01	-	0.14	0.14	-	-	-	-
Anion Sum	meq/L	-	<0.10	26.8	<0.10	12.0	11.8	1.68	-	<0.10	60.3	24.6	24.8	0.81	8.10	8.08	0.25	<0.10	<0.10	<0.10
Cation Sum	meq/L	-	<0.10	28.5	<0.10	12.6	13.6	7.63	-	<0.10	62.0	28.7	28.6	0.35	8.66	8.65	0.12	<0.10	<0.10	<0.10
Cation - Anion Balance	%	-	0.0	3.0	0.0	2.6	7.1	-	-	0.0	1.3	7.7	7.1	8.11	3.3	3.4	2.99	0.0	97.5	0.0
Cyanides							]											1		
Cyanide, Total	mg/L	-	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	nc	-	<0.0050	<0.0050	0.0098	0.0078	nc	<0.0050	<0.0050	nc	<0.0050	<0.0050	<0.0050
Cyanide, Free	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	nc	-	<0.0050	<0.0050	0.0063	<0.0050	nc	<0.0050	<0.0050	nc	<0.0050	<0.0050	<0.0050
Cyanide, Weak Acid Diss	mg/L	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	nc	-	<0.0050	<0.0050	0.0061	0.0051	17.86	<0.0050	<0.0050	nc	<0.0050	<0.0050	<0.0050
Thiocyanate (SCN)	mg/L	-	<0.50	<0.50	<0.50	<0.50	<0.50	nc	-	<0.50	-	0.86	0.70	nc	<0.50	<0.50	nc	<0.50	<0.50	<0.50
Organic/Inorganic Carbon																				
Total Inorganic Carbon	mg/L	-	<0.50	53.2	<0.50	58.1	59.6	2.55	-	<0.50	-	72.8	72.1	0.97	61.3	60.4	1.48	<0.50	<0.50	<0.50
Total Organic Carbon	mg/L	-	<0.50	3.78	<0.50	9.54	8.88	7.17	-	<0.50	-	23.9	22.4	6.48	6.18	5.99	3.12	<0.50	<0.50	<0.50

### Table B: QA/QC Analytical Data

		Site Location	MW	/09-16		MW	09-24		CH-P-13-03/50	GSI-F	PC-03B		MP09-05			MP09-08		Field Blank	Travel	Blanks
		Sample ID	FB-1	MW09-16	FB-2	DUP-1	MW09-24		CH-P-13-03/50	FB-4	GSI-PC-03B	DUP-2	MP09-05		DUP-3	MP09-08		FB-3	TRAVEL_BLANK	TRAVEL_BLANK
		Date Sampled	24/05/2016	24/05/2016	25/05/2016	25/05/2016	25/05/2016		25/05/2016	27/05/2016	27/05/2016	26/05/2016	26/05/2016		27/05/2016	27/05/2016	1	26/05/2016	26/05/2016	27/05/2016
		ALS Work Number	L1774699	L1774699	L1774699	L1774699	L1774699	RPD (%) <sup>14</sup>	L1774699	L1775300	L1775300	L1774699	L1774699	RPD (%) 14	L1775300	L1775300	RPD (%) <sup>14</sup>	L1774699	L1774699	L1775300
		Station Status	Good	Good	Good	Good	Good		Direct Sample	Direct Sample	Direct Sample	Good	Good		Good	Good				
Parameter	Units	CCME-FAL <sup>1, 2, 3, 4</sup>																		
Dissolved Metals																				
Aluminum (Al)-Dissolved	mg/L	Varies 8	0.0038	<0.0020	<0.0010	0.0021	0.0271	nc	0.0051	<0.0010	0.0315	0.0238	0.0243	2.08	0.0051	0.0046	10.31	<0.0010	-	-
Aluminum CCME-FAL	mg/L	-	-	0.1	-	0.1	0.1	-	0.1	-	0.1	0.1	0.1	-	0.1	0.1	-	-	-	- '
Antimony (Sb)-Dissolved	mg/L	-	<0.00010	0.0891	<0.00010	0.00018	0.00019	5.41	0.00032	<0.00010	0.00296	0.00029	0.00031	6.67	<0.00010	<0.00010	nc	<0.00010	-	- '
Arsenic (As)-Dissolved	mg/L	0.005	<0.00010	0.0244	<0.00010	0.00136	0.00135	0.74	0.00079	<0.00010	0.0874	0.0226	0.0230	1.75	0.0152	0.0148	2.67	<0.00010	-	-
Barium (Ba)-Dissolved	mg/L	-	<0.000050	0.0149	<0.000050	0.0902	0.0928	2.84	0.0443	<0.000050	0.126	0.0408	0.0410	0.49	0.0434	0.0446	2.73	<0.000050	-	-
Beryllium (Be)-Dissolved	mg/L	-	<0.000020	<0.000040	<0.000020	<0.000020	<0.000020	nc	<0.000040	<0.000020	<0.000040	<0.000040	<0.000040	nc	<0.000020	<0.000020	nc	<0.000020	-	-
Bismuth (Bi)-Dissolved	mg/L	-	<0.000050	<0.00010	<0.000050	<0.000050	<0.000050	nc	<0.00010	<0.000050	<0.00010	<0.00010	<0.00010	nc	<0.000050	<0.000050	nc	<0.000050	-	-
Boron (B)-Dissolved	mg/L	1.5	<0.010	0.051	<0.010	<0.010	0.014	nc	0.026	<0.010	0.036	0.046	0.052	12.24	<0.010	<0.010	nc	<0.010	-	- '
Cadmium (Cd)-Dissolved	mg/L	Varies 9	<0.000050	0.0503	<0.000050	0.0000545	0.0000653	18.03	0.000256	<0.000050	0.000135	0.000136	0.000149	9.12	<0.000050	<0.0000050	nc	<0.000050	-	- '
Cadmium CCME-FAL	mg/L	-	-	0.00037	-	0.00037	0.00037	-	0.00037	-	0.00037	0.00037	0.00037	-	0.00037	0.00037	-	-	-	- '
Calcium (Ca)-Dissolved	mg/L	-	<0.050	320	<0.050	176	194	9.73	438	<0.050	125	333	330	0.90	115	114	0.87	<0.050	-	- '
Chromium (Cr)-Dissolved	mg/L	-	<0.00010	<0.00020	<0.00010	0.00017	0.00033	nc	<0.00020	<0.00010	0.0290	0.00030	0.00048	nc	<0.00010	<0.00010	nc	<0.00010	-	- '
Cobalt (Co)-Dissolved	mg/L	-	<0.00010	0.00402	<0.00010	0.00011	0.00012	8.70	0.00067	<0.00010	0.00579	0.0151	0.0153	1.32	0.00066	0.00065	1.53	<0.00010	-	- '
Copper (Cu)-Dissolved	mg/L	Varies 10	<0.00020	0.00575	<0.00020	0.00542	0.00579	6.60	0.00197	<0.00020	0.00541	0.00091	0.00099	8.42	<0.00020	<0.00020	nc	<0.00020	-	- '
Copper CCME-FAL	mg/L	-	-	0.004	-	0.004	0.004	-	0.004	-	0.004	0.004	0.004	-	0.004	0.004	-	-	-	- '
Iron (Fe)-Dissolved	mg/L	0.3	<0.010	0.023	<0.010	<0.010	<0.010	nc	0.011	<0.010	7.28	52.5	50.9	3.09	1.11	1.11	-	<0.010	-	- '
Lead (Pb)-Dissolved	mg/L	Varies 11	<0.000050	0.00502	<0.000050	<0.000050	<0.000050	nc	<0.00010	<0.000050	0.00080	<0.00010	<0.00010	nc	<0.000050	<0.000050	nc	<0.000050	-	- '
Lead CCME-FAL	mg/L	-	-	0.007	-	0.007	0.007	-	0.007	-	0.007	0.007	0.007	-	0.007	0.007	-	-	-	- '
Lithium (Li)-Dissolved	mg/L	-	<0.0010	0.0099	<0.0010	0.0012	0.0011	8.70	0.0029	<0.0010	0.0469	<0.0020	<0.0020	nc	0.0034	0.0036	5.71	<0.0010	-	- '
Magnesium (Mg)-Dissolved	mg/L	-	<0.10	143	<0.10	42.1	42.9	1.88	163	<0.10	603	76.6	78.1	1.94	30.9	30.9	-	<0.10	-	- '
Manganese (Mn)-Dissolved	mg/L	-	0.00023	0.943	<0.00010	0.0224	0.0275	20.44	0.318	<0.00010	2.10	9.84	10.1	2.61	0.810	0.804	0.74	<0.00010	-	- '
Mercury (Hg)-Dissolved	mg/L	0.000026	<0.000050	0.0000053	<0.000050	<0.000050	<0.0000050	nc	<0.0000050	<0.000050	<0.0000050	<0.0000050	<0.0000050	nc	<0.000050	<0.0000050	nc	<0.000050	-	- '
Molybdenum (Mo)-Dissolved	mg/L	0.073	<0.000050	0.00024	<0.000050	0.000238	0.000270	12.60	0.00069	<0.000050	0.0153	0.00064	0.00067	4.58	0.000382	0.000406	6.09	<0.000050	-	- '
Nickel (Ni)-Dissolved	mg/L	Varies 12	<0.00050	0.0061	<0.00050	<0.00050	<0.00050	nc	0.0199	<0.00050	0.0743	0.0053	0.0052	1.90	<0.00050	<0.00050	nc	<0.00050	-	- '
Nickel CCME-FAL	mg/L	-	-	0.15	-	0.15	0.15	-	0.15	-	0.15	0.15	0.15	-	0.15	0.15	-	-	-	- '
Phosphorus (P)-Dissolved	mg/L	-	<0.050	<0.050	<0.050	<0.050	<0.050	nc	<0.050	<0.050	<0.050	<0.050	<0.050	nc	<0.050	<0.050	nc	<0.050	-	- '
Potassium (K)-Dissolved	mg/L	0.001	<0.10	6.59	<0.10	1.96	1.90	3.11	11.8	<0.10	24.6	8.59	8.70	1.27	1.14	1.12	1.77	<0.10	-	- '
Selenium (Se)-Dissolved	mg/L	0.001	<0.000050	<0.00010	<0.000050	0.000692	0.000840	19.32	0.00717	<0.000050	0.00039	0.00018	0.00017	5.71	0.000084	0.000100	17.39	<0.000050	-	- '
Silicon (Si)-Dissolved	mg/L	-	<0.050	4.34	<0.050	7.19	7.38	2.61	6.10	<0.050	8.84	5.46	5.49	0.55	7.40	7.39	0.14	<0.050	-	- '
Silver (Ag)-Dissolved	mg/L	0.0001	<0.000010	0.000064	<0.000010	<0.000010	<0.000010	nc	<0.000020	<0.000010	<0.000020	<0.000020	<0.000020	nc	<0.000010	<0.000010	nc	<0.000010	-	- '
Sodium (Na)-Dissolved	mg/L	-	<0.050	7.08	<0.050	7.36	7.63	3.60	203	<0.050	117	40.4	41.2	1.96	6.31	6.32	0.16	<0.050	-	- '
Strontium (Sr)-Dissolved	mg/L	-	0.00023	0.706	<0.00020	0.614	0.623	1.46	1.24	<0.00020	2.18	0.991	1.01	1.90	1.12	1.15	2.64	<0.00020	-	- '
Sulfur (S)-Dissolved	mg/L	-	<0.50	389	<0.50	121	122	0.82	554	<0.50	629	323	328	1.54	59.7	59.6	0.17	<0.50	-	- '
Thallium (TI)-Dissolved	mg/L	0.0008	<0.000010	0.000423	<0.000010	<0.000010	<0.000010	nc	0.000087	<0.000010	<0.000020	<0.000020	<0.000020	nc	<0.000010	<0.000010	nc	<0.000010	-	1 - '
Tin (Sn)-Dissolved	mg/L	-	<0.00010	<0.00020	<0.00010	<0.00010	<0.00010	nc	0.00281	<0.00010	0.00025	<0.00020	<0.00020	nc	<0.00010	<0.00010	nc	<0.00010	-	- '
Titanium (Ti)-Dissolved	mg/L	-	<0.00030	<0.00060	<0.00030	<0.00030	<0.00030	nc	<0.00060	<0.00030	0.00336	0.00116	0.00094	nc	<0.00030	<0.00030	nc	<0.00030	-	- '
Uranium (U)-Dissolved	mg/L	0.015	<0.000010	0.00261	<0.000010	0.00256	0.00259	1.17	0.0124	<0.000010	0.0239	0.00164	0.00167	1.81	0.00241	0.00246	2.05	<0.00010	-	- '
Vanadium (V)-Dissolved	mg/L	-	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	nc	<0.0010	<0.00050	0.0033	0.0016	0.0017	6.06	<0.00050	<0.00050	nc	<0.00050	-	1 - '
Zinc (Zn)-Dissolved	mg/L	0.03	<0.0010	6.94	<0.0010	0.0012	0.0055	nc	0.0159	<0.0010	0.0376	0.0153	0.0156	1.94	<0.0010	0.0026	nc	<0.0010	-	- '
Zirconium (Zr)-Dissolved	mg/L	-	<0.00030	<0.00060	<0.00030	<0.00030	<0.00030	nc	<0.00060	<0.00030	0.00114	0.00077	0.00079	2.56	<0.00030	<0.00030	nc	<0.00030	_	- '

### Table B: QA/QC Analytical Data

		Site Location	MW	09-16		MW	09-24		CH-P-13-03/50	GSI-F	PC-03B		MP09-05			MP09-08		Field Blank	Travel	l Blanks
		Sample ID	FB-1	MW09-16	FB-2	DUP-1	MW09-24		CH-P-13-03/50	FB-4	GSI-PC-03B	DUP-2	MP09-05		DUP-3	MP09-08		FB-3	TRAVEL_BLANK	TRAVEL_BLANK
		Date Sampled	24/05/2016	24/05/2016	25/05/2016	25/05/2016	25/05/2016		25/05/2016	27/05/2016	27/05/2016	26/05/2016	26/05/2016		27/05/2016	27/05/2016	1	26/05/2016	26/05/2016	27/05/2016
		ALS Work Number	L1774699	L1774699	L1774699	L1774699	L1774699	RPD (%) 14	L1774699	L1775300	L1775300	L1774699	L1774699	RPD (%) 14	L1775300	L1775300	RPD (%) <sup>14</sup>	L1774699	L1774699	L1775300
		Station Status	Good	Good	Good	Good	Good	. ,	Direct Sample	Direct Sample	Direct Sample	Good	Good	. ,	Good	Good	Ì , , ,			
Parameter	Units																1			
Total Metals																				
Aluminum (Al)-Total	mg/L	Varies 8	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	<0.0030	<0.0030
Aluminum CCME-FAL	mg/L	-	_	_	_	_	_	_	_		_	_	_		_	_	_	_	-	-
Antimony (Sb)-Total	mg/L	_		_	_	_	_	_		_		_	_		_	_	_	_	<0.00010	<0.00010
Arsenic (As)-Total	mg/L	0.005						_						_			_	_	<0.00010	<0.00010
Barium (Ba)-Total		-	-		-	_	-	-	-	-	-	_		-	-	-		-		<0.00010
` '	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		<0.000050	
Beryllium (Be)-Total	mg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000020	<0.000020
Bismuth (Bi)-Total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050
Boron (B)-Total	mg/L	1.5 Varies <sup>9</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.010
Cadmium (Cd)-Total	mg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	<0.0000050
Cadmium CCME-FAL	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium (Ca)-Total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.050	<0.050
Chromium (Cr)-Total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010
Cobalt (Co)-Total	mg/L	- 10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010
Copper (Cu)-Total	mg/L	Varies 10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Copper CCME-FAL	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron (Fe)-Total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	<0.010
Lead (Pb)-Total	mg/L	Varies 11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050
Lead CCME-FAL	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium (Li)-Total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010
Magnesium (Mg)-Total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	<0.10
Manganese (Mn)-Total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010
Mercury (Hg)-Total	mg/L	0.000026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	<0.0000050
Molybdenum (Mo)-Total	mg/L	0.073	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050
Nickel (Ni)-Total	mg/L	Varies 12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Nickel CCME-FAL	mg/L	-	_	_	_	_	_	_	_	_	_	_	_	_	_	-	-	_	_	-
Phosphorus (P)-Total	mg/L	-	_	_	-	_	_	-	_	_	_	-	_	-	_	-	_	_	<0.050	<0.050
Potassium (K)-Total	mg/L	-	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	<0.10	<0.10
Selenium (Se)-Total	mg/L	0.001	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	<0.000050	<0.000050
Silicon (Si)-Total	mg/L	-	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	<0.050	<0.050
Silver (Ag)-Total	mg/L	0.0001		_	_	_	_	_		_		_	_	_	_	_	_		<0.00010	<0.00010
Sodium (Na)-Total	mg/L	-	-	-	-	_	-	-	-	-	-	_	-	-	-	-	-	-	<0.050	<0.050
1		-	-	-	-	_	-	-	-	-	-	_	-	-	-	-	-	-	<0.00020	
Strontium (Sr)-Total	mg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		<0.00020
Thallium (TI)-Total	mg/L	0.0008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000010	<0.000010
Tin (Sn)-Total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010
Titanium (Ti)-Total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00030	<0.00030
Uranium (U)-Total	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000010	<0.000010
Vanadium (V)-Total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050
Zinc (Zn)-Total	mg/L	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0030	<0.0030
Zirconium (Zr)-Total	mg/L	-	-	-			-	-	-	-	-	-	-	-	-	-	-	-	<0.00030	<0.00030

#### **Notes**

- (1) CCME guideline exceedences shaded with dark grey. Light grey shading denotes reportable detection limit in exceedance of CCME Guidelin Where guideline value is dependent on hardness or pH, reported values have been compared against a guideline value calculated for each site based on the relevant value, and the guideline value has been noted as "varies".
- (2) = No standard or not analyzed
- (3) CCME = Canadian Council of Ministers of the Environment, Canadian Environmental Quality Guidelines, 1999, updated to November 2014
- (4) CCME FAL = Chapter 4, Canadian Water Quality Guidelines for the Protection of Aquatic Life, Freshwater, updated to November 2014
- (5) CCME FAL stipulates pH not < 6.5 and not > 9
- (6) Guideline note: Lowest acceptable dissolved oxygen concentration for cold-water biota, early life stages
- (7) Ammonia varies with pH and temperature for CCME FAL; see the CCME ammonia fact sheet for details regarding the applicable criteria, ammonia-NH3 versus total ammonia-N, and other usage guidelines. CCME values listed in the table are expressed as ammonia (N) When field pH is not available, lab pH is used. When field and lab pH are both not available, the most stringent guideline has been used. If field temperature is not available ammonia standards can not be calculated.
- (8) Aluminum varies with pH as follows for CCME FAL:

```
0.005 if pH<6.5
0.1 if pH>=6.5
```

when field pH is not available, lab pH is used. When field and lab pH are both not available, the most stringent guideline has been used.

(9) Cadmium varies with Hardness in mg/L as follows for CCME FAL:

(10) Copper varies with Hardness in mg/L as follows for CCME FAL:

```
0.002 if H<82  
0.002 - 0.004 if H>=82 and H<=180 as follows;  
CWQG \ (\mu g/L) = 0.2 * e\{0.8545[ln(hardness)]-1.465\}
```

(11) Lead varies with Hardness in mg/L as follows for CCME FAL:

(12) Nickel varies with Hardness in mg/L as follows for CCME FAL:

- (13) Due to slow recharge and low well volumes, samples were collected from GSI-HA-04A between May 25 and 27, 2016.
  Dissolved metals and dissolved mercury were collected on May 25, 2016. All other parameters were collected on May 27, 2016.
- (14) RPD = Relative Percent Difference. The difference between a sample and its field duplicate over the average of two values. nc = not calculated. RPD is not calculated if either the sample or the field duplicate concentration is less than five times the detection limit.
- (15) Due to slow recharge and low well volumes, samples were collected from CH-P-13-03/50 between May 25 and 27, 2016.

  Dissolved metals were collected on May 25, 2016. Dissolved mercury and general chemistry were collected on May 27, 2016.
- (16) Due to slow recharge and low well volumes, field parameters were measured for well MW09-22 on May 26, 2016.
  All laboratory samples were collected on May 27, 2016

**Bold** and underlined indicates values above RDL in Field Blank or Travel Blank

Bold and Italic Indicates QAQC values exceed expected results (i.e. RDP values exceed 20%).

# APPENDIX A Site Photographs



Photo 1: View of drive point wells GSI-DC-01A and GSI-DC-01B. Photo taken on May 25, 2016.



Photo 2: View of drive point wells GSI-DC-02A and GSI-DC-02B. Photo taken on May 25, 2016.



**Photo 3:** View of drive point wells GSI-DC-03A and GSI-DC-03B. Photo taken on May 25, 2016.



**Photo 4:** View of drive point wells GSI-DC-05A and GSI-DC-05B. Photo taken on May 25, 2016.



Photo 5: View of drive point wells GSI-DC-06A and GSI-DC-06B. Photo taken on May 26, 2016.



Photo 6: View of drive point wells GSI-DC-07A and GSI-DC-07B. Photo taken on May 27, 2016.



**Photo 7:** View of drive point wells GSI-DC-08A and GSI-DC-08B. Photo taken on May 27, 2016.



Photo 8: View of drive point wells GSI-DC-09A and GSI-DC-09B. Photo taken on May 27, 2016.



Photo 9: View of drive point wells GSI-DC-10A and GSI-DC-10B. Photo taken on May 27, 2016.



Photo 10: View of drive point well GSI-HA-01A. Photo taken on May 25, 2016.



Photo 11: View of drive point well GSI-HA-02A. Photo taken on May 25, 2016.



Photo 12: View of drive point well GSI-HA-03A. Photo taken on May 25, 2016.



Photo 13: View of drive point well GSI-HA-04A. Photo taken on May 25, 2016.



Photo 14: View of drive point well GSI-HA-05A. Photo taken on May 25, 2016.



Photo 15: View of well MW09-15. Photo taken on May 25, 2016.



Photo 16: View of well MW09-16. Photo taken on May 24, 2016.



Photo 17: View of well MW09-17. Photo taken on May 25, 2016.



Photo 18: View of well MW09-18. Photo taken on May 25, 2016.



Photo 19: View of well MW09-19. Photo taken on May 25, 2016.



Photo 20: View of well CH-P-13-01/10. Photo taken on May 25, 2016.



Photo 21: View of wells CH-P-13-03/50. Photo taken on May 25, 2016.



Photo 22: View of wells CH-P-13-04/10 and CH-P-13-04/35. Photo taken on May 25, 2016.



Photo 23: View of well GLL07-01. Photo taken on May 25, 2016.



Photo 24: View of well MW09-13. Photo taken on May 25, 2016.



Photo 25: View of well MW09-14. Photo taken on May 25, 2016.



Photo 26: View of drive point wells GSI-PC-03A and GSI-PC-03B. Photo taken on May 27, 2016.



Photo 27: View of drive point wells GSI-PC-04A and GSI-PC-04B. Photo taken on May 27, 2016.



Photo 28: View of drive point wells GSI-PC-05A and GSI-PC-05B. Photo taken on May 27, 2016.



Photo 29: View of drive point well MP09-03. Photo taken on May 27, 2016.



Photo 30: View of drive point well MP09-08. Photo taken on May 27, 2016.



Photo 31: View of well W14103083BH01. Photo taken on May 25, 2016.



Photo 32: View of well W14103083BH02. Photo taken on May 25, 2016.



**Photo 33:** View of well W14103083BH04. Photo taken on May 25, 2016.



Photo 34: View of well MP09-04. Photo taken on May 26, 2016.



Photo 35: View of well MP09-05. Photo taken on May 26, 2016.



Photo 36: View of wells MP09-09 and MP09-10. Photo taken on May 26, 2016.



Photo 37: View of wells MP09-11 and MP09-12. Photo taken on May 26, 2016.

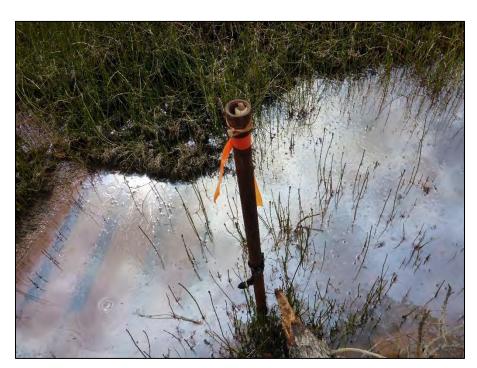


Photo 38: View of drive point well MP09-14. Photo taken on May 26, 2016.



Photo 39: View of well MW09-02. Photo taken on May 26, 2016.



Photo 40: View of well MW09-03. Photo taken on May 26, 2016.



Photo 41: View of well MW09-04. Photo taken on May 26, 2016.



Photo 42: View of wells MW09-05 and MW09-06. Photo taken on May 26, 2016.



Photo 43: View of well MW09-07. Photo taken on May 25, 2016.



Photo 44: View of well MW09-08. Photo taken on May 26, 2016.



Photo 45: View of well MW09-11. Photo taken on May 25, 2016.



Photo 46: View of well MW09-20. Photo taken on May 25, 2016.



Photo 47: View of well MW09-21. Photo taken on May 26 2016.



Photo 48: View of wells MW09-22. Photo taken on May 26, 2016.



Photo 49: View of well MW09-23. Photo taken on May 26, 2016.



Photo 50: View of well MW09-24. Photo taken on May 25, 2016.



Photo 51: View of well W14103083BH03. Photo taken on May 26, 2016.

# APPENDIX B Field Forms



## **GROUNDWATER SAMPLE COLLECTION SHEET**

Sample Site	CH	P-13-101 CAR-13-011	Project Nu	mber	1343-005.27		Date	-	1	25	- May	- (b	
Piezometer Diameter	8	M (11	Client		GY - AAM		Sampl	ers	1		/Md		
UTM Location	Z:08.	E: 0388654N: 6881121			Mount Nanse	en 2016 GW	Weath	er/Tempe	rature	Rainy/snow			
Waypoint	GPS: E		Project Na	me	Sampling Pro	ogram	Recov	Recovery			Good Bad		
Photos	Cam: 🖺	LR Nos: 419-401	Purge Meth	nod		100							
Duplicate Collected	☐ Yes	Name:	Wate	erra	Pe	D	isp. Baile	r	Other				
Field Blank Collected	☐ Yes	Name:											
Initial Depth to Water (r	n)	6.610 ice.	Purge Star	t Time:		Purge End Time:	d			or	YSI P	ro Plus Init	
Depth to Bottom (m)		6.610 ice. Frozen	Purge Inter		Vol. () L								
Submerged Tubing Dep	Depth to w							- (	1				
Well Stick-up Height (m)			Temperatu	re (°C) :	3%				1		1		
Estimated Water Volum	pH (pH Uni	ts) ±0.1	1				7	7		1			
		r well diameter) = 1 well volume	Cond. (µs/d	cm) 3%	1			-	/	X			
		vell diameter) = 1 well volume	Specific Co	ond. (µs	/cm) 3%		17						
		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV	) 10%			1					_	
		diameter) = 1 well volume	DO (mg/L)	10%									
(= .= ,			DO (%) 109	6		X							
Calculations:			Appearance Silty, HC o	e & Ode dours, e	our (Clear, etc.)	1							
			Only for final	Sulph	nide (mg/L)								
/			readings	Turbi	dity (NTU)		/						
			Interval Pu	rge Vol	ume (L)								
		Cumulative	Purge	Volume (L):						1	100		
YSI ID  Logged Field Paramete	rs	☐ Yes ☐ No	Sample Method:										
Time logged on YSI (24	hr)		Waterra Peri		Peris	Peristaltic		Disp. Bailer			Other		
Sample Time (24hr)													



Sample Sit	e (Con't): A CH-	P-13-61/10.			Head	Space Ga	s Measure	ments	
Sample Da	te (Con't):				1	555	-	Units	Values
Well Head	Seed: D I Dive 194	PVC Con	Other		Met	hane (CH4	1)	%LEL	0 :
	Seal: ☐ J-Plug ☐		Other		Ox	ygen (O2)		%	20.9
Seal Repla	ced:  J-Plug PV	C Cap	Other			Dioxide (		PPM	200
Well prope	rly sealed for gas mon	itoring: ☐ Yes ☐ No Detail	s: slits	on cap 4c	_				300
Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Ad	Ided 🛛	Vol. Coll	ected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>				
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)				
2	500 ml (plastic)	General Chemistry	100 ml	-	-				
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	□ NaOH (Sodium Hydroxide)				
4	120 ml (glass) Ammonia (NH3) 60 ml -				☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>				
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNO <sub>3 (Nitric)</sub>				
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	=				
	Notes and Observation (0 6.610 m)	tions:  autempt to thouse  orminutes; aut	lempl.	wash thro	ngh to		1/4" HD 3/8" HD 5/8" HD 1/4" Sili High Ca D-25 (fc	PE (microwaterra PE (waterra tubing con tubing	g)ft _ft



# **GROUNDWATER SAMPLE COLLECTION SHEET**

Sample Site	CH-P	7-13-03/50	Project Nu	mber	1343-005.27		Date	A THE		23- May-16		
Piezometer Diameter		1,,	Client		GY - AAM		Sample	rs		3/1111	2	
UTM Location	Z:08v E	:0389142N:6881\05	Deviced No.		Mount Nanse	en 2016 GW	Weathe	r/Tempera	ature 2	21/4/31	nowy	
Waypoint	GPS:	LL Name: 006	Project Na	me	Sampling Pro	ogram	Recove	Recovery		Good Bac		
Photos	Cam: E	LR Nos: 427 - 429.	Purge Meth	nod			BUTTON BUTTON					
Duplicate Collected	Yes Yes	Name:	Wate	erra	Pe	eristaltic	Di	sp. Bailer		Other		
Field Blank Collected	Yes	Name:					Lie	bail-	er			
Initial Depth to Water (m)		49.433	Purge Star	t Time:	/	Purge End Time:	/	-	Pen or YSI:	YSI Pro		
Depth to Bottom (m)		50.478.	Purge Inter		Vol. () L							
Submerged Tubing Depti	bmerged Tubing Depth (m)			rater (m)	)		1 . 11			V	1:	
Well Stick-up Height (m)	ell Stick-up Height (m)			re (°C) 3	3%				_ <	10	1	
Estimated Water Volume (L)			pH (pH Uni	its) ±0.1		-			M	0	E	
	(DTB – DTW) x (πr <sup>2)*</sup> 1000 (for well diameter) = 1 well volume			cm) 3%			65	(C)		5 × 100		
		vell diameter) = 1 well volume	Specific Co	ond. (µs	s/cm) 3%	1,5	di.		5	0		
		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV	/) 10%		1000	1	1			1	
		diameter) = 1 well volume	DO (mg/L) 10%				- K					
			DO (%) 10°	%		TIL	7				) — 1	
Calculations:			Appearance & Odour (Clear, Silty, HC odours, etc.)			Y						
\$6.478 49.435 1.045 *	0.5	=0,5225	Only for	T	nide (mg/L)	-						
49,435	a		final readings		idity (NTU)							
1.095			Interval Pu							_		
				-	Volume (L):							
YSLID			Gamaiativ	or arge	Volume (L).				-			
Logged Field Parameters	s	☐ Yes ☐ No	Sample Me	ethod:								
Time logged on YSI (24h	nr)		Waterra Perist		staltic	Disp.	Bailer		Other			
Sample Time (24hr)		17:00										



Sample Site (Con't): (H- D - 13- 63/50	1
Sample Date (Con't): 25 - Way - 16 @ 17:20 + 28 - May - 16 @ 15:10	13
Well Head Seal: ☐ J-Plug ☐ PVC Cap ☐ Not Sealed ☐ Other _ Clean _ plastic	
Seal Replaced:   J-Plug PVC Cap Not required Other  Other	
Well properly sealed for gas monitoring: ☑ Yes ☐ No Details:	Ca

#### Head Space Gas Measurements

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	29 9
Carbon Dioxide (C02)	PPM	200

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	HNO <sub>3 (Nitric)</sub>	100	@17:20
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)	15	@ 15:10 on 25-
2	500 ml (plastic)	General Chemistry	100 ml	-		100	@15:10 on 21-
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	□ NaOH (Sodium Hydroxide)		(C) (1) (C) (A)
4	120 ml (glass)	Ammonia (NH3)	60 ml		☐ H <sub>2</sub> SO <sub>4 (Sulfurio)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-/		

General Notes and Observations:	Consumables Used:
	1/4" HDPE (peristaltic pump tubing)ft
- Direct Sampled in 1" bailer, unable to get water out in	3/8" HDPE (microwaterra tubing)ft
bowler will return with spore bailer tourse for second	5/8" HDPE (waterra tubing)ft
table will return with profe bailer truck for serond	1/4" Silicon tubingft
	☐ High Capacity .45 micron filters
afternot, assumed value on vailer may not be closing properly	D-25 (for 2" wells, use with 5/8") foot valves
2 11 2	☐ D-16 (for 1" wells, use with 5/8") foot valves
- Second attempt @ 17:00 on 35-may-16-) able to alread sample	SS-10 (for 5/8" wells, use with 3/8") foot valves
The state of the s	1 bailer x 2 + bailes twing N
the dissolved metals, will return tomorrow to check recharge. Red	☐ 2" bailer
and the state of t	
-DTN @ 49.524 @ 17.02.	other (describe)

- returned @ 15:10 on 26-may-16 7 sommed min vote for airs therry a genthem



## **GROUNDWATER SAMPLE COLLECTION SHEET**

Sample Site	CH-P	-13-04/10	Project Nur	nber	1343-005.27		Date		25	- May -1	Ь		
Piezometer Diameter		1"	Client		GY - AAM		Samplers		NB/				
UTM Location	Z: 08v1	E0289136 N: 6881472	Project Nar		Mount Nans	en 2016 GW	Weather/Temp	erature	Over	ast/~L	4°C.		
Waypoint	GPS: ‡	ELR Name: 010	Project Nai	ile	Sampling Pr	ogram	Recovery		Goo	d 🗌 Ba	ad		
Photos	Cam: ©	ELR Nos: 437-440	Purge Meth	od									
Duplicate Collected	☐ Yes	Name:	Waterra Peristaltic				Disp. Bai	ler	Other				
Field Blank Collected	Yes	Name:											
Initial Depth to Water (m)		6.198 torice.	Purge Start Time:		. /	Purge End Time:		Pen YS		YSI Pro I			
Depth to Bottom (m)		FROZEN	Purge Inter		Vol. () L								
Submerged Tubing Depth (m)			Depth to w	Depth to water (m)									
Well Stick-up Height (n	n)	0.630	Temperatu	\		- 1							
Estimated Water Volume (L)			pH (pH Uni	ts) ±0.1				1					
		r well diameter) = 1 well volume	Cond. (µs/c				1	)					
		vell diameter) = 1 well volume	Specific Cond. (µs/cm) 3%										
		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV	) 10%	/								
		diameter) = 1 well volume	DO (mg/L)	10%							1		
			DO (%) 10%	6									
Calculations:			Appearance Silty, HC or										
	/		Only for final	Sulpi	nide (mg/L)		/						
			readings	Turbi	dity (NTU)								
			Interval Pu	rge Vol	ume (L)								
			Cumulative	Purge	Volume (L):								
YSI ID  Logged Field Parameter	ers	☐ Yes ☐ No	Sample Me	thod:	E								
Time logged on YSI (24	thr)		Waterra		Peri	staltic	Disp. Bailer		Other				
Sample Time (24hr)		/											



sample Da	ate (Con't):						Units	Values
Vell Head	Seal: ☐ J-Plug 🏗	PVC Cap Not Sealed	Other		Methane (C	H4)	%LEL	0
	iced:				Oxygen (O	2)	%	26.9
		itoring: Yes No Detail			Carbon Dioxide	(C02)	PPM	200
		37 -						
Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🗵	Vol. Col	lected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitrio)</sub>			
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)	i C		
2	500 ml (plastic)	General Chemistry	100 ml	/.	-			
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	□ NaOH (Sodium Hydroxide)			
4	120 ml (glass)	Ammonia (NH3)	60 ml	1.	☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>	1		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNO <sub>3 (Nitric)</sub>			
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-			
- Attended worth	was found saw	tions:  well for 80  unsucessful  on the tip of  age was ive.				☐ 1/4" HD☐ 3/8" HD☐ 5/8" HD☐ 1/4" Sili☐ High Ca☐ D-25 (ft☐ D-16 (fd☐ D-16 (	PE (microwaterra to PPE (waterra tubing con tubing apacity .45 micron for 2" wells, use with for 5/8" wells, use with	t)ft



Sample Site	CH-F	2-13-04/65	Project Nu	mber	1343-005.27	7	Date		25	- may -	-16
Piezometer Diameter		J.	Client		GY - AAM		Samplers		NB		
UTM Location	Z:OBJE	E:03/9/136 N:68/1467.	Decised No.	lega-	Mount Nans	en 2016 GW	Weather/	Temperature	over	ost n	-4
Waypoint	GPS:	LR Name: 009	Project Nar	ne	Sampling Pr	rogram	Recovery	Recovery		d Ba	rd_
Photos	Cam: E	UL Nos: 437-440	Purge Meth	nod							
Duplicate Collected	☐ Yes	Name:	Wate	erra	Pe	eristaltic	Disp	. Bailer		Other	
Field Blank Collected	Yes	Name:									
Initial Depth to Water (r	m)	6.492 to ice	Purge Star	t Time:		Purge End Time:		Pen		YSI Pro F	
Depth to Bottom (m)		6.492 to ice FROZEN	Purge Inter		Vol. () L						
Submerged Tubing Dep	pth (m)		Depth to w	ater (m)				7			
Well Stick-up Height (m	n)	0.62.	Temperatu	re (°C) 3	3%						
Estimated Water Volum	ne (L)		pH (pH Uni	ts) ±0.1					1		
(DTB – DTW) x (πr <sup>2)</sup>	*1000 (fo	r well diameter) = 1 well volume	Cond. (µs/c	cm) 3%					01		
		vell diameter) = 1 well volume	Specific Co	ond. (µs	/cm) 3%			1	10		
		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV	) 10%	/		200	/			
		diameter) = 1 well volume	DO (mg/L)	10%	2	1			/		
(5.55,	(	diameter, 1 may retaine	DO (%) 10%	6	/	1					
Calculations:			Appearance Silty, HC o			$\leq$					
1	/		Only for final	Sulph	nide (mg/L)						
- /			readings	Turbi	dity (NTU)						
			Interval Pu	rge Vol	ume (L)	1					
2			Cumulative	e Purge	Volume (L):		/				
YSI ID  Logged Field Parameter	ers	☐ Yes ☐ No	Sample Me	thod:							
Time logged on YSI (24	thr)		Wa	iterra	Peri	staltic	Disp. Ba	iler		Other	
Sample Time (24hr)											



	te (Con't): CH-P-R					Head Space Ga	s Measurem	nents	
ample Da	ate (Con't):							Units	Values
ell Head	Seal: ☐ J-Plug ☐ F	PVC Cap  Not Sealed	Other Clear	- COD -> CLOOUS	+	Methane (CH4	4)	%LEL	0
	iced:  J-Plug PV	7	Othor 04 34	morenty		Oxygen (O2)		%	20.0
				1		Carbon Dioxide (	(C02)	PPM	200
reli prope	erry sealed for gas mon	itoring: ☐ Yes	is. Cup too	5 10050	_				
riority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🛛	Prese	rvative Added 🖂	Vol. Colle	ected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNG	3 (Nitric)			
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL	- (Hydrochloric)	1		
2	500 ml (plastic)	General Chemistry	100 ml	/-					
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	□NaO	OH (Sodium Hydroxide)			
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	☐ H <sub>2</sub> S0	O <sub>4</sub> (Sulfurio)			
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	7-	HNC	3 (Nitric)			
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-				
A-Hemp		well for 80 to 100 (6.402m)					☐ 1/4" HDF☐ 3/8" HDF☐ 5/8" HDF☐ 1/4" Silici☐ High Cap☐ D-25 (for		tubing) ft ft ft



Sample Site	-9-47	R-05/50	Project Nu	mber	1343-005.27			Date			25-1	Vay -1	6
Piezometer Diameter		2"	Client GY - AAM					Sample	rs	- 3	NB/	( )	
UTM Location	Z:08, E	: 0388954 N:6881466	Desired No.	Mount Nans	en 2016 G	w	Weathe	r/Tempe	rature	ONELCO!			
Waypoint	GPS: N	J/A Name:	Project Na	Project Name Sampling Pro				Recovery					Bad
Photos	Cam: /	V/A Nos:	Purge Meth	hod									3=11
Duplicate Collected	Yes	Name:	Wate	erra	Pe	eristaltic		Di	sp. Baile	r		Other	
Field Blank Collected	☐ Yes	Name:											
Initial Depth to Water (m	1)	/	Purge Star	t Time:		Purge I				Pen o		YSI Pro	
Depth to Bottom (m)			Purge Inter		Vol. () L			/	/				
Submerged Tubing Dep	th (m)		Depth to w	ater (m)	)			/					
Well Stick-up Height (m)	)		Temperatu	re (°C)	3%		/		/		1,		
Estimated Water Volume	e (L)		pH (pH Uni	its) ±0.1						2	XI /	1	
		r well diameter) = 1 well volume	Cond. (µs/	cm) 3%		/			~0	50			
		vell diameter) = 1 well volume	Specific Co	ond. (µs	/cm) 3%		/	/	4	/		/	
	-	ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV	/) 10%	1			00	- /		/		
		diameter) = 1 well volume	DO (mg/L)	10%			1	1	/		/		
(,,	(		DO (%) 109	%		1	9	/					
Calculations:	/		Appearance Silty, HC o			6	/		/				
,			Only for final	Sulph	nide (mg/L)	1		/					
			readings	Turbi	dity (NTU)			/					
			Interval Pu	rge Vol	ume (L)								
			Cumulative	e Purge	Volume (L):								
YSI ID Logged Field Parameter	rs	☐ Yes ☐ No	Sample Me	ethod:									
Time logged on YSI (24)	hr)		Wa	iterra	Peris	staltic		Disp. I	Bailer			Other	
Sample Time (24hr)													



ample Sit	e (Con't): CH-P-B	-05/50			Head Space Ga	as Measurements	
imple Da	te (Con't):					Units	Values
Vell Head	Seal: □.J-Pluo □ F	PVC Cap  Not Sealed	Other		Methane (CH	4) %LEL	
					Oxygen (O2	) %	
	ced:  J-Plug PV				Carbon Dioxide	(C02) PPM	
Vell prope	rly sealed for gas mon	itoring: Yes No Detail	ls:		_		
			IR.				
Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🛛	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>		
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml	/-	-		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml		☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>	1 - 1	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNO <sub>3 (Nitric)</sub>	( = = = = = = = = = = = = = = = = = = =	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-		
- Not 0		ions: orated in the pit ands as specified			nits aue	Consumables Used  1/4" HDPE (peristaltic p 3/8" HDPE (microwater 5/8" HDPE (waterra tut 1/4" Silicon tubing High Capacity .45 micr D-25 (for 2" wells, use D-16 (for 1" wells, use SS-10 (for 5/8" wells, u	pump tubing)ft rra tubing)ft bing)ftft on filters with 5/8") foot valves with 5/8") foot valves
						2" bailer	_



Sample Site	661	- 07-01	Project Nu	mber	1343-005.27			Date			Ma	1. 25	Zolk
Piezometer Diameter	ezometer Diameter 2-inch Client			GY - AAM			Sample	rs		KIB	PEC	7	
UTM Location	Location Z: 08 E: 0388 848 N: (088 17-83		Project Na		Mount Nansen 2016 GW		Weather/Temperature			overcast			
Waypoint	ypoint GPS: Hum Name: NA		Sampling Progr			ogram		Recovery			☐ Good ☑ Bad		Bad
Photos			Purge Method						-				
Duplicate Collected	☐ Yes	Name:	Wate	erra	Pe	ristaltic	100	Dis	sp. Baile			Other	
Field Blank Collected	Yes	Name:											
Initial Depth to Water (n	n)	brozen.	Purge Star	t Time:		Purge Tim				Pen YSI:		YSI Pr	
Depth to Bottom (m)		603en.	Purge Inter		/ol. () L		34			- 1			
Submerged Tubing Dep	oth (m)	NIA	Depth to w	ater (m)		1							
Well Stick-up Height (m	)	0.777	Temperatu	re (°C) 3°	%								
Estimated Water Volum		NIA	pH (pH Uni	its) ±0.1									
		r well diameter) = 1 well volume	Cond. (µs/	cm) 3%									
		vell diameter) = 1 well volume	Specific Co	ond. (µs/	cm) 3%				1				
		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV	) 10%						/			
		diameter) = 1 well volume	DO (mg/L)	10%						1			
			DO (%) 109	%			1	20					
Calculations:			Appearance Silty, HC o	e & Odo dours, e	ur (Clear, tc.)	1	600	Se	1		1		
			Only for final	-	ide (mg/L)								
			readings	Turbid	lity (NTU)			1					
			Interval Pu		. ,								
			Cumulative	Purge \	/olume (L):								
YSI ID  Logged Field Parameter	rs	☐ Yes ☐ No	Sample Me	thod:									
Time logged on YSI (24	hr)	NA	Wa	terra	Peris	taltic		Disp. I	Bailer			Other	-
Sample Time (24hr)		NA			14								



Sample Site (Con't): GLL 07-G	
Sample Date (Con't): May 25	2016
/	
Well Head Seal: ☐ J-Plug ☑ PVC Cap	☐ Not Sealed ☐ Other
Seal Replaced:   J-Plug PVC Cap	☐ Not required ☐ Other
Well properly sealed for gas monitoring:	Yes No Details:

	Units	Values
Methane (CH4)	%LEL	Ø
Oxygen (O2)	%	20.6
Carbon Dioxide (C02)	PPM	700

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🗵	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>	V-	
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml	-	-		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-		

General Notes and Observations:	Consumables Used:
- frozen.  - did not attempt to than due to depth of well	☐ 1/4" HDPE (peristaltic pump tubing)ft ☐ 3/8" HDPE (microwaterra tubing)ft ☐ 5/8" HDPE (waterra tubing)ft ☐ 1/4" Silicon tubingft ☐ High Capacity .45 micron filters ☐ D-25 (for 2" wells, use with 5/8") foot valves ☐ D-16 (for 1" wells, use with 5/8") foot valves ☐ SS-10 (for 5/8" wells, use with 3/8") foot valves ☐ 1" bailer ☐ 2" bailer



Sample Site	LL07-03	Project Numb	per 1343-005.27		Date	6	25-May-Ho	
Piezometer Diameter	2	Client	GY - AAM		Samplers		UBILLE	
UTM Location 2	Z: 08, E: 6388059 N: 6881477	Decised Name	Mount Nanse	en 2016 GW	Weather/Tempe		Parmy	
Waypoint	SPS: N/A Name:	Project Name	Sampling Pro	ogram	Recovery		Good Bad	d
Photos	Cam: N/A Nos:	Purge Method					71-52	1
Duplicate Collected	Yes Name:	Waterra	a Pe	eristaltic	Disp. Baile	er	Other	
Field Blank Collected	Yes Name:							
Initial Depth to Water (m)		Purge Start T	ime:	Purge End Time:		Pen or YSI:	YSI Pro P	lus
Depth to Bottom (m)		Purge Interva	nin / Vol. () L			1	7	
Submerged Tubing Depth	n (m)	Depth to water	er (m)					
Well Stick-up Height (m)		Temperature	(°C) 3%		/ /		//	
Estimated Water Volume	(L) /	pH (pH Units)	±0.1	/			2V	
	000 (for well diameter) = 1 well volume	Cond. (µs/cm	) 3%		/	1 4		
	for 4" well diameter) = 1 well volume	Specific Cond	d. (µs/cm) 3%			KY		
	or 2" well diameter) = 1 well volume for 1.5" diameter) = 1 well volume	Redox (mV) 1	0%		K NC	1		
	(for 1" diameter) = 1 well volume	DO (mg/L) 10	%	16				
	. /	DO (%) 10%		170	/			
Calculations:		Appearance 8 Silty, HC odo	& Odour (Clear, urs, etc.)			1		
/		Only for ginal	Sulphide (mg/L)					
		<u>readings</u>	Turbidity (NTU)					
-7		Interval Purge	• • •					
		Cumulative P	urge Volume (L):					
YSI ID  Logged Field Parameters	☐ Yes ☐ No	Sample Meth	od:					
Time logged on YSI (24hr	)	Water	ra Peris	staltic	Disp. Bailer		Other	
Sample Time (24hr)								



e (Con't): GLLO7-	OB .			Head Space Ga	s Measurements	
te (Con't):				AL EXEC	Units	Values
Saal:   LDlug   D	No Can	Other		Methane (CH	4) %LEL	
				Oxygen (O2	%	
ced:  J-Plug PV	C Cap Not required	Other				
rly sealed for gas moni	itoring: Yes No Detail	s:		- Garbon bloxide	11111	
Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🗵	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>		
40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
500 ml (plastic)	General Chemistry	100 ml	-/			
145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		□ NaOH (Sodium Hydroxide)		
120 ml (glass)	Ammonia (NH3)	60 ml	- 1	☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>		
120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNO <sub>3 (Nitric)</sub>		
120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-			
to locate a	cess wells in th	e pit (	due to c	over/Jeach		oump tubing)ft ra tubing)ft ing)ftft on filters
	Seal:  J-Plug  PV  Iced: J-Plu	Bottle Type Parameters Analyzed  120 ml (plastic) Dissolved Mercury  500 ml (plastic) General Chemistry  145 ml (plastic) Cyanide (total, free, weak acid dissociable)  120 ml (plastic) Thiocyanate (SCN)  120 ml (glass amber) Total Inorganic Carbon (TIC)	Seal:	Seal:	Methane (Chr.   Seal:	Seal:   J-Plug   PVC Cap   Not Sealed   Other   Methane (CH4)   %LEL



Sample Site	GL	L-07-02	Project Number 1343-005.27			Date			May 27 2016							
Piezometer Diameter	6	n	Client		GY - AAM		Sample	ers			168					
UTM Location	Z: 08	E: 0389069 N: 688 1703			Mount Nansen 2016 GW		Mount Nansen 2016 GW		Mount Nanse		Weather/Temperature			11° Sunny		
Waypoint	GPS:		Project Nar	ne	Sampling Pro		Recove	ery		☐ Good ☑ Bad						
Photos	Cam: 7	Meny Nos:	Purge Meth	od	10.00					1						
Duplicate Collected	Yes	Name:	Wate	rra	Pe	ristaltic	Di	isp. Baile	r		Other					
Field Blank Collected	☐ Yes	Name:										-				
Initial Depth to Water (m	n)	Dry.	Purge Star	Time:	-	Purge End Time:		_	Pen or YSI:		YSI Pro Plus Pen Unit	-				
Depth to Bottom (m)		7.125	Purge Inter		Vol. () L											
Submerged Tubing Dep	th (m)		Depth to w	ater (m)				-								
Well Stick-up Height (m	)	1.351	Temperature (°C) 3%													
Estimated Water Volum	e (L)		pH (pH Units) ±0.1													
(DTB – DTW) x (πr <sup>2)*</sup> 1000 (for well diameter) = 1 well volume			Cond. (µs/cm) 3%													
		well diameter) = 1 well volume	Specific Co	ond. (µs												
		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV													
		diameter) = 1 well volume	DO (mg/L) 10%				1	7		23						
(,			DO (%) 10%	6			1//		7							
Calculations:	,		Appearance Silty, HC or	e & Odo dours, e	our (Clear, etc.)		1	1								
	/		Only for final	Sulph	nide (mg/L)											
			readings	Turbi	dity (NTU)											
			Interval Pu	rge Vol	ume (L)		/									
			Cumulative	Purge	Volume (L):							_				
YSI ID  Logged Field Parameter	rs	Yes No	Sample Me	thod:		No. Or St.	30									
Time logged on YSI (24)	hr)		Wa	terra	Peris	Peristaltic		Disp. Bailer		Other						
Sample Time (24hr)	1		e e e e e e e e e e e e e e e e e e e													



Sample Site (Con't): Aug GIL-O7-02
Sample Date (Con't): May 27 2016
Well Head Seal: J-Plug PVC Cap Not Sealed Nother Mital Flip Cap
Seal Replaced:   J-Plug PVC Cap Not required Other
Well properly sealed for gas monitoring:   Yes No Details:

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	300

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	☐ HNO <sub>3 (Nitric)</sub>		
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml		A Supplementary of the Control of th		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml		☐ H₂SO₄ (Sulfuric)		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-		

General Notes and Observations:	Consumables Used:
	☐ 1/4" HDPE (peristaltic pump tubing)ft
	☐ 3/8" HDPE (microwaterra tubing)ft
	5/8" HDPE (waterra tubing)ft
	☐ 1/4" Silicon tobingft
1.1811 B OLY	☐ High Capacity .45 micron filters
W.( * * * * /	D-25 (for 2" wells, use with 5/8") foot valves
	☐ D-16 (for 1" wells, use with 5/8") foot valves
21:1171	SS-10 (for 5/8" wells, use with 3/8") foot valves
Dedicated Bailer in well	1" bailer
Deciliar te	2" bailer
	other (describe)



Sample Site	675I-DC-01B/A	Project Number 1343-005.27				Date			May 25 2016			
Piezometer Diameter	1-inch	Client	ent GY - AAM				Samplers			- 7		10 Kmar
UTM Location	Z:08 E:0387672 N: 6881126	Mount Nanse		en 2016 GW		Weather/Temperature			20		Rain	
Waypoint	GPS: Name:	Project Na	me	Sampling Pro					☐ Good ☐ Bad			
Photos	Cam: Then Nos:	Purge Meti	nod		1							
Duplicate Collected	Yes Name:	Wate	erra	Pe	eristaltic		D	isp. Baile	r	Other		
Field Blank Collected	Yes Name:											
Initial Depth to Water (m	B=1.345 A=0.929	Purge Start Time:		Purge End Time:				Pen or YSI:		YSI Pro		
Depth to Bottom (m)	8=1.536 A=1.200	Purge Inter		Vol. () L								
Submerged Tubing Dep	th (m) 1.536	Depth to w	ater (m)									
Well Stick-up Height (m)	8=0.936 A=0.923	Temperature (°C) 3%			x							
Estimated Water Volume	pH (pH Units) ±0.1					1	10	1				
(DTB – DTW) x (πr <sup>2)*</sup>	(DTB – DTW) x ( $\pi r^{2}$ )*1000 (for well diameter) = 1 well volume		Cond. (µs/cm) 3%			/	(0					
	(for 4" well diameter) = 1 well volume	Specific Cond. (µs/cm) 3%				,						
	for 2" well diameter) = 1 well volume (for 1.5" diameter) = 1 well volume	Redox (mV) 10%						1				
	5 (for 1" diameter) = 1 well volume	DO (mg/L) 10%				The desired			Mole.			
	1/2 dianeth	DO (%) 10%  Appearance & Odour (Clear,						COM				
Calculations:							7-			T		
11536-	1.345) X.O.25=	Silty, HC odours, etc.)		tc.)								
_ // 0	7 7 7 . 0 . 5	Only for final	Sulph	ide (mg/L)								
	0.047L		Turbio	lity (NTU)								
			rge Volu	ime (L)	1 3							
		Cumulative	Purge '	Volume (L):								
YSI ID	NA	Comple Methods										
Logged Field Parameter	Yes No	Sample Method:						_				
Time logged on YSI (24h	N/A	Wa	terra	Peris	staltic Disp. Bailer				Other			
Sample Time (24hr)	8-40	C										



Sample Site (Con't): 451 - W -	1
Sample Date (Con't): May 25 201	6
Well Head Seal: ☐ J-Plug ☐ PVC Cap	☐ Not Sealed ☐ Other
Seal Replaced:   J-Plug PVC Cap	
Well properly sealed for gas monitoring: $\square$	Yes No Details: Slit in cap

well B

	Units	Values
Methane (CH4)	%LEL	B=0 4=0
Oxygen (O2)	%	B=20 9 A=26
Carbon Dioxide (C02)	PPM	B=30001-20

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🗵	Preservative Added 🛛	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered		(iii)	Comments
1b	40 ml (glass)		100 1111	E Field Filtered	HNO <sub>3 (Nitric)</sub>	50	rinsofficien do
	40 mi (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		111301411121-10
2	500 ml (plastic)	General Chemistry	100 ml		( indicator)		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml				
5	120 ml (plastic)	This was a record		-	☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>		
		Thiocyanate (SCN)	50 ml		☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-			

General Notes and Observations:	Consumables Used:
camera battery dying + memory full & Scripte not Represent	1/4" HDPE (peristaltic pump tubing) 7 ft
used Jeverny's camera on phone, will upload tonight	5/8" HDPE (waterra tubing)ft
	☐ 1/4" Silicon tubing ☐ 5 ft ☐ High Capacity .45 micron filters
veils not labeled, assumed well to flagging tape	D-25 (for 2" wells, use with 5/8") foot valves D-16 (for 1" wells, use with 5/8") foot valves
was well &	SS-10 (for 5/8" wells, use with 3/8") foot valves
	☐ 1" bailer
Returned May 27 / well was dry.	other (describe)
- Well assured frozen + Sampled water above Ire	



Sample Site	GS	5I-DC-02B/A	Project Number 1343-005.27			Date			May 25 2016			
Piezometer Diameter	meter		Client		GY - AAM		Samplers			Jehua K Beckman		
UTM Location	Z: 08 I	Z: 08 E: 03 87 838 N: 688 11 169			Mount Nanse	en 2016 GW	Weather/Temperature			80	Licht 1	
Waypoint	GPS: (-	Name: ///A	Project Na	me	Sampling Pro	ogram	Recovery			Good Bad		
Photos	Cam: 3	browy Nos:	Purge Meth	nod								
Duplicate Collected	☐ Yes	Name:	Wate	erra	Pe	eristaltic	Di	sp. Baile	r	Other		
Field Blank Collected	Yes	Name:										
Initial Depth to Water (n	n)	8=507zenlA=Dry B=0.923/A=1.69	Purge Start Time:		Purge End Time:			Pen or YSI:		YSI Pro		
Depth to Bottom (m)		B=0.923/A=1.69	Purge Interval Time () min / Vol. () L									
Submerged Tubing Dep	oth (m)		Depth to w	ater (m)								
Well Stick-up Height (m	1)	8=6, 827/A 0.989.	Temperature (°C) 3%									
Estimated Water Volum				pH (pH Units) ±0.1								
(DTB – DTW) x (πr <sup>2)*</sup> 1000 (for well diameter) = 1 well volume			Cond. (µs/cm) 3%									
		vell diameter) = 1 well volume	Specific Cond. (µs/cm) 3%				1					
		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV) 10%				0	5187	en.		1	
		diameter) = 1 well volume	DO (mg/L) 10%				1/2	10				
			DO (%) 10%				1					
Calculations:			Appearance & Odour (Clear, Silty, HC odours, etc.)									
		×	Only for final	Sulph	ide (mg/L)							
		+3	readings	Turbio	dity (NTU)							8
			Interval Purge Volume (L)									
			Cumulative	Purge	Volume (L):							
YSI ID  Logged Field Paramete	rs	☐ Yes ☑No	Sample Method:									
Time logged on YSI (24	hr)		Wa	terra	Peris	eristaltic Disp. Bailer				Other		
Sample Time (24hr)	- 1	_							1			



Sample Site (Con't): 6SI - DC Sample Date (Con't): May 75 70	
Well Head Seal: ☐ J-Plug ☐ PVC Cap	☐ Not Sealed ☐ Other
Seal Replaced:	☐ Not required ☐ Other
Well properly sealed for gas monitoring:	Yes No Details: Slit in Cap.

	Units	Values
Methane (CH4)	%LEL	0=8 0=A
Oxygen (O2)	%	A= 20,9 B=20,9
Carbon Dioxide (C02)	PPM	A=400 B=400

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🛛	Preservative Added 🛛	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>		
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml	-1-	•		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	- 17	☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	☐ HNO <sub>3 (Nitric)</sub>	(	/
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		4		

eneral Notes and Observations:	Consumables Used:
1 1 Deal	1/4" HDPE (peristaltic pump tubing)ft
Whell Awas observe Dry	3/8" HDPE (microwaterra tubing)ft  5/8" HDPE (waterra tubing) ft
	21/4" Silicon tubing 0.5 ft
14 111 1 1 1 1 7	High Capacity .45 micron filters
Attempted to thow well B, unsucessful	D-25 (for 2" wells, use with 5/8") foot valves
	D-16 (for 1" wells, use with 5/8") foot valves
	SS-10 (for 5/8" wells, use with 3/8") foot valves
	☐ 1" bailer
	2" bailer
	other (describe)



Sample Site	GY-DC-BB	Project Nui	mber	1343-005.27		Date			25-May-16.			
Piezometer Diameter	0.5" DP	Client GY - AAM				Sample	rs		NB/	MM		
UTM Location	Z:08, E:03 88107 N: 68810 =0	Decises No.	Mount Nancon			GW Weather/Temperature			Some	La L		
Waypoint	GPS: 512 Name: 003	Project Name Sampling Pro			ogram	Recove	гу		☐ Good ☐ Bad			
Photos	Cam: 8 7 Nos: 416 - 418	Purge Meth	Purge Method									
Duplicate Collected	Yes Name:	Wate	Waterra Per			Di			Other			
Field Blank Collected	Yes Name:											
Initial Depth to Water (r	n) 0,929 1.010	Purge Star	Purge Start Time:		Purge End Time:				Pen or YSI:		Plus it	
Depth to Bottom (m)	BY FROZEN FROZE		Purge Interval Time () min / Vol. () L									
Submerged Tubing Dep		Depth to w	rater (m)									
Well Stick-up Height (n	1) 629 HOLDS MOSS	Temperatu	Temperature (°C) 3%						. 1			
Estimated Water Volun		pH (pH Units) ±0.1					7	-	N			
	(DTB – DTW) x (πr <sup>2)*</sup> 1000 (for well diameter) = 1 well volume		cm) 3%			25	5					
	(for 4" well diameter) = 1 well volume	Specific Cond. (µs/cm) 3%			1							
	(for 2" well diameter) = 1 well volume 1 (for 1.5" diameter) = 1 well volume	Redox (mV) 10%									<u> </u>	
	.5 (for 1" diameter) = 1 well volume	DO (mg/L) 10%								,		
(5.55)		DO (%) 109	%					1				
Calculations:		Appearance & Odour (Clear, Silty, HC odours, etc.)										
		Only for final	Sulphi	de (mg/L)	<							
		readings	Turbid	ity (NTU)								
		Interval Pu	ırge Volu	me (L)								
		Cumulative Purge Volume (L):										
YSI ID  Logged Field Parameter	Yes No	Sample Method:										
Time logged on YSI (24		Wa	Waterra Peri			Disp.	Bailer		Other			
Sample Time (24hr)												



other (describe)

Sample Si	te (Con't): <u>CSI-DC-</u>	-038				Head Space Ga	s Measur	<u>ements</u>	R
ample Da	te (Con't):						0	Units	Values
Well Head	Seal: □ L-Plug □ F	PVC Can	Other 5 CC	I MADES B		Methane (CH	4)	%LEL	0.
Seel Deel	end C I Division C Division	PVC Cap Not Sealed	DIASTI	CBay on A		Oxygen (O2	)	%	20.9
	ced:					Carbon Dioxide	(C02)	PPM	200
Priority	Bottle Type	itoring:  Yes No Detail Parameters Analyzed	Min. Volume	Treatment 🖂	Prese	rvative Added 🛛	Vol. Co	llected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNC	) <sub>3 (Nitric)</sub>			
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL	(Hydrochloric)			
2	500 ml (plastic)	General Chemistry	100 ml	-		- T-			
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	□NaO	H (Sodium Hydroxide)			
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	☐ H₂S0	O <sub>4</sub> (Sulfuric)			
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNC	3 (Nitric)			
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-				
- 400	Notes and Observations of Show I	ions:  oam, awhemp do  cocossful, still  lain acck bec	frost - Cross	for 20 m	inut DP	23-	☐ 1/4" H ☐ 3/8" H ☐ 5/8" H ☐ 1/4" Si ☐ High C ☐ D-25 ( ☐ D-16 (	for 1" wells, use with	tubing)ft i)ft _ft



Sample Site	951.	-DC-05 B/A	Project Nu	mber	1343-005.27			Date		3.8	25-	May -1	6
Piezometer Diameter		0.5' DP	Client		GY - AAM			Sample	ers		NB/		
UTM Location	Z: DRy E	: 0389722 N: 6880836.	Mount Nansen 20		en 2016 GW		Weather/Temperature			Painy/snowy			
Waypoint	GPS: E	12 Name: 065	Project Name Sampling Prog		gram				☐ Good ☐ Bad				
Photos	Cam: ±		Purge Method										4
Duplicate Collected	☐ Yes	Name:	Waterra Peri			ristaltic	- 1	Di	sp. Bailer		Other		
Field Blank Collected	Yes	Name:											
Initial Depth to Water (n	n)	A =0.54B.	Purge Star	t Time:		Purge I				Pen or YSI:	-	YSI Pro	
Depth to Bottom (m)		Frozen (A)	Purge Inter		Vol. () L								
Submerged Tubing Dep	oth (m)		Depth to water (m)										
Well Stick-up Height (m	1)	160,398 to 100	Temperature (°C) 3%										
Estimated Water Volum	ne (L)		pH (pH Units) ±0.1				/		10	CATE			
(DTB – DTW) x (πr <sup>2)*</sup> 1000 (for well diameter) =		well diameter) = 1 well volume	Cond. (µs/	cm) 3%			1.	01				-	12-1
		vell diameter) = 1 well volume	Specific Co	ond. (µs	/cm) 3%	147	11						
		ell diameter) = 1 well volume	Redox (mV) 10%										
		" diameter) = 1 well volume diameter) = 1 well volume	DO (mg/L) 10%				/					FOT	5
(515-5111) x 5	.0 (101 1	didiffectly - 1 Well Volume	DO (%) 109	%					15	CT	7	167	
Calculations:			Appearance Silty, HC o					,ed	rni				
			Only for final	Sulph	ide (mg/L)	Po	M.						
			readings	Turbi	dity (NTU)			-					
			Interval Pu	rge Vol	ume (L)								
			Cumulative	e Purge	Volume (L):								
YSI ID  Logged Field Paramete	ers	☐ Yes ☐ No	Sample Method:			TE					43		
Time logged on YSI (24			Wa	terra	Peris	staltic		Disp. Bailer			Other		
Sample Time (24hr)													



Sample Sit	e (Con't): GSI-DC-	SAB	Head Space Ga	s Measure	For A				
Sample Da	te (Con't):	-						Units	Values
Well Head	Seal: J-Plug F	PVC Cap Not Sealed	Other			Methane (CH4	4)	%LEL	0
	ced: ☐ J-Plug ☐ PV	Oxygen (O2)	02) %		30.9				
		Carbon Dioxide (	(C02)	PPM	200				
well prope	rly sealed for gas mon	itoring: Yes No Detail	S:		-				
Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preser	vative Added 🛛	Vol. Col	lected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO3	(Nitric)			- 1/4
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	☐ HCL (	Hydrochloric)			
2	500 ml (plastic)	General Chemistry	100 ml	-		-			
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		□ NaOH (Sodium Hydroxide)				
4	120 ml (glass)	Ammonia (NH3)	60 ml	- 30	☐ H₂SO	4 (Sulfuric)			
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	☐ HNO <sub>3</sub>	(Nitric)			
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-				
- B is away locar	le. A 15 fro	ofter 20 minuser (B)	est.	on lite	s) le	40	☐ 1/4" HC☐ 3/8" HC☐ 5/8" HC☐ 1/4" Sil☐ High C☐ D-25 (f☐ D-16 (f☐	DPE (microwaterra DPE (waterra tubing DPE (microwaterra DPE (waterra tubing DPE (water	g)ft



Sample Site	GS1-DC-06B/A	Project Numb	er 1343	3-005.27		Date	7	26-	May -	14
Piezometer Diameter	OS DP	Client GY - AAM			Samplers		NB/		10	
UTM Location	Z:08 vE: 0389788 N: 6880567		Project Name Mount Na		n 2016 GW	Weather/Temp	erature			Dreoze
Waypoint	GPS: ELR Name: 024	Project Name	Sampling Progra			Recovery		Good D		
Photos	Cam: PL R.Nos: 477 - 479	Purge Method	1-			1				- 3
Duplicate Collected	Yes Name:	Waterra Pe		Per	ristaltic	Disp. Bailer		Other		
Field Blank Collected	Yes Name:				/					
Initial Depth to Water (r	n) B/ 1.433	Purge Start Ti	me:		Purge End Time:		Pen YSI	Control of the Contro	YSI Pro	
Depth to Bottom (m)	FROZEN FROZEN	Purge Interva		)L			1			
Submerged Tubing Dep	oth (m)	Depth to water	r (m)					1		/
Well Stick-up Height (n	0.247 10.840	Temperature	°C) 3%	1			_	1.		
Estimated Water Volun		pH (pH Units)	±0.1				-11	- 1 /	1	/
	1000 (for well diameter) = 1 well volume	Cond. (µs/cm	3%		X	7(1)	1			
	(for 4" well diameter) = 1 well volume	Specific Cond	l. (µs/cm) 3	%	+	LV	1/		/	
	(for 2" well diameter) = 1 well volume	Redox (mV) 1	0%						1	1
	1 (for 1.5" diameter) = 1 well volume 1.5 (for 1" diameter) = 1 well volume	DO (mg/L) 10	%		X	1				
(5.55.111)	is (is: 1 diameter)	DO (%) 10%					/			
Calculations:		Appearance & Silty, HC odo		lear,						
		Only for ginal	Sulphide (n	ng/L)						
/			urbidity (N	ITU)						
		Interval Purge	Volume (I	->/	/					
/		Cumulative P	urge Volun	ne (L):				-	1	
YSI ID	/	Comple Math	d.							
Logged Field Parameter	Yes No	Sample Metho	Ju.			-	1			
Time logged on YSI (24	ihr)	Water	ra	Peris	taltic	Disp. Bailer			Other	
Sample Time (24hr)										



Sample Site	(Con't): <u>G51 - DC</u>	-068			Head Space Ga	as Measurements	
Sample Dat	e (Con't):					Units	
Well Head S	Seal: J-Plug	PVC Cap  Not Sealed >	Other SCC	ansay	Methane (CH	4) %LEL	
Seal Replac	ed:  J-Plug PV	/C Cap   ☑ Not required   ☐		3242	Oxygen (O2	) %	
		nitoring: ⊠Yes ☐ No Deta		_	Carbon Dioxide	(C02) PPM	
Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🛛	Vol. Collected (ml)	C
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>		
	V	Discourse mistale	1001111		LITTO 3 (Nitric)		

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>		
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml		-		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	☐ H <sub>2</sub> SO <sub>4 (Suffuric)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		1.2		

General Notes and Observations:	Consumables Used:
Frozen @ 1.218m > attempted to than for 20 minutes.	☐ 1/4" HDPE (peristaltic pump tubing)ft ☐ 3/8" HDPE (microwaterra tubing)ft
unsucessful attempt	5/8" HDPE (waterra tubing) ft
CONTRACT CONTRACTOR	☐ 1/4" Silicon tubingft
Per tinia formatica de la mi	☐ High Capacity .45 micron filters
Pen tubing frozen (stuck in well)	D-25 (for 2" wells, use with 5/8") foot valves
Boundary cheer and a second	D-16 (for 1" wells, use with 5/8") foot valves
Rainbow sheer on water standing teside well, creek levels	SS-10 (for 5/8" wells, use with 3/8") foot valves
lower than usual	1" bailer
Could	2 5 bailer
	other (describe)



Sample Site	GS1- DC-G78/A	Project Num	Project Number 1343-			Date		27	- May	-14
Piezometer Diameter	0.5" DP	Client		GY - AAM		Samplers		NB	(1	
UTM Location	Z: 02 E: 0390062 N: 6880642.	Desired New	3 7	Mount Nanse	en 2016 GW	Weather/Ter	mperature	Sunnu		
Waypoint	GPS: ELR Name: 035	Project Nam	Sampling Progr		ogram	Recovery		Good Bad		
Photos	Cam: ELR Nos: 0487 - 489	Purge Metho	Purge Method		When principle		- 10			
Duplicate Collected	Yes Name:	Water	та	Pe	ristaltic	Disp. Bailer		Othe		
Field Blank Collected	Yes Name:			/						
Initial Depth to Water (	m) 3 09.30. 09.90.	Purge Start	Time:		Purge End Time:		Pen YSI		YSI Pro	
Depth to Bottom (m)	Frozen Frozen		min/	Vol. () L						
Submerged Tubing De		Depth to wa	ter (m)							
Well Stick-up Height (n	B 0.855 10.805	Temperatur	e (°C) 3	%						
Estimated Water Volun	ne (L)	pH (pH Unit	s) ±0.1					1		
	1000 (for well diameter) = 1 well volume	Cond. (µs/cm) 3%					1	7		
	(for 4" well diameter) = 1 well volume	Specific Co	nd. (µs	/cm) 3%			7			
	(for 2" well diameter) = 1 well volume 1 (for 1.5" diameter) = 1 well volume	Redox (mV)	10%		/	mil		/		
	.5 (for 1" diameter) = 1 well volume	DO (mg/L) 1	0%		//	20	/			1
(5.55)		DO (%) 10%			(/					
Calculations:		Appearance Silty, HC od	& Odd	our (Clear, tc.)	1			/		
		Only for final	Sulph	ide (mg/L)					7	
		readings	Turbi	dity (NTU)						
		Interval Pur	ge Vol	ume (L)		/				
		Cumulative	Purge	Volume (L):						
YSI ID  Logged Field Paramete	ers Yes No	Sample Met	hod:							
Time logged on YSI (24	Hhr)	Wat	erra	Peris	staltic	Disp. Baile	er		Other	
Sample Time (24hr)										



☐ High Capacity .45 micron filters

other (describe)

□ D-25 (for 2" wells, use with 5/8") foot valves □
□ D-16 (for 1" wells, use with 5/8") foot valves □
□ SS-10 (for 5/8" wells, use with 3/8") foot valves

Comments
ıbi

20 minutes, attempt unsuccessful, there was bon of water.
- stick up height taken from top of ice

Sample Site (Con't): G51-DC-07B/A



Sample Site	GSI	- DC-08B/A	Project Nu	mber	1343-005.27		Date		2	- 16	
Piezometer Diameter		0.5 BP	Client	1	GY - AAM		Samplers			BIND	
UTM Location	Z:08/	E: 03903 10 N: 6880583	Mount Nar			en 2016 GW	Weather/	Temperature	SU	nn.	
Waypoint		ELR Name: 026	Project Nat	Project Name Sampling Pro			Recovery		-	Good DE	Bad—
Photos	Cam: 🖲	ELIZ Nos: 492-496	Purge Method				/				
Duplicate Collected	☐ Yes	Name:	Wate	Waterra Per		eristaltic	Disp	. Bailer			
Field Blank Collected	☐ Yes	Name:									
Initial Depth to Water (r	n)	0.593 1.317	Purge Star	t Time:	/	Purge End Time:	/	Per	or I:	YSI Pro	
Depth to Bottom (m)		FROZEN FROZEN	Purge Inter		Vol. () L				_		
Submerged Tubing Dep	oth (m)		Depth to w	ater (m	)						
Well Stick-up Height (m	1)	0.330 0.995	Temperatu	re (°C)	3%				_		
Estimated Water Volum	ne (L)		pH (pH Uni	its) ±0.1							1
		r well diameter) = 1 well volume	Cond. (µs/c	cm) 3%						11	
		well diameter) = 1 well volume	Specific Co	ond. (µs	s/cm) 3%			2	-	M	
		ell diameter) = 1 well volume 5" diameter) = 1 well volume	Redox (mV	/) 10%			12	14-		1	
		diameter) = 1 well volume	DO (mg/L) 10%			1	1			_	
(5.55)			DO (%) 109	%							
Calculations:	-		Appearance Silty, HC o								
			Only for final	Sulpi	hide (mg/L)	1		7			
			readings	Turb	idity (NTU)						
			Interval Pu	rge Vol	ume (L)						
			Cumulative	e Purge	Volume (L):		4				
YSI ID Logged Field Parameter	ers	☐ Yes ☐ No	Sample Me	ethod:		1					
Time logged on YSI (24	lhr)		Wa	iterra	Peris	staltic	Disp. B	ailer		Other	
Sample Time (24hr)											



Sample Site	e (Con't): CSI-DX	-088/A			Head Space Ga	s Measure	ments	
Sample Date	te (Con't): May &	7 2016					Units	Values
Well Head	Seal: J-Plug	PVC Cap ☐ Not Sealed ☐	Other 300	Sm) Wi	Methane (CH	4)	%LEL	0
	ced:  J-Plug P				Oxygen (O2	)	%	20.
		nitoring: Ves No Detail		<del></del>	Carbon Dioxide	(C02)	PPM	400
Priority	Bottle Type	Parameters Analyzed Min. Volume Treatment ⊠ Pres		Preservative Added 🛛	Vol. Coll	ected (ml)	Comments	
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>			
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)			
2	500 ml (plastic)	Dissolved Mercury			LITTOL (Hydrochloric)			
	ood iiii (piastic)	General Chemistry	100 ml	-	HOL (Hydrochloric)			

60 ml

50 ml

50 ml

4

5

6

120 ml (glass)

120 ml (plastic)

120 ml (glass amber)

Ammonia (NH3)

Thiocyanate (SCN)

Total Inorganic Carbon (TIC)

General Notes and Observations:  - Creek levels very low; lote of lice + snow covering bed (** 490)  - Frozen @ 0.593m w 3cm of water; per tubing frozen in well; attempt to thaw for 20 minutes; attempt unsuccessful	Consumables Used:    1/4" HDPE (peristaltic pump tubing)ft   3/8" HDPE (microwaterra tubing)ft   5/8" HDPE (waterra tubing)ft   1/4" Silicon tubingft   High Capacity .45 micron filters   D-25 (for 2" wells, use with 5/8") foot valves   D-16 (for 1" wells, use with 5/8") foot valves   SS-10 (for 5/8" wells, use with 3/8") foot valves   1" bailer   2" bailer
--	--

☐ H<sub>2</sub>SO<sub>4 (Sulfuric)</sub>

☐ HNO<sub>3 (Nitric)</sub>



Sample Site	G157	- DC-09A1B	Project Nu	mber	1343-005.27		Date	Date		May	1016		
Piezometer Diameter	. 1	12"	Client		GY - AAM		Sampler	S		30	14B		
UTM Location	Z:98	E: 390614 N:6880494	Project Name Mount Nanse			en 2016 GW	Weather	/Temperati	ure	1000	OVER	est	
Waypoint	GPS: [		Sampling Pro			ogram	Recover	у		Good	Bad		
Photos	Cam: 3	Deren Nos:	Purge Method										
Duplicate Collected	☐ Yes	Name:	Waterra Pe			eristaltic	Disp. Bailer			Other			
Field Blank Collected	☐ Yes	Name:	,							_			
Initial Depth to Water (n	n)	B. Frozen A: Frozen	Purge Star	Start Time:		Purge End Time:				Pen or YSI:		Plus	
Depth to Bottom (m)		B=1.155 A=1.182.	Purge Interval Time () min / Vol. () L					-					
Submerged Tubing Dep	oth (m)	_	Depth to w	ater (m)									
Well Stick-up Height (m	1)	B=0.891 A-0.947	Temperatu	re (°C) 3	3%								
Estimated Water Volum	ne (L)		pH (pH Uni	ts) ±0.1									
		r well diameter) = 1 well volume	Cond. (µs/c	cm) 3%									
		well diameter) = 1 well volume	Specific Co	ond. (µs	/cm) 3%								
	-	ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV	) 10%				01	01	5			
		' diameter) = 1 well volume	DO (mg/L) 10%				10	)/					
(-1-11)			DO (%) 10%										
Calculations:			Appearance & Odour (Clear, Silty, HC odours, etc.)							_			
	/		Only for final	Sulph	ide (mg/L)								
			readings	Turbi	dity (NTU)								
			Interval Pu	rge Vol	ume (L)								
			Cumulative	Purge	Volume (L):						- 1		
YSI ID  Logged Field Paramete	rs	Yes No	Sample Me	thod:									
Time logged on YSI (24	hr)		Wa	terra	Peris	staltic	Disp. B	ailer		Other			
Sample Time (24hr)			-		_								



Values

Sample Site	(Con't):	Dc-09 A1B				Head Space Ga	as Measuren	nents	
Sample Dat	e (Con't): May )	72016.						Units	
Well Head S	Seal: ☐ J-Plug ☑ I	PVC Cap ☐ Not Sealed ☐	Other			Methane (CH	4)	%LEL	
	ed: 🗆 J-Plug 🔲 PV		Other			Oxygen (O2	2)	%	1
		nitoring:   Yes □ No Deta				Carbon Dioxide	(C02)	PPM	
тт. ргоро	, comment gas mon				_				
Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Prese	rvative Added 🖂	Vol. Colle	ected (ml)	
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNC	) <sub>3 (Nitric)</sub>			

			volume				
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>	T.	
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml		-		
3	145 ml (plastic)	Eyanide (total, free, weak acid dissociable)	100 ml		□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-		

General Notes and Observations:	Consumables Used:
	☐ 1/4" HDPE (peristaltic pump tubing)ft
	3/8" HDPE (microwaterra tubing)ft
	5/8" HDPE (waterra tubing)ft
4116	☐ 1/4" Silicon tubingft
- When Rozen in Well	☐ High Capacity .45 micron filters
	D-25 (for 2" wells, use with 5/8") foot valves
- Tubing Rozen in well - Attempted to Maw well, unsaccessful	D-16 (for 1" wells, use with 5/8") foot valves
A Hompiec 10 11100 welly ovy access at	SS-10 (for 5/8" wells use with 3/8") foot valves
	1" bailer
	2" bailer
	other (describe)



Sample Site	GSI	-DC-10A/B	Project Nu	mber	1343-005.27		Date	#/ S		May 27.			
Piezometer Diameter	1/2 -	inch	Client		GY - AAM		Sam	plers		36	16B	,	
UTM Location		E: 0390858 N: 688450	-	Mount Nanse			Weat	her/Temper	rature	100 O	vecest		
Waypoint	1	Name: AJ/A	Project Na	Sampling Prog			100000000000000000000000000000000000000	Recovery			☐ Good ☐ Bac		
Photos	Cam: <	MIN Nos:	Purge Meti	Purge Method							- 4-		
Duplicate Collected	Yes	Name:	Wate	erra	Pe	ristaltic		Disp. Baile			Other		
Field Blank Collected	Yes	Name:	- /										
Initial Depth to Water (n	n)	A=Frozen B=Frozen	Purge Start Time:		Purge En				Pen or YSI:		Plus it		
Depth to Bottom (m)		A = 1.431 B = 1.314	Purge Interval Time () min / Vol. () L				/						
Submerged Tubing Dep	oth (m)		Depth to water (m)										
Well Stick-up Height (m	1)	A=1.178 B= 1.095	Temperatu	re (°C) :	3%								
Estimated Water Volum	e (L)		pH (pH Uni	ts) ±0.1									
		r well diameter) = 1 well volume	Cond. (µs/	cm) 3%									
	-	well diameter) = 1 well volume	Specific Co	ond. (µs	/cm) 3%				20				
		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV) 10%					1	KI			/	
	Y	diameter) = 1 well volume	DO (mg/L) 10%				V	100					
.,	(1.2.	, , , , , , , , , , , , , , , , , , , ,	DO (%) 109	6				110		/			
Calculations:			Appearance Silty, HC o										
			Only for final	Sulph	nide (mg/L)			/					
- 2			readings	Turbi	dity (NTU)								
			Interval Pu	rge Vol	ume (L)								
			Cumulative	Purge	Volume (L):								
YSI ID Logged Field Parameter	rs	Yes No	Sample Me	thod:									
Time logged on YSI (24	hr)	6/	Wa	terra	Peris	taltic	Dis	p. Bailer		Other			
Sample Time (24hr)			-					_					



Values

		DC-10A/B			Head Space Ga	s Measure	ments	
Sample Dat	te (Con't): May	27,2016					Units	
Well Head S	Seal: J-Plug []1	PVC Cap  Not Sealed	Other		Methane (CH4	4)	%LEL	8:0
		/C Cap □ Not required □			Oxygen (O2)		%	8-20
		nitoring: Yes No Deta	-	-	Carbon Dioxide (	(C02)	PPM	8-30
Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🗵	Preservative Added 🛛	Vol. Col	lected (ml)	Comr
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>			
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)			
2	500 ml (plastic)	General Chemistry	100 ml	1	-/			

100 ml

60 ml

50 ml

50 ml

Cyanide (total, free, weak acid

dissociable)

Ammonia (NH3)

Thiocyanate (SCN)

Total Inorganic Carbon (TIC)

145 ml (plastic)

120 ml (glass)

120 ml (plastic)

120 ml (glass amber)

3

4

5

6

eneral Notes and Observations:	Consumables Used:
	☐ 1/4" HDPE (peristaltic pump tubing)ft
	☐ 3/8" HDPE (microwaterra tubing)ft
- Tubing Frozen in well - Attempted to thow, unsuccessful	5/8" HDPE (waterra tubing)ft
102111) 11020 111 WEI	1/4" Silicon tubingft
	☐ High Capacity .45 micron filters
Ato a fee to Thow unsuccessial	D-25 (for 2" wells, use with 5/8") foot valves
111.000	☐ D-16 (for 1" wells, use with 5/8") foot valves
	SS-10 (for 5/8" wells, use with 3/8") foot valves
	1" bailer
	☐ 2" bailer
	other (describe)

NaOH (Sodium Hydroxide)

☐ H<sub>2</sub>SO<sub>4 (Sulfurio)</sub>

☐ HNO<sub>3 (Nitric)</sub>



Sample Site	G-51	-HA-01A	Project Nu	mber	1343-005.27			Date			Ma	01/0-	
Piezometer Diameter	1	Will	Client GY - AAM					Sample	rs		KB	150	
UTM Location	Z: 08 E	:0387843N:688   133	Project Name Mount Nanse			en 2016	GW	Weathe	r/Tempe	rature	Snou	Vrain	
Waypoint	GPS: H		Project Nat	ne	Sampling Pr	ogram		Recove	ry		□ Go	od 🖸	Bad
Photos	Cam: 🦪	er Nos:	Purge Method				-						
Duplicate Collected	Yes	Name:	Waterra Per			eristaltic		Di	sp. Baile	r	Other		
Field Blank Collected	Yes	Name:											
Initial Depth to Water (n	nitial Depth to Water (m)		Purge Start Time:		Purge End Time:				Pen or YSI:		YSI Pr		
Depth to Bottom (m)	5.166		Purge Interval Time () min / Vol. () L										
Submerged Tubing Dep	oth (m)	250 3-122	Depth to water (m)										
Well Stick-up Height (m	)	1.163	Temperature (°C) 3%			1							
Estimated Water Volum	mated Water Volume (L) 0, 28 6/L		pH (pH Uni	ts) ±0.1		0	1						
	(DTB – DTW) x (πr <sup>2)*</sup> 1000 (for well diameter) = 1 well volume		Cond. (µs/c	cm) 3%		,						-76	
		vell diameter) = 1 well volume	Specific Co	ond. (µs	/cm) 3%	16							
		ell diameter) = 1 well volume ' diameter) = 1 well volume	Redox (mV	) 10%									
		diameter) = 1 well volume	DO (mg/L) 10%			828						70	
(2.22,	(	and to the state of the state o	DO (%) 10%		-								
Calculations:	2	2 - 0 571 × 05	Appearance Silty, HC or	e & Odo dours, e	our (Clear, etc.)			d	irec	+	\		X
(3.790-	-gag	(9) =0.571×0.5	Only for final	Sulph	ide (mg/L)	0.06			San	ple			
	0 25	86L + 3	readings	Turbi	dity (NTU)	76.1	31.5		Ten.				
	0,0		Interval Pu	rge Volu	ume (L)								
		1-1	Cumulative	Purge	Volume (L):							10-	
YSI ID  Logged Field Parameter	rs	☐ Yes ☑ No	Sample Me	thod:									
Time logged on YSI (24	hr)		Wa	terra	Peris	staltic		Disp. I	Bailer		Other		
Sample Time (24hr)	13	10:25			1	/							



Sample Site (Con't): May 25 2016
Well Head Seal: ☐ J-Plug ☐ PVC Cap ☐ Not Sealed ☐ Other
Seal Replaced:   J-Plug PVC Cap   Not required  Other
Well properly sealed for gas monitoring: ☐ Yes ☐ No Details:

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	209
Carbon Dioxide (C02)	PPM	400

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	HNO <sub>3 (Nitric)</sub>	100	may 25
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)	20	May 75
2	500 ml (plastic)	General Chemistry	100 ml		-	1 250	May 25
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		NaOH (Sodium Hydroxide)	100	May 25
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>	60	May 25
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	HNO <sub>3 (Nitric)</sub>	50	May 25
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	1.	-	50	May 25

General Notes and Observations:	Consumables Used:
	☐ 1/4" HDPE (peristaltic pump tubing)ft
01 44 7 0000 00 00	☐ 3/8" HDPE (microwaterra tubing)ft
-Photos- Jeremy phone	5/8" HDPE (waterra tubing)ft
	1/4" Silicon tubing 0,7 ft
	☐ High Capacity .45 micron filters
	D-25 (for 2" wells, use with 5/8") foot valves
	☐ D-16 (for 1" wells, use with 5/8") foot valves
	SS-10 (for 5/8" wells, use with 3/8") foot valves
	☐ 1" bailer
	□ 2" bailer
	other (describe)



Sample Site	GSI	-HA-02A	Project Nu	mber	1343-005.27			Date			Ma	V2520	16
Piezometer Diameter	1/2		Client	- 13	GY - AAM			Sample	rs		50	wn K	Beckman
UTM Location	Z:08 E	:: 0387863 N: 6881131			Mount Nanse	en 2016 G	w	Weathe	r/Tempe		70	~ light	
Waypoint	GPS:	Name: NA	Project Na	me	Sampling Pro	ogram		Recove	ry		□G		Bad
Photos	Cam:	Chury Nos:	Purge Meth	nod									
Duplicate Collected	Yes	Name:	Wate	erra	Pe	eristaltic		Dis	sp. Baile	r		Other	
Field Blank Collected	☐ Yes	Name:											
Initial Depth to Water (m	1)	& Frozen	Purge Star	t Time:		Purge I				Pen (		YSI Pr	
Depth to Bottom (m)		2.391	Purge Inter		Vol. () L								
Submerged Tubing Dep	th (m)		Depth to w	ater (m)					-				
Well Stick-up Height (m)	)	1.552	Temperatu	re (°C) 3	3%								
Estimated Water Volume	e (L)	-	pH (pH Uni	ts) ±0.1					1				
		well diameter) = 1 well volume	Cond. (µs/d	cm) 3%									
		ell diameter) = 1 well volume	Specific Co	ond. (µs	/cm) 3%								
		ell diameter) = 1 well volume diameter) = 1 well volume	Redox (mV	) 10%				1	0761	n.			
		diameter) = 1 well volume	DO (mg/L)	10%	7			1					
			DO (%) 10%										
Calculations:		/.	Appearance Silty, HC or										
			Only for final	Sulph	ide (mg/L) .	-							-
			readings	Turbi	dity (NTU)								
			Interval Pu	rge Volu	ume (L)								
			Cumulative	Purge	Volume (L):								N. A.
YSI ID Logged Field Parameter	rs	☐ Yes ☑Ńo	Sample Me	thod:									
Time logged on YSI (24h	hr)		Wa	terra	Peris	staltic		Disp. I	Bailer			Other	
Sample Time (24hr)													



Sample Site (Con't):HA - C	
Sample Date (Con't): May 35 206	
Well Head Seal: ☐ J-Plug ☐ PVC Cap	☐ Not Sealed ☐ Other
Seal Replaced:   J-Plug PVC Cap	☐ Not required ☐ Other
Well properly sealed for gas monitoring:	Yes No Details:

	Units	Values
Methane (CH4)	%LEL	- 0
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	300

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🗵	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>		
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml	-	-		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml		☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-		

General Notes and Observations:	Consumables Used:
111/5 111 " 115	1/4" HDPE (peristaltic pump tubing)ft
Well Frozen, tubing in well Frozen in well.	3/8" HDPE (microwaterra tubing)ft
	5/8" HDPE (waterra tubing)ft
Attention Road of Thousand Leads to button uncharged	1/4" Silicon tubing <u>D. S</u> ft
THE STORY OF THE S	☐ High Capacity .45 micron filters
Attenting Rove I at Thawha depth to bottom uncharged Rome 2 of Thawhay depth to bottom uncharged	D-25 (for 2" wells, use with 5/8") foot valves
on contract of	☐ D-16 (for 1" wells, use with 5/8") foot valves
	SS-10 (for 5/8" wells, use with 3/8") foot valves
	☐ 1" bailer
	2" bailer
	other (describe)



Sample Site	GSI-HA-03A	Project Nun	nber 1343-00	5.27	Date	-	May 2	5 7 Ail
Piezometer Diameter	1-inch	Client	GY - AA	М	Samplers		KB/3C	10010
UTM Location	Z:08 E:0387879 N: 688 1	1/3/ Project Nov	Mount N	ansen 2016 GW	Weather/Tem		Snow/	Cain
Waypoint	GPS: Name: NAMe:	Project Nan	Project Name Sampling Prog		Recovery			Bad
Photos	Cam: Nos:	Purge Meth	od					
Duplicate Collected	Yes Name:	Water	rra	Peristaltic	Disp. Ba	iler	Oth	er
Field Blank Collected	Yes Name:							
Initial Depth to Water (n	0.973	Purge Start	Time:	Purge En Time:	id	Pen o		I Pro Plus n Unit
Depth to Bottom (m)	1.349	Purge Inter-	val min / Vol. ()	L				
Submerged Tubing Dep	th (m) 1.349	Depth to wa	ater (m)					
Well Stick-up Height (m	0.960	Temperatur	re (°C) 3%					
Estimated Water Volum		pH (pH Unit	rs) ±0.1	\$				1
	1000 (for well diameter) = 1 well vo		m) 3%					- 1
	(for 4" well diameter) = 1 well volu	Opcomo oo	nd. (µs/cm) 3%			1	7	-11
	(for 2" well diameter) = 1 well volun (for 1.5" diameter) = 1 well volum	Renov (mv)	10%				2	-1
	5 (for 1" diameter) = 1 well volume	DO /// \ 4	10%		1	0		
	:=0	DO (%) 10%	. /				-	
Calculations:	38	Appearance Silty, HC od	& Odour (Clear, lours, etc.)		41126	7		
- 0.973	, x0,5=0.188	Only for final	Sulphide (mg/L)		14	mote	7	
- 21	88LE 2.01	readings	Turbidity (NTU)		2			
0.5+6	X 0 1 2 - 111	Interval Pur	ge Volume (L)					
		Cumulative	Purge Volume (L	):		3/		
YSI ID  Logged Field Parameter	Yes No	Sample Met	hod:		1112			
Time logged on YSI (24)	hr)	Wate	erra P	Peristaltic	Disp. Bailer		Oth	er
Sample Time (24hr)	12:30							



Sample Site (Con't): 6 SI - HA - 6 3A
Sample Date (Con't): May 25, 2016
Well Head Seal: ☐ J-Plug ☐ PVC Cap ☐ Not Sealed ☐ Other 51+ in Cap
Seal Replaced:   J-Plug PVC Cap Not required Other
Well properly sealed for gas monitoring: ☐ Yes ☐ No Details: ☐ Cal

	Units	Values
Methane (CH4)	%LEL	Ø
Oxygen (O2)	%	20,9
Carbon Dioxide (C02)	PPM	400

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	HNO <sub>3 (Nitric)</sub>	80 ~1	insufficient sample
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)	15~1	msyrram sample
2	500 ml (plastic)	General Chemistry	100 ml	100			
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-			

General Notes and Observations:	7.	Consumables Used:  1/4" HDPE (peristaltic pump tubing) 6 ft (+
- frozen	of Samples not Representativ	□ 3/8" HDPE (microwaterra tubing)ft □ 5/8" HDPE (waterra tubing)ft
-14 inch tobing in well-	frozen	☐ 1/4" Silicon tubing ☐ 5 ft ☐ High Capacity .45 micron filters ☐ D-25 (for 2" wells, use with 5/8") foot valves
-water sampled about		□ D-16 (for 1" wells, use with 5/8") foot valves □ SS-10 (for 5/8" wells, use with 3/8") foot valves □ 1" bailer
- Checked again on Mo	my 27, 2016 7 Insufficient worder; Frozen	☐ 2" bailer ☐ other (describe)



Sample Site	GISI.	- HA - 04A	Project Nu	mber	1343-005.27		Date		May 25 2016			
Piezometer Diameter		*	Client		GY - AAM		Samplers Weather/Temperature			John / K. Becking		
UTM Location Z: 68		: 6387915 N: 6881132	Project Name		Mount Nanse	en 2016 GW				Lon Avvcast		
		Ym Name: N/A			Sampling Program		Recovery			☐ Good ☐ Bad		
Photos				Purge Method								
Duplicate Collected	Duplicate Collected Yes Nar		Waterra		Pe	eristaltic	Disp. Bailer			Other		
Field Blank Collected	old Blank Collected Yes Name:				1							
Initial Depth to Water (m)		1.615	Purge Start Time:		Purge End Time:			Pen YSI:	-			
Depth to Bottom (m)		1.854	Purge Interval Time () min / Vol. () L									
Submerged Tubing Dept	th (m)	1.854	Depth to water (m)									
Well Stick-up Height (m)		0,609	Temperature (°C) 3%								κ.	
Estimated Water Volume	pH (pH Units) ±0.1											
(DTB – DTW) x (πr <sup>2)*</sup> 1	Cond. (µs/cm) 3%											
(DTB – DTW) x 8.1	Specific Co	Specific Cond. (µs/cm) 3%						7				
(DTB – DTW) x 2 (t (DTB-DTW) x 1.1	Redox (mV) 10%				2	1 cect	\					
(DTB-DTW) x 0.5	DO (mg/L) 10%					1100	000	/	1			
			DO (%) 10%				1	500	1		3 11 = =	
Calculations:	Appearance & Odour (Clear, Silty, HC odours, etc.)											
- (1	Only for final		ide (mg/L)									
	readings Tur	Turbio	dity (NTU)									
	Interval Purge Volume (L)		ume (L)									
	Cumulative Purge Volume (L):											
YSI ID			Sample Me	thod:								= 10
Logged Field Parameters	S	Yes No	Campio metrou.									
Time logged on YSI (24h	nr)		Wa	Waterra Peri		staltic	Disp. Bailer			Other		
Sample Time (24hr)		14:10.			<							





Sample Site (Con't):
Sample Date (Con't): May 25 2016
Well Head Seal: ☐ J-Plug ☐ PVC Cap ☐ Not Sealed ☐ Other
Seal Replaced:   J-Plug PVC Cap Not required Other
Well properly sealed for gas monitoring: ☐ Yes ☐ No Details: 5(+ 10 Cap

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20.7
Carbon Dioxide (C02)	PPM	400

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	HNO <sub>3 (Nitric)</sub>	loval	May 25 @ 14:11
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)	20-1	May 25/20 14:1
2	500 ml (plastic)	General Chemistry	100 ml	J		2260	May 27 (08
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	1 -	NaOH (Sodium Hydroxide)	145	May 2708
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>	70	Mar 27 @ 16:10
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	1	HNO <sub>3 (Nitric)</sub>	£\$ 100	MATRIA (2) 16:10
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-	120	MWD7 2016:10

General Notes and Observations:	Consumables Used:
	☐ 1/4" HDPE (peristaltic pump tubing)ft
Low producing well.	3/8" HDPE (microwaterra tubing)ft
	5/8" HDPE (waterra tubing)ft
	∠ 1/4" Silicon tubing _ 0,5 ft
	☐ High Capacity .45 micron filters
-pres-Beremy phone	D-25 (for 2" wells, use with 5/8") foot valves
	☐ D-16 (for 1" wells, use with 5/8") foot valves
	SS-10 (for 5/8" wells, use with 3/8") foot valves
-May 27 - Sampled agash, cyanide + Gen Chem.	☐ 1" bailer
Lead it sauched 200 1 1 - 1 - 1	☐ 2" bailer
- May 27 @ 16:10 justubing stuck in well, able to pull out &	other (describe)



Sample Site	GSI	-Ht-05A	Project Number 1343-005.27				Date			P	May 25 788		
Piezometer Diameter	1-11	ch .	Client		GY - AAM		Sample	rs	X	RI	50		
UTM Location	Z:08 E	:0387890 688112Z	Desired No.	Project Name Mount Nansen 2016 GW		Weather/Temperature		ature O	overcas +				
Waypoint	GPS:	Name: N/A	Sampling Program			Recovery				☐ Good ☐ Bad			
Photos	Cam: J	ecentos:	Purge Meth	nod								1	
Duplicate Collected	Yes	Name:	Wate	erra	Pe	eristaltic		Dis	sp. Bailer	- 15		Other	
Field Blank Collected	Yes	Name:											
Initial Depth to Water (m	1)	0.966	Purge Star	t Time:		Purge Tim				Pen or YSI:		YSI Pro Pen Unit	
Depth to Bottom (m)		1.519	Purge Inter		Vol. () L								
Submerged Tubing Dept	th (m)	1.519	Depth to w	ater (m)								1	
Well Stick-up Height (m)	)	10188	Temperature (°C) 3%			1				/	1		
Estimated Water Volume (L)			pH (pH Units) ±0.1									1	
(DTB – DTW) x ( $\pi r^{2)*}$ 1000 (for well diameter) = 1 well volume			Cond. (µs/cm) 3%					1	N	//	7		
		rell diameter) = 1 well volume	Specific Cond. (µs/cm) 3%				/	1	X	1		-	
		ell diameter) = 1 well volume ' diameter) = 1 well volume	Redox (mV) 10%					'V	7				
		diameter) = 1 well volume	DO (mg/L)	10%			/	1	. \				
			DO (%) 10%	6			X	12	20				
Calculations:			Appearance Silty, HC o					216	mol	2			
			Only for final	Sulph	nide (mg/L)			)9					
			readings		dity (NTU)								
			Interval Pu	170									
			Cumulative	Purge	Volume (L):					- 50	1		
YSI ID		1	Sample Me	thod:									
Logged Field Parameter	rs	☐ Yes ☐ No								5-1-			
Time logged on YSI (24h	hr)		Wa	terra	Peris	staltic		Disp. I	Bailer	100		Other	- 3
Sample Time (24hr)		13:40			1								



Sample Site (Con't): GSI-HA-OSA	
Sample Date (Con't): May 25 2016	
Well Head Seal: ☐ J-Plug ☐ PVC Cap ☐ Not Sealed ☐ Other	
Seal Replaced: _ J-Plug _ PVC Cap _ Not required _ Other	
Well properly sealed for gas monitoring: ☐ Yes ☑ No Details:	in cap

	Units	Values
Methane (CH4)	%LEL	Ø
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	300

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🛛	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	HNO <sub>3 (Nitric)</sub>	loó	May 25
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)	15	May 25
2	500 ml (plastic)	General Chemistry	100 ml	-	-		•
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml		☐ H₂SO₄ (Sulfuric)		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-		

- 14 -inch tobing brozen inside well & Samples -direct sampled water w new tubing. not Representati	Consumables Used:  1/4" HDPE (peristaltic pump tubing) 6 ft 3/8" HDPE (microwaterra tubing) ft 5/8" HDPE (waterra tubing) ft 1/4" Silicon tubing 1/8 ft
-direct sampled water w new tubing. not Representation	High Capacity .45 micron filters  D-25 (for 2" wells, use with 5/8") foot valves  D-16 (for 1" wells, use with 5/8") foot valves  SS-10 (for 5/8" wells, use with 3/8") foot valves
-in 50 66 vol to complete al samples	☐ 1" bailer ☐ 2" bailer
-pris Jeremy Phone	other (describe)



Sample Site	GISI	I-PC-01B	Project Number 1343-005.27			Date		May 7 8016		26.
Piezometer Diameter			Client	ent GY - AAM §		Samplers	R-	TC:	148	
UTM Location	Z: I	E: N:	Project Name	Mount Nanse	en 2016 GW	Weather/	Temperature			
Waypoint	GPS:	Name:	Sampling Prog		ogram	Recovery		G	ood 🗌 Ba	ad
Photos	Cam:	Nos.	Purge Method							
Duplicate Collected	☐ Yes	Name:	Waterra		eristaltic	Disp	b. Bailer		Other	
Field Blank Collected	☐ Yes	Name:								
Initial Depth to Water (r	nitial Depth to Water (m)		Purge Start Time:		Purge End Time:		Pen YSI		YSI Pro	
Depth to Bottom (m)			Purge Interval Time () min /	Vol. () L						
Submerged Tubing Dep	nerged Tubing Depth (m)		Depth to water (m	)						
Well Stick-up Height (m	Stick-up Height (m)		Temperature (°C)	3%						
Estimated Water Volum			pH (pH Units) ±0.1							
	(DTB – DTW) x ( $\pi r^{2}$ *1000 (for well diameter) = 1 well volume (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume			Cond. (µs/cm) 3%						
		vell diameter) = 1 well volume ell diameter) = 1 well volume	Specific Cond. (µs	s/cm) 3%			202			
	. /	" diameter) = 1 well volume	Redox (mV) 10%		X	51 m	yes			
	- /	diameter) = 1 well volume	DO (mg/L) 10%			7	V			
/			DO (%) 10%						-	
Calculations:			Appearance & Od Silty, HC odours,	our (Clear, etc.)						
			final	hide (mg/L)						
				idity (NTU)						
			Interval Purge Vol							
			Cumulative Purge	Volume (L):						
YSI ID  Logged Field Paramete	rs	☐ Yes ☐ No	Sample Method:							
Time logged on YSI (24	hr)		Waterra	Peris	staltic	Disp. Ba	iler		Other	
Sample Time (24hr.)										



Well Head Seal:	Sample Sit	te (Con't):	-PC-02B		Head Space Ga	as Measurements			
Seal Replaced:	Sample Da	te (Con't):	870010				3	Units	Values
Seal Replaced:   J-Plug   PVC Cap   Not required   Other   Carbon Dioxide (C02)	Well Head	Seal: □.I-Plug □ F	PVC Can	Other		Methane (CH	4)	%LEL	
Priority   Bottle Type   Parameters Analyzed   Min. Volume   Treatment   Preservative Added   Vol. Collected						Oxygen (O2	2)	%	
Priority Bottle Type Parameters Analyzed Volume Treatment  Preservative Added  Vol. Collected  1a 120 ml (plastic) Dissolved Metals 100 ml						Carbon Dioxide	(C02)	PPM	
Treatment   Preservative Added   Vol. Collected	топ ргоро	in y oculeu for gus mon	Normig.   165   160 Deta						
1b 40 ml (glass) Dissolved Mercury 15 mL Field-Filtered HCL (Hydrochloric)  2 500 ml (plastic) General Chemistry 100 ml - NaOH (sodium Hydroxide)  3 145 ml (plastic) Cyanide (total, free, weak acid dissociable) 100 ml - NaOH (sodium Hydroxide)  4 120 ml (glass) Ammonia (NH3) 60 ml - H <sub>2</sub> SO <sub>4</sub> (Sulfuric)  5 120 ml (plastic) Thiocyanate (SeN) 50 ml - HNO <sub>3</sub> (Neric)  6 120 ml (glass amber) Total Inorganic Carbon (TIC) 50 ml	Priority	Bottle Type	Parameters Analyzed		Treatment 🖂	Preservative Added 🛛	Vol. Collected	(ml)	Comments
2 500 ml (plastic) General Chemistry 100 ml - NaOH (sodium Hydroxide)  3 145 ml (plastic) Cyanide (total, free, weak acid dissociable) 100 ml - NaOH (sodium Hydroxide)  4 120 ml (glass) Ammonia (NH3) 60 ml - H <sub>2</sub> SO <sub>4</sub> (sulfuric)  5 120 ml (plastic) Thiocyanate (SCN) 50 ml - HNO <sub>3</sub> (Ntric)  6 120 ml (glass amber) Total Inorganic Carbon (TIC) 50 ml	1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	HNO <sub>3 (Nitric)</sub>			
3 145 ml (plastic) Cyanide (total, free, weak acid dissociable) 100 ml - NaOH (sodum Hydroxide) 4 120 ml (glass) Ammonia (NH3) 60 ml - H <sub>2</sub> SO <sub>4</sub> (suffuric) 5 120 ml (plastic) Thiocyanate (SeN) 50 ml - HNO <sub>3</sub> (Ntric) 6 120 ml (glass amber) Total Inorganic Carbon (TIC) 50 ml	1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)			
dissociable)  4 120 ml (glass) Ammonia (NH3) 60 ml -	2	500 ml (plastic)	General Chemistry	100 ml	-			7.11	
5 120 ml (plastic) Thiocyanate (SCN) 50 ml -	3	145 ml (plastic)		100 ml	-	□ NaOH (Sodium Hydroxide)			
6 120 ml (glass amber) Total Inorganic Carbon (TIC) 50 ml  General Notes and Observations:  Consumables  1/4" HDPE (pe 3/8" HDPE (mi 5/8" HDPE (wa 1/4" Silicon tub High Capacity D-25 (for 2" we	4	120 ml (glass)	Ammonia (NH3)	60 ml	3.2	☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>			
General Notes and Observations:  Consumables  1/4" HDPE (pe 3/8" HDPE (mi 5/8" HDPE (wa 1/4" Silicon tub High Capacity D-25 (for 2" we	5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	1 20	☐ HNO <sub>3 (Nitric)</sub>			
☐ 1/4" HDPE (pe☐ 3/8" HDPE (mi☐ 5/8" HDPE (wi☐ 1/4" Silicon tub☐ High Capacity☐ D-25 (for 2" we	6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		· ·			
	General I	Notes and Observat	ions:				☐ 1/4" HDPE (pe ☐ 3/8" HDPE (m ☐ 5/8" HDPE (w. ☐ 1/4" Silicon tul ☐ High Capacity ☐ D-25 (for 2" w. ☐ D-16 (for 1" w. ☐ SS-10 (for 5/8 ☐ 1" bailer ☐ 2" bailer ☐	eristaltic pump to icrowaterra tubing)ft	ing)ft ft



Sample Site	GISI	- PC-03A1B	Project Nur	nber	1343-005.27		Date			May 27 2016		
Piezometer Diameter	1/	<i>}</i> "	Client		GY - AAM		Sample	ers		36	143	
UTM Location	Z:08 I	E: 6389258N: 6881710	Decises No.		Mount Nansen 2016 GV		2016 GW Weather/Temperature		ature	re 12° Sunny		
Waypoint	GPS: \	Name: ///A	Project Name Sampling Pro		gram	Recove	ery		☐ Good	d UB	ad	
Photos	Cam: 5	erely Nos:	Purge Meth	od	12							
Duplicate Collected	Yes	Name:	Wate	rra	Pe	ristaltic	Di	sp. Bailer	-	Other		
Field Blank Collected	Yes	Name: 68-4										
Initial Depth to Water (n	n)	B-1.075 A = 0,955	Purge Start	Time:		Purge Er Time:			Pen YSI:		YSI Pro Pen Uni	
Depth to Bottom (m)		B-2.833 A=1.234	Purge Inter		Vol. () L							
Submerged Tubing Dep	oth (m)	馨	Depth to wa	ater (m)			,					
Well Stick-up Height (m	1)	B = 1,008 A = 0.972	Temperature (°C) 3%									
Estimated Water Volume (L) 0 .4395			pH (pH Units) ±0.1				1					
(DTB – DTW) x (πr <sup>2)*</sup> 1000 (for well diameter) = 1 well volume			Cond. (µs/cm) 3%									
		vell diameter) = 1 well volume	Specific Cond. (µs/cm) 3%									
		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV) 10%				$\lambda$					
		diameter) = 1 well volume	DO (mg/L) 10%				,00	1				
			DO (%) 10%	6			1110	175				
Calculations:	022-	-1.075) × 0.25 -0.4395L	Appearance Silty, HC or				W. W	KV	1			
( }	.837	12951	Only for final	Sulph	ide (mg/L)		50	0	1	\		
		- 0.43	readings	Turbi	dity (NTU)		(			1		
			Interval Pu	rge Vol	ume (L)		60			1	1	
		Cumulative	Purge	Volume (L):		1			1			
YSI ID			Sample Method:								0	
Logged Field Paramete	ers	☐ Yes ☐ No	Cumpio inc	LITOU.								
Time logged on YSI (24	lhr)		Wa	terra	Peris	taltic	Disp.	Bailer			Other	
Sample Time (24hr)		18:50			\							



Sample Site (Con't): _	G5I-PC-	03×1/B		
Sample Date (Con't): _				
Well Head Seal:   J-	Plug PVC Cap	Not Sealed	Other	
Seal Replaced:   J-Plu	ug PVC Cap	☐ Not required	Other	
Well properly sealed for	or gas monitoring:	Yes □ No □	etails:	

	Units	Values
Methane (CH4)	%LEL	B= 0 B= 0.
Oxygen (O2)	%	B; 20.9 B= 209
Carbon Dioxide (C02)	PPM	B-500 B-300

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🛛	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	DL/HNO <sub>3 (Nitric)</sub>	400	
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)	./	
2	500 ml (plastic)	General Chemistry	100 ml		(Hydrosinon)	150	
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		□ NaOH (Sodium Hydroxide)	a so	
4	120 ml (glass)	Ammonia (NH3)	60 ml	1	☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	1	HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml				

General Notes and Observations:	Consumables Used:
well labeled of SI-PCO3-MP-B/A re-labeled well as: 651-PC-03-A/B -PVC carp on well B, no cap (glove) on well A	State   Stat
	other (describe)



Sample Site	GS1-PC-04B/A	Project Nur	mber	1343-005.27		Date		27-	may -1	6
Piezometer Diameter	0.5" DP	Client		GY - AAM		Samplers	3	NB	Mr.	
UTM Location	Z:08, E: 03895 84 N: 6881659	Dunio et Nov		Mount Nanse	en 2016 GW	Weather/Te	emperature	50 CK	quality to	5wn
Waypoint	GPS: ELR Name: 627	Project Nar	ne	Sampling Pro	ogram	Recovery		Good Bad		ad
Photos	Cam: ELR Nos: 497-499	Purge Meth	nod						P. W. TO	
Duplicate Collected	Yes Name:	Wate	erra	Pe	ristaltic	Disp.	Bailer		Other	
Field Blank Collected	Yes_Name:									
Initial Depth to Water (r	n)   8   A   1.257	Purge Start	t Time:		Purge End Time:		Pen YSI		YSI Pro	
Depth to Bottom (m)	FROZEN FROZEN	Purge Inter		/ol. () L						
Submerged Tubing Dep	oth (m)	Depth to w	ater (m)							-
Well Stick-up Height (m	0.985 10.978	Temperatu	re (°C) 3	%				_		
Estimated Water Volum	ne (L)	pH (pH Uni	ts) ±0.1					_	1	
, , , , , , , , , , , , , , , , , , , ,	1000 (for well diameter) = 1 well volume	Cond. (µs/d	cm) 3%	-			1	1	10	
	(for 4" well diameter) = 1 well volume	Specific Co	ond. (µs/	cm) 3%		101	16			
	(for 2" well diameter) = 1 well volume 1 (for 1.5" diameter) = 1 well volume	Redox (mV	) 10%		//	14				
	.5 (for 1" diameter) = 1 well volume	DO (mg/L)	10%					/		
(=:==:::/:::		DO (%) 10%	6		1		/			1
Calculations:		Appearance Silty, HC of	e & Odo dours, e	ur (Clear, tc.)						
		Only for final	Sulphi	ide (mg/L)						
/		readings	Turbio	lity (NTU)						
		Interval Pu	rge Volu	ime (L)		6				
	,	Cumulative	e Purge \	Volume (L):						
YSI ID  Logged Field Paramete	yes No	Sample Me	thod:			/				
Time logged on YSI (24	ihr)	Wa	terra	Peris	staltic	Disp. Bail	er		Other	
Sample Time (24hr)										



	e (Con't): _GSI- PC	1			Head Space Ga	s Measurements		
mple Da	te (Con't):	//				Un	its	Values
/ell Head	Seal: J-Plug DF	PVC Cap  Not Sealed	Other SC	con cu	Methane (CH	4) %L	EL	0
	ced:  J-Plug PV				Oxygen (O2	) %	6	20.9
					Carbon Dioxide	(C02) PP	PM	200
ven prope	ny sealed for gas mon	itoring: Yes No Detai	is		_	•		
Priority	Bottle Type	Parameters Analyzed	Min.	Treatment 🛛	Preservative Added	Vol. Collected (m	ni) C	omments
1a	120 ml (plantis)		Volume					MINION CO
1b	120 ml (plastic) 40 ml (glass)	Dissolved Metals  Dissolved Mercury	100 ml	Field Filtered	HNO <sub>3 (Nitric)</sub>		-	
2	500 ml (plastic)	General Chemistry	100 ml	☐ Field Filtered	HCL (Hydrochloric)			
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	□ NaOH (Sodium Hydroxide)			
4	120 ml (glass)	Ammonia (NH3)	60 ml		☐ H₂SO₄ (Sulfuric)			
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	☐ HNO <sub>3 (Nitric)</sub>			
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-			
	notes and Observations of the 20 min	well, frozen ( si attampt unsu	Q Cess Fil	m, other	ngted to	Consumables U  1/4" HDPE (perist 3/8" HDPE (micro 5/8" HDPE (water 1/4" Silicon tubing High Capacity .45 D-25 (for 2" wells, D-16 (for 1" wells,	taltic pump tubing) owaterra tubing) rra tubing) g ft 6 micron filters , use with 5/8") foo	ft ft ot valves



Sample Site	GSI-	PC-OSB/A		Project Nur	nber	1343-005.27		Date		2	7- may-1	6
Piezometer Diameter		05" DP		Client		GY - AAM		Sampler	S		BIMK.	
UTM Location	Z:08\E	E: 0389712 N: (	6881661	Desired No.	- 1	Mount Nanse	en 2016 GW	Weather	Tempera	ture Cla	WOLLI WS	unbreak
Waypoint		Name: 02		Project Nan	ne	Sampling Pro	ogram	Recover	у	G	Good 📗	Bad
Photos	Cam: E	LR Nos: 500-	500.	Purge Meth	nod			-/				
Duplicate Collected	☐ Yes	Name:		Wate	rra	Pe	ristaltic	Dis	p. Bailer		Other	
Field Blank Collected	Yes	Name:					/					
Initial Depth to Water (r	m)	1.150 1.150	la   P//./	Purge Start	t Time:		Purge End Time:			Pen or YSI:	YSI Pr	
Depth to Bottom (m)		FROZEN	FROZEN	Purge Inter		Vol. () L						
Submerged Tubing Dep	pth (m)			Depth to wa	ater (m)	)			1			
Well Stick-up Height (m	n)	8	P1P.0 19	Temperatu	re (°C) 3	3%						1
Estimated Water Volum	ne (L)		1	pH (pH Uni	ts) ±0.1							1
(DTB – DTW) x (πr <sup>2)</sup>	*1000 (fo	r well diameter) = 1	well volume	Cond. (µs/c	cm) 3%					1/	1	-
		vell diameter) = 1 w		Specific Co	ond. (µs	s/cm) 3%			) (	) <		
		ell diameter) = 1 we diameter) = 1 well		Redox (mV	) 10%			1,/	-			
		diameter) = 1 well		DO (mg/L)	10%				,			-
(5.55)	(, , ,			DO (%) 10%	6				`			
Calculations:				Appearance Silty, HC or								
				Only for final	Sulph	nide (mg/L)						
				readings	Turbi	dity (NTU)						
				Interval Pu	rge Vol	ume (L)	/		1			
				Cumulative	e Purge	Volume (L):						
YSI ID  Logged Field Parameter	ers	Yes	TNo	Sample Me	thod:							
Time logged on YSI (24	- 2			Wa	terra	Peris	staltic	Disp. E	Bailer		Other	
Sample Time (24hr)	-					/						



Sample Si	te (Con't): <u>GSI-P</u> (	2-05B/A				Head Space Ga	s Measure	ments		
Sample Da	ate (Con't):				1			Units	Values	A
Well Head	Seal: J-Plug F	PVC Cap ☐ Not Sealed ☑	Other Screen	000		Methane (CH	4)	%LEL	0	0
					Ī	Oxygen (O2)		%	209	30.8
	nced:  J-Plug PV				Ī	Carbon Dioxide	(C02)	PPM	300	9600
well prope	erly sealed for gas mon	itoring: Yes No Detail	s:		_ '					
Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🛛	Preserv	ative Added 🛛	Vol. Col	lected (ml)	Comments	
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (</sub>	Nitric)				
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	☐ HGL (H					
2	500 ml (plastic)	General Chemistry	100 ml			-				
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		□NaOH	(Sodium Hydroxide)				
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	☐ H₂SO₄	(Sulfuric)				
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNO <sub>3 (</sub>	Nitric)				
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-					
	Notes and Observation @1.152m;	tions:  peri tubing frozen  20 mins, attem	o) (o)	well; a	Hemp	+ +0	☐ 1/4" HD ☐ 3/8" HD ☐ 5/8" HD ☐ 1/4" Sili ☐ High Ca ☐ D-25 (fr	or 1" wells, use with for 5/8" wells, use	tubing)ft	



Sample Site	MPC	91-02	Project Nun	nber	1343-005.27		Date		M	4027	2016.
Piezometer Diameter			Client		GY - AAM		Sample	rs	50	JK	B
UTM Location	Z: E	: N:	Desirat Non		Mount Nanse	n 2016 GW	Weather	r/Tempera	ture		
Waypoint	GPS:	Name:	Project Nan	ie	Sampling Pro	gram	Recove	гу		Good	Bad
Photos	Cam:	Nos:	Purge Meth	od							
Duplicate Collected	☐ Yes	Name:	Wate	rra	Pe	ristaltic	Dis	sp. Bailer		Other	
Field Blank Collected	Yes	Name:									
Initial Depth to Water (r	m)	•	Purge Start	Time:		Purge End Time:			Pen or YSI:	YSI F	Pro Plus Unit
Depth to Bottom (m)			Purge Inter		Vol. () L						
Submerged Tubing Dep	pth (m)		Depth to wa	ater (m)						,	
Well Stick-up Height (m	n)		Temperatur	re (°C) 3	3%						
Estimated Water Volum	ne (L)		pH (pH Unit	ts) ±0.1							
		well diameter) = 1 well volume	Cond. (µs/c	m) 3%							1
		ell diameter) = 1 well volume	Specific Co	nd. (µs	/cm) 3%						
		ll diameter) = 1 well volume diameter) = 1 well volume	Redox (mV	10%		_		1			
		diameter) = 1 well volume	DO (mg/L)	10%			1	ne	M	01	
(5.55)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	alameter, Their relains	DO (%) 10%	6			$  \rangle$	11	19/		
Calculations:			Appearance Silty, HC or								
			Only for final	Sulph	nide (mg/L)						-
			readings	Turbi	dity (NTU)						
			Interval Pu	rge Vol	ume (L)		/				
		1 5	Cumulative	Purge	Volume (L):						
YSI ID  Logged Field Parameter	ers	Yes No	Sample Me	thod:	174						
Time logged on YSI (24	4hr)		Wa	terra	Peris	staltic	Disp.	Bailer		Other	
Sample Time (24hr)	-										



I- D-	te (Con't): MC	272116						
ample Da	ite (Cont):	. / 0000.					Units	Values
Well Head	Seal: ☐ J-Plug ☐ F	PVC Cap Not Sealed	Other		Methane (C	H4)	%LEL	
	iced:  J-Plug PV				Oxygen (O	2)	%	
					Carbon Dioxide	(C02)	PPM	
Well prope	erly sealed for gas mon	itoring: Yes No Detail	ls:		_			
Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added ⊠	Vol. C	Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>	1		
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)			
2	500 ml (plastic)	General Chemistry	100 ml		/.			
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-/	□ NaOH (Sodium Hydroxide)			310
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>			
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNO <sub>3 (Nitric)</sub>			
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		÷-			
General I	Notes and Observat	ions:				Cono	umahlaa Haadi	
Jenerai i	Notes and Observat	ions.				1 1 2 2 2 2 2	umables Used: HDPE (peristaltic pun	no tubina) ft
							HDPE (microwaterra	
							HDPE (waterra tubing	
							Silicon tubing	
		1	1	,			Capacity .45 micron	n 5/8") foot valves
		1) /16	200	yed				1 5/8 ) foot valves
			0110	VVA.				with 3/8") foot valves
			1/	100			ailer	
			/				ailer	
							r (describe)	



Sample Site	MPO	9-03	Project Nur	nber	1343-005.27		Date		07	7 - Nau	1-16
Piezometer Diameter		0.5" DP	Client		GY - AAM		Sample	rs	N	MM18	)
UTM Location	Z:08vE	E: 0388957N: 6881743	Decine Man		Mount Nanse	en 2016 GW	Weather	r/Temperatu	re Sul	mu in cl	auds
Waypoint		ELR Name: 009	Project Nar	ne	Sampling Pro	ogram	Recover	ry		3000 🔲 I	Bad
Photos	Cam: €	ELR Nos: 564-505	Purge Meth	od	-	La					
Duplicate Collected		Name:	Wate	rra	Pe	ristaltic	Dis	sp. Bailer		Other	
Field Blank Collected	☐ Yes	Name:							-		
Initial Depth to Water (r	n)	1.618	Purge Start	Time:		Purge End Time:	/		Pen or YSI:	YSI Pro	
Depth to Bottom (m)		FROZEN	Purge Inter		Vol. () L						
Submerged Tubing Dep	oth (m)		Depth to w	ater (m)						>	
Well Stick-up Height (m	1)	0.620	Temperatu	re (°C) 3	3%	/					
Estimated Water Volum	ne (L)		pH (pH Uni	ts) ±0.1							
, , , , , , , , , , , , , , , , , , , ,		r well diameter) = 1 well volume	Cond. (µs/c	m) 3%	- /				- 1		
		vell diameter) = 1 well volume	Specific Co	ond. (µs	/cm) 3%		1	1	8	14	
		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV	) 10%		//	10	206	_*		
		diameter) = 1 well volume	DO (mg/L)	10%				)			
			DO (%) 109	6		1					
Calculations:			Appearance Silty, HC o				/				
	/		Only for final	Sulph	ide (mg/L)						
			readings	Turbi	dity (NTU)						
			Interval Pu	rge Vol	ume (L)		1			- 1	
-/			Cumulative	Purge	Volume (L):						
YSI ID  Logged Field Parameter	ers	☐ Yes ☐ No	Sample Me	thod:				1			
Time logged on YSI (24			Wa	terra	Peris	staltic	Disp. I	Bailer		Other	
Sample Time (24hr)											



Sample Sit	e (Con't): MYOY	-03			Head Space Ga	as Measurements	
Sample Da	te (Con't):					Units	Values
Well Head	Seal: J-Plug DF	PVC Cap Not Sealed	Other		Methane (CH	4) %LEL	0
		C Cap □ Not required □		at house of about	Oxygen (O2	) %	29.9
		itoring: ☐ Yes ☑No Detail	CCIL	0	Carbon Dioxide	(C02) PPM	800
	,		0. 1/61	RUNG			
Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitrie)</sub>		
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml		-		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	2.5	☐ H <sub>2</sub> SO <sub>4 (Sulffuric)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	☐ HNO <sub>3 (Nitric)</sub>	1	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-		
well DF 1 assu	beth measured frozen	tions: Prosen (stuck) in Sitting above Ted (at 1.618) The due to wote	ice.	wowter a	eladati	Consumables Used  1/4" HDPE (peristaltic   3/8" HDPE (microwate   5/8" HDPE (waterra tul   1/4" Silicon tubing   High Capacity .45 micr   D-25 (for 2" wells, use   D-16 (for 1" wells, use   SS-10 (for 5/8" wells, u   1" bailer   2" bailer	pump tubing)ft  rra tubing)ft  bing)ft  con filters  with 5/8") foot valves  with 5/8") foot valves
Stand	ing worder	Surrounding I	Q	conclup.	V1100066224008	other (describe)	



Sample Site	MP	09-04	Project Nur	nber	1343-005.27	7		Date			May	26,20	16
Piezometer Diameter	15-inc	h	Client	-	GY - AAM			Sample	rs		KB %	JC	
UTM Location	Z:08 E	:0389567 N:6880616	Desired No.		Mount Nans	en 2016	GW	Weather/Temperature			overc	ast	
Waypoint		Name: N/A	Project Nar	ne	Sampling Pr	rogram		Recovery			Good	Bad	
Photos	Cam:	Nos:	Purge Meth	od									
Duplicate Collected	Yes	Name:	Waterra		Po	eristaltic		Dis	sp. Baile			Other	
Field Blank Collected	☐ Yes	Name:											
Initial Depth to Water (m	1)	2.035	Purge Start	t Time:	08:22	Purge	e End ne:	08:	40	Pen YSI:	-	YSI Pro Plu Pen Unit	is Q
Depth to Bottom (m)		2.214	Purge Inter		Vol. () L	8:24	8:27	8:30	8:33	8:30	8:40		
Submerged Tubing Dep	th (m)	2.2	Depth to wa	ater (m)		2.111	2,080	2.081	2.075	2,075	2.02		
Well Stick-up Height (m)	)	1.234	Temperatu	re (°C) 3	3%	2.96	2.87	2.52	2.22	2.20	2.06		
Estimated Water Volume (L) $0.1969$ (DTB – DTW) x ( $\pi r^2$ )*1000 (for well diameter) = 1 well volume		pH (pH Uni	ts) ±0.1		5.45	6.45	6.62	6.75	684	6.88			
		Cond. (µs/cm) 3%			0.753	0,708	0.704	0.697	0-694	0.691		10.0	
			Specific Cond. (µs/cm) 3%			1,289	1.234	1.233	1.237	1.231	19231		
			Redox (mV	) 10%		279.5	241.0	228.6	217,0	216.2	-214.1		
			DO (mg/L)	10%		7.44	5.50	5.28	5.26	5.06	4.91		
(0.00.11)	Vell Stick-up Height (m)  stimated Water Volume (L)  (DTB – DTW) x (πr²)*1000 (for well diameter) = 1 well volume  (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume  (DTB – DTW) x 2 (for 2" well diameter) = 1 well volume  (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume  (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume	DO (%) 10%	6		51.1	40.6	38.9	38.4	36.8	35.7			
Calculations:		Appearance Silty, HC or			clear	clear	dear	cloal	clea	clear		- 7	
	0	1:79	Only for final	Sulph	nide (mg/L)	/	1	1	(	1	0.01		
129	01	790	readings	Turbi	dity (NTU)	/	1	1	/	1	2.10		
0.17	. 1	76.96	Interval Pu	rge Vol	ume (L)	0.20	0.3	0.35	0.45	0.35	0.30		
x 1.1 0.19.6.42		Cumulative	Purge	Volume (L):	0.20	0.50	0.85	1.30	1.65	1.25			
YSI ID  Logged Field Parameter	s	13F190509-Pine ■Yes □No	Sample Me	thod:									
Time logged on YSI (24)	hr)	08:42	Wa	terra	Peri	staltic		Disp. Bailer			Other		
Sample Time (24hr)	3	08:50											



	n't): MP09-04
Sample Date (Co	on't): May 26, 2016
Well Head Seal:	☐ J-Plug ☐ PVC Cap ☐ Not Sealed ☐ Other
Seal Replaced: [	☐ J-Plug ☐ PVC Cap ☐ Not required ☐ Other
Well properly se	aled for gas monitoring: 🗆 Yes 🔲 No Details:

	Units	Values			
Methane (CH4)	%LEL	Ø			
Oxygen (O2)	%	20.9			
Carbon Dioxide (C02)	PPM	700			

Priority	Bottle Type	Bottle Type Parameters Analyzed Min. Volume Treatment ⊠ Preservative Added ⊠		Vol. Collected (ml)	Comments		
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	HNO <sub>3 (Nitric)</sub>	120	
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)	40	
2	500 ml (plastic)	General Chemistry	100 ml	-		500	
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	NaOH (Sodium Hydroxide)	145	
4	120 ml (glass)	Ammonia (NH3)	60 ml		H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>	120	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	HNO <sub>3 (Nitric)</sub>	120	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-		120	

General Notes and Observations:	Consumables Used:
	1/4" HDPE (peristaltic pump tubing)ft
	3/8" HDPE (microwaterra tubing)ft
- XO.2 m of water above frozen section, HOPE tolong was frozen	5/8" HDPE (waterra tubing)ft
in well, but we dis-ladged if	☐ High Capacity .45 micron filters
1. WIII, but we dis-larged 17	D-25 (for 2" wells, use with 5/8") foot valves
	☐ D-16 (for 1" wells, use with 5/8") foot valves
- sampled to tubing, well had good re-change.	SS-10 (for 5/8" wells, use with 3/8") foot valves
willi.	1" bailer
	2" bailer
	other (describe)



Sample Site	MPO9	-05	Project Nur	nber	1343-005.27	,		Date		26	- May - 16		
Piezometer Diameter		Lic	Client		GY - AAM			Sample	rs	NE	3/MU		
UTM Location	Z:08/1	18vE:0389560 N:6880558	Project Nar	ma	Mount Nans		GW	Weather/Temperature			overcet, snow		
Waypoint	GPS: E	LR. Name: 014	r Toject Nai		Sampling Pr	ogram		Recove	ry		Good Ba	ad	
Photos	Cam: €	LR Nos: 450 - 450.	Purge Meth	od									
<b>Duplicate Collected</b>	Yes	Name: Dup - 2	Wate	rra	Pe	eristaltic		Di	sp. Baile	r	Other		
Field Blank Collected	Yes	Name:				$\times$					_		
Initial Depth to Water (m	1)	1.447	Purge Start	Time:	7:58		e End ne:	8:	13	Pen or YSI:	YSI Pro		
Depth to Bottom (m)		1,829	Purge Inter		Vol. () L	8:01	8:04	8:07	8:10	8:13			
Submerged Tubing Dep	th (m)	N1.6	Depth to w	ater (m)		1.463	1,463	1.463	1.463	1.463			
Well Stick-up Height (m)	)	1.048	Temperatu	re (°C) 3	3%	2.2	1.9	1.7	1,6	1.6			
<b>Estimated Water Volume</b>	e (L)	DIGT 0.4302	pH (pH Uni	ts) ±0.1		5.67	6.61	14.0	6.74	6,76			
		r well diameter) = 1 well volume	Cond. (µs/c	cm) 3%		1269	1199	177	1168	1165			
		vell diameter) = 1 well volume	Specific Co	ond. (µs	/cm) 3%	8263	2144	2119	2112	2109			
		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV	) 10%		37.5		-34.1	-465	- 567			
		diameter) = 1 well volume	DO (mg/L)			3,50		1.00	1.0	1.29			
			DO (%) 10%			28.0		7.3	7.6	9.2			
Calculations:		a (1202	Appearance Silty, HC or			21.00th	Same	Clear	4m29	Chear			
1.\$59 1.447 0.382 x 62		0,400	Only for final	Sulph	nide (mg/L)	/	/	/	/	0.0			
777 K 0-	5 -	A	readings	Turbi	dity (NTU)	/	1	/	/	266			
0,500			Interval Pu	rge Vol	ume (L)	/	0,6	0.35	0.35	0.35			
			Cumulative	Purge	Volume (L):	/	0,6	0.95	1.30	1.65			
YSI ID Logged Field Parameter	S	MP09 - 05	Sample Me	thod:									
Time logged on YSI (24)	hr)	8:84	Wa	terra	Peri	staltic		Disp.	Bailer		Other	B	
Sample Time (24hr)		8:30			7	~							



Values

mments

☐ D-16 (for 1" wells, use with 5/8") foot valves \_\_\_\_ ☐ SS-10 (for 5/8" wells, use with 3/8") foot valves

☐ 1" bailer \_\_\_\_\_ ☐ 2" bailer \_\_\_\_\_

other (describe)

Head Space Gas Measurements

						ao moada dinonto	
Sample Date	e (Con't):	y-16 @8:00				Units	
Well Head S	ieal: ⊠ J-Plug □ I	PVC Cap ☐ Not Sealed ☐	Other		Methane (Ch	14) %LEL	
			Other		Oxygen (O	2) %	
					Carbon Dioxide	(C02) PPM	
тт рторог	eal Replaced:						
Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🗵	Vol. Collected (ml)	Co
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	HNO <sub>3 (Nitric)</sub>	120	+ D.

15 mL

100 ml

Sample Site (Con't): MPO9 - 05

40 ml (glass)

500 ml (plastic)

Dissolved Mercury

General Chemistry

	d					>00	- 1JUD-0
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	NaOH (Sodium Hydroxide)	145	2 Dur a
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	(H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>	200	+ Duna
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☑ HNO <sub>3 (Nitric)</sub>	120	+ Dup-2
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-	190	+ Dun-0
- guys	Arom Densor	storted pump	during	purg	е	☐ 3/8" HDPE (micn ☐ 5/8" HDPE (wate ☑ 1/4" Silicon tubin	staltic pump tubing)ft (\$\instructure\inft) movesterra tubing)ft erra tubing)ft
							s, use with 5/8") foot valves

Field Filtered

HCL (Hydrochloric)



Sample Site	MPC	19-08	Project Nur	nber	1343-005.27	7		Date		= 198	Mar	127.	2014
Piezometer Diameter	5/8 +	ubring	Client		GY - AAM			Sample	ers		KB	1/5C	
UTM Location	Z:08 E	:0389 160 N: 688.1718	Desired No.		Mount Nans	en 2016	GW	Weathe	r/Tempe	rature	Sun	ny	
Waypoint		emm -Name: Ma	Project Nar	ne	Sampling Pr	rogram		Recove	ry		Go	ood 🖫	Bad
Photos	Cam: Je	Nos:	Purge Meth	nod									
<b>Duplicate Collected</b>	Yes	Name: DUP-3	Waterra		P	eristaltic		Di	sp. Baile	r	Other		
Field Blank Collected	Yes	Name:								. 1			
Initial Depth to Water (m	1)	0.548	Purge Start	t Time:	11:39	_	e End ne:			Pen YSI		YSI Pro	
Depth to Bottom (m)		1.971	Purge Inter		Vol. () L	11:41	11:44	11:47	11:50	11:53			
Submerged Tubing Dep	th (m)	1.9	Depth to w	ater (m	)	1	1	1	1	1			
Well Stick-up Height (m)	)	0.796	Temperatu	re (°C)	3%	3.71	3.18	2.94	2.89	2.45			
<b>Estimated Water Volume</b>	stimated Water Volume (L) 0.35575		pH (pH Uni	ts) ±0.1		6.16	6.50	6.66	6,76	6,84			
(DTB – DTW) x ( $\pi r^{2}$ )*1000 (for well diameter) = 1 well volume		Cond. (µs/c	m) 3%		0450	0.426	114.0	0,411	0.403				
		ell diameter) = 1 well volume	Specific Cond. (µs/cm) 3%			0.759	0.78	10.710	0.711	0.713			
		Il diameter) = 1 well volume diameter) = 1 well volume	Redox (mV	) 10%		23.3	-0,7	-12.5	-17,7	-21,1			
		diameter) = 1 well volume	DO (mg/L)	10%		1.0	0.60	2.04	3,59	4.86			
	(		DO (%) 10%	6		7.4	4.5	15.8	26.7	35.8			
Calculations: 1.971 - 0.548		=0.35575	Appearance Silty, HC of			grey!	grey	grey	grell	. Clea			
P.HX.	3		Only for final	Sulpi	nide (mg/L)	1	/	1	1	/	TOPE,	0.14	
. 7 . 1	5		readings	Turbi	dity (NTU)	/	11	3000	-	/	/	0.85	
204	60		Interval Pu	rge Vol	ume (L)	2300	0.40	0.5	0.4	0.5			
0.35.5	7.5		Cumulative	Purge	Volume (L):	0.3	0.7	1.20	1.60	2,10			
YSI ID Logged Field Parameter		909-08- ☐Yes ☐No	Sample Me	thod:									
Time logged on YSI (24I	hr)	11:56	Wa	terra	Peri	staltic		Disp.	Bailer	Tr.	Other		
Sample Time (24hr)		11:50											



Sample Site (Con't): MPO9-08	
Sample Date (Con't): May 27, Zolb	
Well Head Seal:	
Seal Replaced:   J-Plug PVC Cap Not required Other	
Well properly sealed for gas monitoring: ☐ Yes ☐ No Details:	

	Units	Values
Methane (CH4)	%LEL	Ø
Oxygen (O2)	%	20,9
Carbon Dioxide (C02)	PPM	300

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	HNO <sub>3 (Nitric)</sub>	120	
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	ACL (Hydrochloric)	40	
2	500 ml (plastic)	General Chemistry	100 ml	-		500	
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	NaOH (Sodium Hydroxide)	145	
4	120 ml (glass)	Ammonia (NH3)	60 ml		H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>	120	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	- a	EHNO <sub>3 (Nitric)</sub>	120	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-	120	

General Notes and Observations:	Consumables Used:
- not enough space in well to measure DTB while doing parameters (5/8)	1/4" HDPE (peristaltic pump tubing)ft
- not enough space in well to meson	3/8" HDPE (microwaterra tubing)ft
2000 From (5/8)	5/8" HDPE (waterra tubing)ft
parameter	1/4" Silicon tubing 0/) ft
1 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	High Capacity .45 micron filters
- purged > 3 well volumes before sampling; Do tope still not stable	D-25 (for 2" wells, use with 5/8") foot valves
- parigue	D-16 (for 1" wells, use with 5/8") foot valves
	SS-10 (for 5/8" wells, use with 3/8") foot valves
no cap on well	☐ 1" bailer
no cap or won	2" bailer



Sample Site	MPO	9-09	Project Nu	mber	1343-005.27		Date.		20	- Mau	1-16	
Piezometer Diameter		10	Client		GY - AAM		Sample	rs		3/MM	3	
UTM Location	Z:08,1	E: 0389.239 N: 6880681	Decinat No.		Mount Nanse	en 2016 GW	Weather	r/Tempera	ature oue	s cost	/ cuis	raus
Waypoint	GPS: 2	ELR Name: 03	Project Na	ne	Sampling Pro	gram	Recover	ry		Good		
Photos	Cam: F	ELR Nos: 441 - 443	Purge Meth	nod								
Duplicate Collected	☐ Yes	Name:	Wate	erra	Pe	ristaltic	Dis	sp. Bailer		Of	ther	
Field Blank Collected	Yes	Name:										
Initial Depth to Water (m	1)	3.052 to ice	Purge Star	t Time:		Purge End Time:			Pen or YSI:		'SI Pro en Uni	
Depth to Bottom (m)		3.050 to ice FROZEN	Purge Inter		Vol. () L							
Submerged Tubing Dep	th (m)		Depth to w	ater (m)								
Well Stick-up Height (m)	)	2.552	Temperatu	re (°C) 3	3%							
Estimated Water Volume	e (L)	/	pH (pH Uni	ts) ±0.1								
		r well diameter) = 1 well volume	Cond. (µs/d	cm) 3%	1					-	-	1
		vell diameter) = 1 well volume	Specific Co	ond. (µs	/cm) 3%				1	7		N
		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV	) 10%	-			X		1	1	,
		diameter) = 1 well volume	DO (mg/L)	10%							_	
			DO (%) 10%	6			1					
Calculations:	/		Appearance Silty, HC or	e & Odo dours, e	our (Clear, etc.)						1	
			Only for final	Sulph	nide (mg/L)							
			readings	Turbi	dity (NTU)							
			Interval Pu	rge Vol	ume (L)							
			Cumulative	Purge	Volume (L):							
YSI ID  Logged Field Parameter	s	☐ Yes ☐ No	Sample Me	thod:								
Time logged on YSI (24)			Wa	terra	Peris	taltic	Disp. E	3ailer		Of	ther	
Sample Time (24hr)						/						



Sample Site	(Con't): MYOU-	04			Head Space Ga	s Measur
Sample Date	e (Con't):		7.			
Well Head S	Seal: ⊠ J-Plug □ I	PVC Cap ☐ Not Sealed ☐	7 Other		Methane (CH	4)
Seal Renian	ed: □ J-Plug □ PV	C Cap ☑ Not required ☐	Other		Oxygen (O2)	)
				No. of the control of	Carbon Dioxide	(C02)
Priority	Bottle Type	itoring:  Yes  No Deta	Min. Volume	Treatment 🗵	Preservative Added ⊠	Vol. Co
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nfric)</sub>	
	1 C 157 - The To	100 00 700 00 70				

#### rements

	Units	Values
Methane (CH4)	%LEL	6
Oxygen (O2)	%	30.9
Carbon Dioxide (C02)	PPM	300

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🛛	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Ntric)</sub>		
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml	-/			
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml		☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-		

General Notes and Observations:	Consumables Used:
-Frozen at 3.052m> Attempted to thaw for 20 minutes, attempt unsuccessful.  - Ice found on water level tape.	□ 1/4" HDPE (peristaltic pump tubing)ft □ 3/8" HDPE (microwaterra tubing)ft □ 5/8" HDPE (waterra tubing)ft □ 1/4" Silicon tubingft □ High Capacity .45 micron filters □ D-25 (for 2" wells, use with 5/8") foot valves □ D-16 (for 1" wells, use with 5/8") foot valves □ SS-10 (for 5/8" wells, use with 3/8") foot valves □ 1" bailer □ 2" bailer □ other (describe)



Sample Site	MPO	1-10	Project Nu	mber	1343-005.27			Date	15		26.	May-	16
Piezometer Diameter	1	J.	Client	330	GY - AAM			Sample	rs		NB,	MM	
UTM Location	Z:08v 1	E: 0389239 N: 688 0681	Project Na		Mount Nanse	en 2016	GW	Weathe	r/Tempe	rature	overo	ost to t	preeze.
Waypoint	GPS: E		Project Na	me	Sampling Pro	ogram		Recove	ery		G		Bad
Photos	Cam:	LR Nos: 441-443	Purge Meth	nod									
Duplicate Collected	Yes	Name:	Wate	erra	Pe	eristaltic	-	Di	sp. Baile	r		Other	
Field Blank Collected	Yes	Name:											
Initial Depth to Water (m	n)	3,500	Purge Star	t Time:			e End ne:			Pen		YSI Pr	
Depth to Bottom (m)		3.948 to ice	Purge Inter		Vol. () L								
Submerged Tubing Dep	th (m)		Depth to w	ater (m							1		
Well Stick-up Height (m	)	2.255	Temperatu	re (°C)	3%				1		0	,	
Estimated Water Volume	e (L)		pH (pH Uni	its) ±0.1			/	/		//	1		
(DTB – DTW) x (πr <sup>2)*</sup>	1000 (fo	r well diameter) = 1 well volume	Cond. (µs/	cm) 3%					1	4/			
		vell diameter) = 1 well volume	Specific Co	ond. (µs	/cm) 3%		/		KU	1	/		
		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV	/) 10%		/	/	11				r /	
		diameter) = 1 well volume	DO (mg/L)	10%			/	V		/		1	
(2.22)	,		DO (%) 109	%		1	1/	3			/		
Calculations:	/		Appearance Silty, HC o	e & Od dours,	our (Clear, etc.)		X						
2502 x	0.5	7	Only for final	Sulph	nide (mg/L)			/	1	/			
5446			readings	Turbi	dity (NTU)			ľ	/	1			
			Interval Pu	rge Vol	ume (L)								
/			Cumulative	e Purge	Volume (L):								1
YSI ID  Logged Field Parameter	rs	☐ Yes ☐ No	Sample Me	ethod:		-							
Time logged on YSI (24)	hr)		Wa	terra	Peris	staltic		Disp.	Bailer			Other	TILL AS
Sample Time (24hr)													



Sample Si	te (Con't): NPOQ-1	0				Head Space Ga	s Measure	ements	
Sample Da	ate (Con't):				110	THE T		Units	Values
Well Head	Seal: □ J-Plug □ F	PVC Cap  Not Sealed	Other			Methane (CH	4)	%LEL	0
						Oxygen (O2)		%	20.9
	iced:		-			Carbon Dioxide	(C02)	PPM	300
Well prope	erly sealed for gas mon	itoring: Xes No Detai	ls:		-				
Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preserv	vative Added 🖂	Vol. Co	llected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO₃	(Nitric)			
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL 0	Hydrochloric)			
2	500 ml (plastic)	General Chemistry	100 ml	-/					
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		☐ NaOH	(Sodium Hydroxide)			
4	120 ml (glass)	Ammonia (NH3)	60 ml		☐ H₂SO.	4 (Sulfuric)			
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNO <sub>3</sub>	(Nitric)			
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-				
- Froze	Notes and Observation @ 3,948 mm Therefore we then to thank or to bailer,	the DTB pre where detected we will after the Attempt unsucce	viously , on sufficient to softed	recorded was	the 10	3 m,	☐ 1/4" HI ☐ 3/8" HI ☐ 5/8" HI ☐ 1/4" Si ☐ High C ☐ D-25 () ☐ D-16 ()	DPE (microwaterra DPE (waterra tubing licon tubing Capacity .45 micron for 2" wells, use wit for 1" wells, use wit (for 5/8" wells, use er er	g)ft



Sample Site	MP09	-11	Project Nur	mber	1343-005.27		Date	е	2	6- May - 16
Piezometer Diameter		1.5"	Client		GY - AAM		San	plers		B/MM
UTM Location	Z:08 JE	0389 000 N:6880610	Denicet No.	Project Name Mount Nansen 201		n 2016 GW	Wea	ather/Temp	erature W	nay in sumbre
Waypoint	GPS:	JL Name: 028	Project Nai	ne	Sampling Pro	gram	Rec	overy		Good Bad
Photos	Cam: E	LR Nos: 471 - 473	Purge Meth	nod						
Duplicate Collected	Yes	Name:	Wate	erra	Pe	ristaltic		Disp. Bail	er	Other
Field Blank Collected	Yes	Name:					/			
Initial Depth to Water (m	1)	2.715 to ICE	Purge Start	t Time:		Purge En Time:	id	/	Pen or YSI:	☐ YSI Pro Plus ☐ Pen Unit
Depth to Bottom (m)		FROZEN	Purge Inter		Vol. () L			/		
Submerged Tubing Dept	th (m)	/	Depth to w	ater (m)			/		1	
Well Stick-up Height (m)	)	1.96	Temperatu	re (°C) 3	3%					
Estimated Water Volume	e (L)		pH (pH Uni	ts) ±0.1					1	7
		well diameter) = 1 well volume	Cond. (µs/c	cm) 3%		_			54	
	4	ell diameter) = 1 well volume	Specific Co	ond. (µs	/cm) 3%			1		
		ell diameter) = 1 well volume diameter) = 1 well volume	Redox (mV	) 10%				5	1	
		diameter) = 1 well volume	DO (mg/L)	10%		8	1			
(=====,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	(		DO (%) 10%	6		X		/		
Calculations:			Appearance Silty, HC or	e & Odo dours, e	our (Clear, etc.)			/		
	/		Only for final	Sulph	ide (mg/L)		1			
/			readings	Turbi	dity (NTU)			/		
			Interval Pu	rge Vol	ume (L)			1		
			Cumulative	Purge	Volume (L):					
YSI ID  Logged Field Parameter	s	☐ Yes ☐ No	Sample Me	thod:				1		
Time logged on YSI (24h	hr)		Wa	terra	Peris	taltic	Di	sp. Bailer		Other
Sample Time (24hr)							1			



	te (Con't): MPOQ-11					Head Space Ga	s Measure		
						2 5	-	Units	Values
Vell Head	Seal: □ J-Plug □ F	PVC Cap Not Sealed	Other			Methane (CH	_	%LEL	<b>19</b> 91
eal Repla	ced:  J-Plug PV	C Cap ☑ Not required ☐	Other			Oxygen (O2)		%	18.2 17
		itoring: XYes No Detail				Carbon Dioxide (	(C02)	PPM	1600
Priority	Bottle Type	Dayamataya Analyzad	Min.	T	Posterior		Val Cal	It a ske of feetly	Community Commun
Hority	Bottle Type	Parameters Analyzed	Volume	Treatment 🖂		ative Added 🛛	Vol. Col	lected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐HNO <sub>3</sub>	(Nitric)			
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	☐ HCL (+	tydrochloric)			
2	500 ml (plastic)	General Chemistry	100 ml						
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	/-	□ NaOH	(Sodium Hydroxide)			
4	120 ml (glass)	Ammonia (NH3)	60 ml		☐ H₂SO₄	(Sulfuric)			
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	☐ HNO <sub>3</sub>	(Nitric)			
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	•				
Froze	rutes, attemp	tions:  To athempted to  the unsuccessful and  tuck (frozen) in a		w well.	for	20	☐ 1/4" HE ☐ 3/8" HE ☐ 5/8" HE ☐ 1/4" Sil ☐ High C ☐ D-25 (f	or 1" wells, use with (for 5/8" wells, use er	tubing)ft  ft  ft



Sample Site	MPO	9-12	Project Nur	nber	1343-005.27	7-		Date	100	20	6 - mar	1-16
Piezometer Diameter		lic -	Client		GY - AAM		Sample	ers		B/MM'	)	
UTM Location	Z:08, E	:0399233 N:6890613	Project Nar	mo	Mount Nanse		GW .	Weathe	er/Tempe	rature w	indu a	sunbreak
Waypoint	GPS: E	LR Name: 000	Project Nai	ne	Sampling Pro	ogram		Recove	егу		Good [	Bad
Photos	Cam:	LTL Nos: 471 - 473	Purge Meth	od								
Duplicate Collected	Yes Yes	Name:	Wate	rra	Pe	eristaltic		Di	sp. Baile	r	Othe	er
Field Blank Collected	Yes	Name:				/						
Initial Depth to Water (m	)	2.664 toice	Purge Star	Time:	/	Purge Tim		/		Pen or YSI:	☐ YSI ☐ Per	Pro Plus Unit
Depth to Bottom (m)		2.664 to ice FROZEN	Purge Inter		Vol. () L							
Submerged Tubing Dept	th (m)	/	Depth to w	ater (m	)							
Well Stick-up Height (m)		2.0	Temperatu	re (°C)	3%		/					
Estimated Water Volume	e (L)		pH (pH Uni	ts) ±0.1								
		r well diameter) = 1 well volume	Cond. (µs/c	m) 3%						-	1	
		vell diameter) = 1 well volume	Specific Co	ond. (µs	s/cm) 3%	-				7 1		
		ell diameter) = 1 well volume " diameter) = 1 well-volume	Redox (mV	) 10%			/	()	1)			
		diameter) = 1 well volume	DO (mg/L)	10%			1	X				
(2.2.2.17,1.11	(		DO (%) 10%	6			1					
Calculations:	/		Appearance Silty, HC o									
/			Only for final	Sulpl	hide (mg/L)		1					
			readings	Turb	idity (NTU)			/				
			Interval Pu	rge Vol	lume (L)							
			Cumulative	Purge	Volume (L):							
YSI ID  Logged Field Parameter	s	☐ Yes ☐ No	Sample Me	thod:					1			
Time logged on YSI (24h	nr)		Wa	terra	Peris	staltic		Disp.	Bailer		Oth	er
Sample Time (24hr)				*			1					



ample Da	te (Con't):					10.00	
						Units	Values
Well Head	Seal: 🛛 J-Plug 🔲 F	PVC Cap Not Sealed	Other		Methane (CH	4) %LEL	0
Seal Repla	ced:  J-Plug PV	C Cap   Not required □	Other		Oxygen (O2	%	20.9
Well prope	rly sealed for gas mon	itoring: ⊠Yes □ No Detai			Carbon Dioxide	(C02) PPM	300
	, ocalou for gao mon	intorning. Extremely 100 Detail					
Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added ⊠	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3-(Nitric)</sub>		
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml		-		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml		☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	[ Te 1]	☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	17	-		
-Frozer	2 attempted	tions:  TO TB previously  TO thow the we  (Frozen) in weel.			aroucces ful	☐ D-16 (for 1" wells, use ☐ SS-10 (for 5/8" wells, use ☐ 1" bailer	pump tubing)ft erra tubing)ft ubing)ft ft
						2" bailer	

Sample Site (Con't): MDO9-16



Sample Site	MPO	1-14	Project Number 1343-005.27			Date	26	26. May 16				
Piezometer Diameter		## 0.5" DP	Client		GY - AAM		Sample	-	NB/NH			
UTM Location	7:09 F: 6290120 N: 6990719		D. L. Aller		Mount Nansen 2016 GW		Weathe	er/Temper	rature (0)	my/58	your lun	
Waypoint	GPS: ELIZ Name: 020		Project Nar	ne	Sampling Pro	ogram	Recove	ery		☐ Good ☐ Bad		
Photos	Cam: E	ELR Nos: 0465-467	Purge Meth	od				-,01				
Duplicate Collected		Name:	Wate	rra	Pe	eristaltic	Di	isp. Bailer		Other		
Field Blank Collected	Yes	Name:				X						
Initial Depth to Water (m	n)	0-1140	Purge Start	Time:	18	Purge End Time:	/		Pen or YSI:		/SI Pro Plus Pen Unit	
Depth to Bottom (m)		210000 1.610	Purge Inter		Vol. () L			100				
Submerged Tubing Dep	oth (m)		Depth to w	ater (m)				/				
Well Stick-up Height (m	)	0.72 (above wester)	Temperatu	re (°C) 3	3%		/		X	_		
Estimated Water Volume	e (L)		pH (pH Units) ±0.1					1				
		r well diameter) = 1 well volume	Cond. (µs/cm) 3%				10			-)		
		vell diameter) = 1 well volume	Specific Cond. (µs/cm) 3%				14	1	1	1		
		ell diameter) = 1 well volume  " diameter) = 1 well volume	Redox (mV	) 10%	<		D			-3	/	
		diameter) = 1 well volume	DO (mg/L) 10%				-	1	SY	1	/	
(2.22,	(		DO (%) 10%	6		1	_ ~	To				
Calculations:			Appearance Silty, HC or	e & Odd dours, e	our (Clear, etc.)		X			/		
1,140	/		Only for final	Sulph	nide (mg/L)		1					
0.370		readings	Turbi	dity (NTU)		1						
		Interval Pu	rge Vol	ume (L)			1/					
			Cumulative	Purge	Volume (L):					(1)		
YSI ID  Logged Field Parameter	rs	☐ Yes ☐ No	Sample Me	thod:								
Time logged on YSI (24)	hr)	//	Waterra Peri		Peris	Peristaltic		Disp. Bailer		(	Other	
Sample Time (24hr)		18,45			X							



Sample Site (Con't): MP 00 - 14	
Sample Date (Con't):	
Well Head Seal: ☐ J-Plug ☐ PVC Cap	Not Sealed ☑ Other plastic ban + tape
Seal Replaced:   J-Plug PVC Cap	□ Not required □ Other Not avail oble
Well properly sealed for gas monitoring:	Yes No Details: Pastic Dog

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	200

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🗵	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	M(HNO <sub>3 (Nitric)</sub>	100	
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml	-	-		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	1.	☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-		

General Notes and Observations:	Consumables Used:
- Hydrocarbon steer sheer on surface of easter surrounding DP	☐ 1/4" HDPE (peristaltic pump tubing)ft (② ᡢ)
- water a tubing stuck in well; attempts to remove it resulted in	5/8" HDPE (waterra tubing)ft
Stick up pull up, stick up wistowle + moves a lot	<ul><li>☑ 1/4" Silicon tubing <u>O</u> ≲ ft</li><li>☐ High Capacity .45 micron filters</li></ul>
- able to sit water level into the tubing	D-25 (for 2" wells, use with 5/8") foot valves
- Attempt to direct sample went dry almost immediately; waited	SS-10 (for 5/8" wells, use with 3/8") foot valves
briefly for recharge, interferent volume collected for metals;	1" bailer
able to collect enough water for dies, metals min vol (100 ml),	other (describe)

Insufficient vol for full somer.

-very slow rectorge, will not return to pung sample more.



Sample Site	MW	09-02	Project Number 1343-005.27		1343-005.27			Date			May	26,6	2016						
Piezometer Diameter	311		Client		Client		GY - AAM			Sample	rs		JC	1KB					
UTM Location	Z: 08 E	: 0389395 N: 6880558	Design to N		Mount Nansen 2016 GW			Weathe	r/Tempe	rature	10°C Suny								
Waypoint	GPS: H		Project Nan	ne	Sampling Pr	rogram		Recove	ry		☐ Good ☐ Bad								
Photos	Cam:	Devely. Nos:	Purge Meth	od			-												
<b>Duplicate Collected</b>	☐ Yes	Name:	Wate	rra	Pe	eristaltic		Di	sp. Baile	er	Other								
Field Blank Collected	Yes	Name:																	
Initial Depth to Water (r	m)	3.420	Purge Start	Time:	11:08		e End ne:	11:2	4	Pen YSI		YSI Pro E							
Depth to Bottom (m)		4.728	Purge Interval Time (3) min / Vol. () L		11:12.	14:15	11:18	11:21	11:24										
Submerged Tubing Dep	pth (m)	4,528	Depth to wa	ater (m)		3,75	3.79	3.87	3.92	3.95									
Well Stick-up Height (m	n)	0.725	Temperature (°C) 3%			2.66	2.55	2.64	260	2.53									
Estimated Water Volume (L) 26164		pH (pH Units) ±0.1			7.04	7,14	7.18	7,21	7.22										
(DTB – DTW) x ( $\pi r^2$ )*1000 (for well diameter) = 1 well volume		Cond. (µs/c	m) 3%		1,384	1,390	1.390	1,398	1.387										
		vell diameter) = 1 well volume	Specific Cond. (µs/cm) 3° Redox (mV) 10% DO (mg/L) 10%		/cm) 3%	2,418	2.424	2.426	2.426	2.425									
		ell diameter) = 1 well volume " diameter) = 1 well volume					Redox (mV) 10%		Redox (mV) 10%			76.1	-87.9	-90.4	-8.2				
		diameter) = 1 well volume						5.19	0,87	0 1	6.29	0.39							
			DO (%) 10%	6		36.2.	6.2	2.2	2.1	3.0									
Calculations:			Appearance & Odo Silty, HC odours, e				sluttilles Sum	Sume	Some	Same	Sur.								
(4.7)	8-3.	480F.1= ( GG	Only for final	Sulph	ide (mg/L)	1	1	1	1	-	0.05								
	208-	2= 2.616 L	readings	Turbi	dity (NTU)	-	1	1	-	/	11.83								
( .300 × 0 - 0.01 × C		Interval Pu	rge Vol	ume (L)	0.200	0.900	0.300	0.300	0.770										
			Cumulative	Purge	Volume (L):	0.300	11-400	0.700	1.00	1.200									
YSI ID  Logged Field Parameter		MW09-03 (556)  ☑Yes □No	Sample Me																
Time logged on YSI (24		11:27	Waterra Peri			istaltic Disp. Bailer					Other								
Sample Time (24hr)		11240			L														



Sample Site (Con't): MW 09-02	
Sample Date (Con't): May 26, 2016	
Well Head Seal: □ d-Plug □ PVC Cap □ Not Sealed □ Other	
Seal Replaced:   J-Plug PVC Cap Not required Other	
Well properly sealed for gas monitoring: ☐ Yes ☐ No Details:	_

	Units	Values
Methane (CH4)	%LEL	Ø
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	400

Priority	Bottle Type	Parameters Analyzed	Min. Volume Treatment ☑ Preservative Added ☑		Vol. Collected (ml)	Comments	
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	MNO <sub>3 (Nitric)</sub>	120	
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)	40	
2	500 ml (plastic)	General Chemistry	100 ml	-		500	
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		NaOH (Sodium Hydroxide)	145	
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>	170	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO <sub>3 (Nitric)</sub>	120	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml			120	

General Notes and Observations:	Consumables Used:
	☐ 1/4" HDPE (peristaltic pump tubing)ft
1	3/8" HDPE (microwaterra tubing)ft
Cross producty well	5/8" HDPE (waterra tubing)ft
	□ 1/4" Silicon tubing <u>U.5</u> ft
	High Capacity .45 micron filters
Note 151 save File is MW09-03 (could not change in Field	D-25 (for 2" wells, use with 5/8") foot valves
700 = 1,52	☐ D-16 (for 1" wells, use with 5/8") foot valves
all to	SS-10 (for 5/8" wells, use with 3/8") foot valves
vill to some	☐ 1" bailer
	2" bailer
	other (describe)



Sample Site	MW	09-03	Project Nu	Project Number 1343-005.27		3-005.27		Date			May	26,	2016		
Piezometer Diameter		311	Client	GY - AAM			Samplers			KB42C					
UTM Location	Z:08 E	:0389419 N:6880556	Droject No.	Project Name Mount Nansen 2016 C		GW	Weather/Temperature			partly cloudy					
Waypoint	GPS: He	emm Name: N/A	Project Na	ile	Sampling Pr	rogram		Recove	ery		☐ G00	d 🔲 I	Bad		
Photos	Cam: 7	Nos:	Purge Meth	nod									- 1		
<b>Duplicate Collected</b>	Yes	Name:	Wate	erra	P	eristaltic		Di	sp. Baile	r		Other			
Field Blank Collected	Yes	Name:				/									
Initial Depth to Water (m	1)	7.714	Purge Star	t Time:	12:03		e End ne:	17:3	15	Pen YSI		YSI Pro Plus			
Depth to Bottom (m)		9.927	Purge Inter		Vol. () L	18:17	12120	(2:23	19:26	12:31	12:35				
Submerged Tubing Dep	th (m)	9.787	Depth to w	ater (m)		7.86	7.86	Eune	Sane	Sane	2.82				
Well Stick-up Height (m)	)	0.415	Temperatu	re (°C) 3	3%	3.61	3.85	4.10	4.23	4.21	4.21				
Estimated Water Volume	e (L)	4,426	pH (pH Units) ±0.1			11.8	8.27	8.37	8.40	8.45	8.50				
		well diameter) = 1 well volume	Cond. (µs/cm) 3%			2.531	1.495	1,502	1.508		1.519				
		ell diameter) = 1 well volume	Specific Co	Specific Cond. (µs/cm) 3%			7,507	2,501	2.500	-	2.519				
		ell diameter) = 1 well volume diameter) = 1 well volume	Redox (mV		-111.7	-113.3	94.6	-87.2	-86.1	-96.9					
		diameter) = 1 well volume	DO (mg/L)		0.96	0-61	0.43	0.47	0.38	0.32					
,		,	DO (%) 109	%		7.1	4.6	3.3	3.6	2.9	2.5				
Calculations:	7 7	714) XX = 4,426		Appearance & Odour Silty, HC odours, etc.				clear	Cleur	clear	Clear	Clem	Clem		
(1,10	1 -/	,(11)	Only for final	Sulph	nide (mg/L)	1	/	1	1	1	0.00	*			
			readings	Turbi	dity (NTU)	/	1	/	-	/	1.61				
			Interval Pu	rge Vol	ume (L)	0.300	6,200	0.400	0.300	0.360	0.250				
			Cumulative	e Purge	Volume (L):	0.200	0400	0.600	009,0	1,150	1. 400				
YSI ID Logged Field Parameter		√(9-04 (556) ☐Yes ☐No	Sample Me												
Time logged on YSI (24)	hr)	12:36	Waterra Per			istaltic	N.	Disp.	Bailer		Other				
Sample Time (24hr)		(2:40													



Sample Site (Con't): MW 09-03	
Sample Date (Con't): May 26, 7016	
Well Head Seal: ☑ J-Plug □ PVC Cap □ Not Sealed □ Other	
Seal Replaced: ☐ J-Plug ☐ PVC Cap ☐ Not required ☐ Other	
Well properly sealed for gas monitoring: ☐ Yes ☐ No Details:	

	Units	Values
Methane (CH4)	%LEL	P
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	300

Priority Bottle Type		Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	EHNO <sub>3 (Nitric)</sub>	120ml	
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	-ETHCL (Hydrochloric)	40	
2	500 ml (plastic)	General Chemistry	100 ml	-	-	500	
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	NaOH (Sodium Hydroxide)	145	
4	120 ml (glass)	Ammonia (NH3)	60 ml		H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>	120	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	DEHNO <sub>3 (Nitric)</sub>	140	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-	120	

General Notes and Observations:	Consumables Used:
	△ 1/4" HDPE (peristaltic pump tubing) 50 ft
11 - Whi is does 11 - 11 - 11 - 11 -	3/8" HDPE (microwaterra tubing)ft
Water table is deep, need to run peristal fic pump @ higher	5/8" HDPE (waterra tubing)ft  1/4" Silicon tubing (0.)ft
speed to start-water flow. speed turned down one water	☐ High Capacity .45 micron filters
The state of the s	☐ D-25 (for 2" wells, use with 5/8") foot valves
reached XSI Flow cell.	☐ D-16 (for 1" wells, use with 5/8") foot valves
	SS-10 (for 5/8" wells, use with 3/8") foot valves
1 ordinate well	☐ 1" bailer
good products well	2" bailer
45I Saved as MW 09-04	other (describe)



Sample Site	MWC	9-04	Project Nu	mber	1343-005.27			Date			Ma	4 26	2016	
Piezometer Diameter	2-	inch	Client	GY - AAM		Samplers			KB/50					
UTM Location Z:0 & E:0389436 N:6880556  Waypoint GPS: \temp{Name: N/a}  Photos Cam: Jeren Nos:		:0389420 N:6880556	Desired No.		Mount Nans	sen 2016 GW		Weather/Temperature			Simmy			
			Project Na	ne	Sampling Pr	rogram		Recove	ry		₩ Go	od 🗆	Bad	
		Purge Meth	nod									9		
Duplicate Collected	☐ Yes	Name:	Waterra Per			eristaltic		Disp. Bailer			Other			
Field Blank Collected	Yes Name:													
Initial Depth to Water (m	1)	4.983	Purge Star	t Time:	12:54	Purge		13:1	8	Pen YSI		YSI Pr		
Depth to Bottom (m)		7.666	Purge Inter		Vol. () L	12:59	13:02	13:05	13:08	13:12	-13:10	0		
Submerged Tubing Depth (m) 7, 100 De		Depth to w	ater (m)		5.28	5.44	5.412	5.545	5.59	\$5.6	.1			
Well Stick-up Height (m)		0.333	Temperatu	re (°C) 3	3%	3.80	3.39	3,77	3.89	3.82	3.56	s c		
Estimated Water Volume (L) 5 , 3 66			pH (pH Uni	8.26	8.31	8.32	8.31	8.32	8,32	-				
(DTB – DTW) x ( $\pi r^{2}$ )*1000 (for well diameter) = 1 well volume		Cond. (µs/cm) 3%			1.499	1,486	1,493	1.497	1.494	1.48				
(DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume			Specific Cond. (µs/cm) 3%			2.518	2.529	2.50	2.509	2.510	2.509	1		
(DTB – DTW) x 2 (for 2" well diameter) = 1 well volume (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume		Redox (mV) 10%			19.1	15.8	11.0	8.5	7.4	7.9				
		DO (mg/L) 10% DO (%) 10%			3.33	0.25	0.20	0.15	0.20	0.19				
Calculations: 7.666					24.31.9		1.5 1.2		1.9	1.4				
			Appearance Silty, HC o			clear	clear	clean	clear	clea	clea	^		
7.683		Only for final	-	ide (mg/L)	1	/	/	1	/	0.00				
,	1		readings	Turbio	dity (NTU)	1	/		1	/	0.2		1 1	
X	6		Interval Pu	rge Volu	ume (L)	0,10	0.50	0.25	0.20	0,20	0.24	5		
5.366			Cumulative	Purge	Volume (L):	0.10	0.60	0.85	1105	1.25	1.50			
YSI ID  Logged Field Parameter	s	Mw 09 - 0 3 F ☑ Yes ☐ No	Sample Method:											
Time logged on YSI (24h	nr)	13:18	Wa	terra	Peri	staltic	tic Disp. Bailer				Other			
Sample Time (24hr)		13140												



Sample Site (Con't): MW 69-64	5
Sample Date (Con't): May 26, 7616	
Well Head Seal: ☐ J-Plug ☐ PVC Cap ☐ Not Sealed	☐ Other
Seal Replaced: ☐ J-Plug ☐ PVC Cap ☐ Not required	☐ Other
Well properly sealed for gas monitoring: ☐ Yes ☐ No ☐	Details:

	Units	Values
Methane (CH4)	%LEL	Ø
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	300

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🗵	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	©-ANO <sub>3 (Nitric)</sub>	120	
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)	40	
2	500 ml (plastic)	General Chemistry	100 ml	-		500	
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		NaOH (Sodium Hydroxide)	145	
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>	120	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO <sub>3 (Nitric)</sub>	120	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-1	120	

General Notes and Observations:	Consumables Used:
	☐ 1/4" HDPE (peristaltic pump tubing)ft
you'd producing well	☐ 3/8" HDPE (microwaterra tubing)ft
glood proceeding well	5/8" HDPE (waterra tubing)ft
	☐ 1/4" Silicon tubingft
	☐ High Capacity .45 micron filters
VCT = 1 = 1 100 102 =	D-25 (for 2" wells, use with 5/8") foot valves
TSI saved as MW09-03r	☐ D-16 (for 1" wells, use with 5/8") foot valves
	SS-10 (for 5/8" wells, use with 3/8") foot valves
	☐ 1" bailer
	2" bailer
	other (describe)



Sample Site	NWO	09-05	<b>Project Number</b> 1343-005.27			Date		24	6 - May	-16		
Piezometer Diameter		2	Client		GY - AAM		Sample	ers		B MH		
UTM Location	Z:OBVE	0399413 N:68 80656			Mount Nansen 2016 GW Weather/Temperatu			rature w	inaus/	over cost		
Waypoint	GPS: F	(R Name: 018	r roject real	ile.	Sampling Pro	ogram	Recov	ery		☐ Good ☐ Bad		
Photos	Cam: E	LR NOS: @ 460-464	Purge Meth	nod								
Duplicate Collected	Yes Yes	Name:	Wate	erra	Pe	eristaltic	D	isp. Baile	r	Oth	ner	
Field Blank Collected	Yes Yes	Name:				/						
Initial Depth to Water (m)	)	DRY	Purge Star	t Time:		Purge End Time:			Pen or YSI:		SI Prø Plus en Unit	
Depth to Bottom (m)		7.570	Purge Inter		Vol. () L							
Submerged Tubing Dept	th (m)		Depth to w	ater (m	)			/				
Well Stick-up Height (m)		1.420	Temperatu	re (°C)	3%							
Estimated Water Volume	e (L)	/	pH (pH Uni	its) ±0.1								
, , , , , , , , , , , , , , , , , , , ,		well diameter) = 1 well volume	Cond. (µs/d	cm) 3%				5				
		rell diameter) = 1 well volume	Specific Cond. (µs/cm) 3%				1					
		ell diameter) = 1 well volume ' diameter) = 1 well volume	Redox (mV	) 10%		X						
		diameter) = 1 well volume	DO (mg/L)	10%						>		
	•		DO (%) 10%	%			4	/				
Calculations:			Appearance Silty, HC o				/	1				
_			Only for final	Sulph	nide (mg/L)							
			readings	Turbi	dity (NTU)							
			Interval Pu	rge Vol	ume (L)							
			Cumulative	e Purge	Volume (L):							
YSI ID  Logged Field Parameters	S	☐ Yes ☐ No	Sample Me	ethod:								
Time logged on YSI (24h	nr)		Wa	terra	Peris	staltic	Disp.	Bailer		Ot	her	
Sample Time (24hr)												



Sample Si	te (Con't): MW 0 9	-05				Head Space Ga	s Measure	ments	
Sample Da	ate (Con't):						1	Units	Values
Well Head	Seal: ☐ J-Plug 1⊠1	PVC Cap ☐ Not Sealed ☐	Other			Methane (CH	4)	%LEL	0
	aced:  J-Plug PV					Oxygen (O2	)	%	214.2
		itoring: ☐ Yes ☑ No Deta				Carbon Dioxide	(C02)	PPM	2400
Priority 1a	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂		Preservative Added 🛛		lected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO:	(Nitric)			
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL	Hydrochloric)			
2	500 ml (plastic)	General Chemistry	100 ml	- /		-			
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	/.	☐ NaOl	(Sodium Hydroxide)			
4	120 ml (glass)	Ammonia (NH3)	60.ml		☐ H₂SO	4 (Sulfurio)			
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	☐ HNO:	(Nitric)			
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-				

eneral Notes and Observations:	Consumables Used:
h .	☐ 1/4" HDPE (peristaltic pump tubing) ft
my @ 7.57 m	☐ 3/8" HDPE (microwaterra tubing)ft
	☐ 5/8" HDPE (waterra tubing)ft
	☐ 1/4" Silicon tubingft
	☐ High Capacity .45 micron filters
	☐ D-25 (for 2" wells, use with 5/8") foot valves
	☐ D-16 (for 1" wells, use with 5/8") foot valves
	SS-10 (for 5/8" wells, use with 3/8") foot valves
	☐ 1" bailer
	2" bailer
	other (describe)



Sample Site	MWC	09-06	Project Nui	Project Number 1343-005.27				Date			26- May-16				
Piezometer Diameter		2"	Client		GY - AAM		Sample	rs		NB/MM					
UTM Location	Z:08, E	:0389414 N: 6880655	Project Name Mount N		Mount Nans	Mount Nansen 2016 GW			Weather/Temperature			windy / overcest			
Waypoint	GPS: E	Name: 0/9	Project Nai	ile	Sampling Pr	rogram		Recove	ry		☑ Goo	d 🗆 E	3ad		
Photos	Cam:	ED Nos: 462 - 464	Purge Meth	nod						elle					
Duplicate Collected	Yes	Name:	Wate	erra	Pe	eristaltic		Dis	sp. Baile	r		Other			
Field Blank Collected	Yes	Name:				X									
Initial Depth to Water (m	)	3.161	Purge Star	t Time:	11:05		e End ne:	11.2	7	Pen YSI		YSI Pro			
Depth to Bottom (m)		6.048	Purge Inter		Vol. () L	Fo.'//	11.10	1:13	11:16	111/4	115,111	11:24	11:24		
Submerged Tubing Dept	th (m)	N 5.0	Depth to w	ater (m)		3,310	3.348	3,367	3,390	3,302	3.3%	3.398	3,430		
Well Stick-up Height (m)		1.70 2.	Temperatu	re (°C) 3	3%	3.7	3.4	3.4	3.3	3.3	3.1	3.1	3.2		
Estimated Water Volume	e (L)	3.8	pH (pH Uni	its) ±0.1		7.45	7.20	7.18	7,17	7.18	7.14	7.6	7.10		
(DTB – DTW) x (πr <sup>2)*1</sup>	1000 (for	r well diameter) = 1 well volume	Cond. (µs/cm) 3%			1181	1168	1165	1162	1158	1153	1148	1146		
		vell diameter) = 1 well volume	Specific Cond. (µs/cm) 3%			1996	1986	1984	1990	1981	[980	1970	1969		
,		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV) 10%			108.9	112.7	114,6	16.3	1/7.7	1184	119.9	1186		
		diameter) = 1 well volume	DO (mg/L) 10%			1.20	0.67	0.60	0.56	0.50	0,500	0.50			
(5.55)	. (		DO (%) 10°	%		16.3	5.0	4,5	4.3	3.9	3.8	4.0	4.0		
Calculations:			Appearance & Odour (Clear, Silty, HC odours, etc.)		SI ONLY	SOM	Some	CHOC	come	same	Salve	Same			
8.048		>11	Only for final	Sulph	nide (mg/L)	/	1	/	1	1	1	/	0.07		
3,10	1 2	= 3,774	readings	Turbi	idity (NTU)	/	/	/	/	/	/	/	24.7		
2.887		Interval Pu	ırge Vol	ume (L)	1	0.7	6.45	0.4	0.5	0.4	3.5	0.5			
		y =	Cumulativ	e Purge	Volume (L):	/	0.7	1.15	1.55	2.05	2.45	2.95	3.45		
YSI ID  Logged Field Parameter	rs	M(V) 09 - 06 □Yes □ No	Sample Me	ethod:											
Time logged on YSI (24)		11:27	Wa	aterra	Peri	istaltic	2	Disp.	Bailer		Other				
Sample Time (24hr)		11:30				$\times$									



Sample Site (Con't): WW 09 - 06	
Sample Date (Con't): 26-May - 16 @	11:20
Well Head Seal: ☐ J-Plug ☐ PVC Cap	□ Not Sealed □ Other
Seal Replaced:	Not required ☐ Other
Well properly sealed for gas monitoring:	Yes No Details: Slits in PVC CO

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	34,9
Carbon Dioxide (C02)	PPM	300

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🗵	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	HNO <sub>3 (Nitric)</sub>	140	
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)	40	
2	500 ml (plastic)	General Chemistry	100 ml	3-11		500	
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	NaOH (Sodium Hydroxide)	145	
4	120 ml (glass)	Ammonia (NH3)	60 ml		H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>	130	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	HNO <sub>3 (Nitric)</sub>	120	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-	190.	

General Notes and Observations:	Consumables Used:
-Stick up very high, had to stand on bornel to take ubder level.	□ 1/4" HDPE (peristaltic pump tubing)ft



Sample Site	NWM	9-07	Project Num	ber	1343-005.27		Date	E F P	25	- May -	16.
Piezometer Diameter		2"	Client		GY - AAM		Samplers			3/MM	,
UTM Location	Z: OBV	E:0389 322 N: 6880698			Mount Nanse	n 2016 GW	Weather/	Temperature	win	au Ove	reast
Waypoint		LR Name: 012	Project Name	е	Sampling Pro	gram	Recovery			oog 🔲 B	
Photos	Cam:	LR_Nos: 444 - 446	Purge Metho	d		-	18 19 1	- 1 - 5			
Duplicate Collected	Yes	Name:	Water	ra	Per	ristaltic	Disp	. Bailer		Other	
Field Blank Collected	Yes	Name:									
Initial Depth to Water (n	n)	8 DRY	Purge Start	Time:		Purge End Time:		Pen		YSI Pro	
Depth to Bottom (m)		3,405	Purge Interv		Vol. () L						
Submerged Tubing Dep	oth (m)		Depth to wat	ter (m)			1				
Well Stick-up Height (m	1)	1.395	Temperature	e (°C) 3	%						
Estimated Water Volum	ne (L)		pH (pH Units	s) ±0.1							
, , , , , , , , , , , , , , , , , , , ,		r well diameter) = 1 well volume	Cond. (µs/cn	n) 3%	1						
		well diameter) = 1 well volume	Specific Cor	nd. (µs	/cm) 3%						
		rell diameter) = 1 well volume 5" diameter) = 1 well volume	Redox (mV)	10%			12	1			
		' diameter) = 1 well volume	DO (mg/L) 1	0%	I		1)				
			DO (%) 10%				1				
Calculations:			Appearance Silty, HC ode				1/1				
	/		Only for final	Sulph	ide (mg/L)						
/				Turbio	dity (NTU)		/				
			Interval Purg	ge Volu	ıme (L)						
			Cumulative	Purge	Volume (L):						
YSI ID  Logged Field Paramete	ers	☐ Yes ☐ No	Sample Meti	hod:							
Time logged on YSI (24	lhr)		Wate	erra	Peris	taltic	Disp. Ba	ailer		Other	
Sample Time (24hr)											



Sample Site (Con't): WW09-67	<u> </u>
Sample Date (Con't):	
Well Head Seal: ☐ J-Plug ☐ PVC Cap ☐	Not Sealed
Seal Replaced: ☐ J-Plug ☐ PVC Cap ☐	Not required  Other
Well properly sealed for gas monitoring:	possibly covering sitts.

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	400

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🗵	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>		
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml	-	-		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	1.0			

Consumables Used:
☐ 1/4" HDPE (peristaltic pump tubing)ft
☐ 3/8" HDPE (microwaterra tubing)ft
5/8" HDPE (waterra tubing)ft
☐ 1/4" Silicon tubingft
☐ High Capacity .45 micron filters
D-25 (for 2" wells, use with 5/8") foot valves
☐ D-16 (for 1" wells, use with 5/8") foot valves
SS-10 (for 5/8" wells, use with 3/8") foot valves
☐ 1" bailer
☐ 2" bailer
other (describe)



Sample Site	MW	09-08	Project Nu	mber	1343-005.27	,		Date			Mar	126,2	016
Piezometer Diameter	2-in		Client		GY - AAM			Sample	ers		KB/	JC'	
UTM Location	Z:08 E	0389620 N: 6880577	Desired No.	-	Mount Nans	en 2016	GW	Weathe	er/Tempe	rature	over	cast	
Waypoint	GPS: 4	um Name: N/a	Project Na	ne	Sampling Pr	rogram		Recove	ery		Goo	od 🗌 E	Bad
Photos	-	rem Nos:	Purge Meth	nod		-							
Duplicate Collected	Yes	Name:	Wate	erra	P	eristaltic		Di	sp. Baile	er		Other	
Field Blank Collected	Yes	Name:											
Initial Depth to Water (r	n)	1.990	Purge Star	t Time:	09:18		e End ne:	09:	36	Pen YSI		X YSI ₽ ☐ Pen Ur	
Depth to Bottom (m)		3.901	Purge Inter		ol. () L	9:20	9:23	9:26	9:30	9:33	9:36		
Submerged Tubing Dep	oth (m)	3,300	Depth to w	ater (m)		1.29	1.30	Same	Same	same	-		9
Well Stick-up Height (m	1)	1.139	Temperatu	re (°C) 3%	6	2.56	2.38	2.06	1.69	1.59	1.87		
Estimated Water Volum	ne (L)	3.827	pH (pH Uni	its) ±0.1		7.63	6.76	6.72	6.69	6.67	6.65		
(DTB – DTW) x (πr <sup>2)</sup>	1000 (fo	well diameter) = 1 well volume	Cond. (µs/	cm) 3%		0.357	0.358	0.357		0.360	0.373	3	
		vell diameter) = 1 well volume	Specific Co	ond. (µs/c	m) 3%	0-626	0.631	0.636	0.648	0.650	0.669		
		ell diameter) = 1 well volume	Redox (mV	) 10%		-65.4	-60.(	-66.0	-62.2	-60,4	-59.2		
		" diameter) = 1 well volume diameter) = 1 well volume	DO (mg/L)	10%		5,17	0.86	0.30	0.21	0.28	0.51		
		diameter) – i weii voidine	DO (%) 109	%		35.7	6.0	2.0	1.5	211	3,7		
Calculations: 3-80			Appearance Silty, HC o			cloar fallouting	Clear	Same	Some	(lear			
1'.9			Only for final	Sulphic	de (mg/L)	1	1	-	-		0.11		
X	2		readings	Turbidi	ty (NTU)	/	1	-	-	1	3.94	1	
3.8	22		Interval Pu	rge Volu	me (L)	0.200	0.400	0300	8:55	0,550	0.500		
			Cumulativ	e Purge V	olume (L):	0.300		0.900	1,45	12.00	2.500		
YSI ID  Logged Field Parameter	ers	M W 09-08 ☑Yes □ No	Sample Me	ethod:									
Time logged on YSI (24	thr)	09:36	Wa	iterra	Peri	staltic		Disp.	Bailer			Other	
Sample Time (24hr)		09:45											



Sample Site (Con't): MWO9-08	
Sample Date (Con't): May 26, 2016	
Well Head Seal: ☐ J-Plug ☐ PVC Cap ☐ Not Sealed ☐ Other	
Seal Replaced:   J-Plug PVC Cap Not required Other	
Well properly sealed for gas monitoring: ☐ Yes ☐ No Details:	

	Units	Values
Methane (CH4)	%LEL	Ø
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	700

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	HNO <sub>3 (Nitric)</sub>	170	
1b	40 ml (glass)	Dissolved Mercury	15 mL	Pield Filtered	HCL (Hydrochloric)	Un	
2	500 ml (plastic)	General Chemistry	100 ml	1-1-1		500	
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		NaOH (Sodium Hydroxide)	145	
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	U-H2SO4(Sulfuric)	170	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO <sub>3 (Nitric)</sub>	120	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-	120	

General Notes and Observations:	Consumables Used:
	□1/4" HDPE (peristaltic pump tubing) 5 ft
and halana	☐ 3/8" HDPE (microwaterra tubing)ft
-replaced tubing	5/8" HDPE (waterra tubing)ft
9	□ 1/4" Silicon tubing \/2_ft
- good producing well	☐ High Capacity .45 micron filters
- Jood higane. & mail	☐ D-25 (for 2" wells, use with 5/8") foot valves
	☐ D-16 (for 1" wells, use with 5/8") foot valves
	SS-10 (for 5/8" wells, use with 3/8") foot valves
	☐ 1" bailer
	☐ 2" bailer
	other (describe)



Sample Site	MWO	9-11	Project Nur	nber	1343-005.27		Date			85-N	Jan - 1	0
Piezometer Diameter		2"	Client		GY - AAM		Sample	rs		NBI	MM	
UTM Location	Z:08v	E:038903B N:6880712.	Desired Nov		Mount Nanse	en 2016 GW	Weathe	r/Tempe	rature	Receive	d Over	ast.
Waypoint	GPS: ₽	11	Project Nar	ne	Sampling Pro	ogram	Recove	ry		Gog	d B	ad
Photos	Cam:	ELR. Nos: 441-443	Purge Meth	od							E	381
Duplicate Collected	Yes	s Name:	Wate	rra	Pe	ristaltic	Dis	sp. Baile	-		Other	
Field Blank Collected	Yes	Name:										
Initial Depth to Water (n	n)	4936 B DRY	Purge Start	Time:		Purge End Time:			Pen o		YSI Pro	
Depth to Bottom (m)		4.926	Purge Inter		Vol. () L							
Submerged Tubing Dep	oth (m)		Depth to w	ater (m)	)							
Well Stick-up Height (m	1)	0.808	Temperatu	re (°C) :	3%				_			
Estimated Water Volum	ne (L)		pH (pH Uni	ts) ±0.1								
, , , , , , , , , , , , , , , , , , , ,		or well diameter) = 1 well volume	Cond. (µs/d	m) 3%				-	1			
		well diameter) = 1 well volume	Specific Co	ond. (µs	s/cm) 3%		X	K	7			
		vell diameter) = 1 well volume 5" diameter) = 1 well volume	Redox (mV	) 10%				) ].				
		" diameter) = 1 well volume	DO (mg/L)	10%			7					
(5.55.111)	.0 (101 1	diameter, Transcriber	DO (%) 10%	6								
Calculations:			Appearance Silty, HC o				/	/				
			Only for final	Sulpi	hide (mg/L)		/					
			readings	Turbi	idity (NTU)							
			Interval Pu	rge Vol	lume (L)							
			Cumulative	Purge	Volume (L):							
YSI ID  Logged Field Paramete	ers	☐ Yes ☐ No	Sample Me	thod:				1				
Time logged on YSI (24			Wa	terra	Peris	staltic	Disp.	Bailer			Other	
Sample Time (24hr)												



Values

20.7

1000

Well Head Seal: ☐ J-Plug ☐ PVC Cap ☐ Not Sealed ☐ Other Methane (CH4)	
Well riedd Oddi. 5 1 ldg 2 1 VO Cap 1 Not Sealed 1 Otilei	%LEL
Seal Replaced:  J-Plug PVC Cap Not required Other Oxygen (O2)	%
Well properly sealed for gas monitoring: ☐ Yes ☑ No Details: S I I PVC	PPM

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>		
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml		-		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	L	☐ H₂SO₄ (Sulfuric)		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-		

eneral Notes and Observations:	Consumables Used:
by @ 4.906m + sona + ice on waterlevel (ice most likely from condensation.	1/4" HDPE (peristaltic pump tubing)ft   3/8" HDPE (microwaterra tubing)ft   5/8" HDPE (waterra tubing)ft   1/4" Silicon tubingft   High Capacity 45 micron filters   D-25 (for 2" wells, use with 5/8") foot valves   D-16 (for 1" wells, use with 5/8") foot valves   S8-10 (for 5/8" wells, use with 3/8") foot valves   1" bailer   2" bailer   other (describe)



Sample Site	MWOO	1-13	Project Nu	mber	1343-005.27	7	0	ate		05-	mau-1	4
Piezometer Diameter		2"	Client		GY - AAM		S	amplers				0
UTM Location	Z:08, 1	E: 0289085 N: 68 81649	Davis dala	-	Mount Nans	en 2016 GW	V	Veather/Tem	perature	DWOL	cost colo	4
Waypoint			Project Na	me			1	Recovery				
Photos	Cam: £	(Z Nos: 423-435	Purge Meti	nod								
Duplicate Collected	☐ Yes	Name:	Wate	erra	Pr	eristaltic	-	Disp. Ba	iler		Other	
Field Blank Collected	Yes	Name:										
Initial Depth to Water (n	n)	5.945 to ice	Purge Star	t Time:		Purge Er Time:	nd	/				
Depth to Bottom (m)		59% FROTEN	_		Vol. () L							
Submerged Tubing Dep	oth (m)		Depth to w	ater (m)	)			/			1	
Well Stick-up Height (m	1)	0.760	Temperatu	re (°C) 3	3%	/				1	N	
Estimated Water Volum	ie (L)		pH (pH Uni	its) ±0.1			/		1	4	/ 2	
		the state of the s	Cond. (µs/	cm) 3%		1			KL	1		
			Specific Co	ond. (µs	/cm) 3%	1	/	1	1			
			Redox (mV	) 10%		/		X		/		
						1	/				/	
						'						
Calculations:		/										
	/		Only for final	Sulph	nide (mg/L)							
			readings	Turbi	dity (NTU)			V				
	Client GY - AAM Samplers  Z: 08, E: 0289005 N: 68 0   60   60   70   70   70   70   70											
Harris			Cumulative	Purge	Volume (L):							
YSI ID Logged Field Parameter	rs	☐ Yes ☐ No	Sample Me	thod:		/						
Time logged on YSI (24)	hr)		Wa	terra	Peris	staltic	- )	Disp. Bailer		ME	Other	
Sample Time (24hr)				/								



Values

39.9

топ рторо						
	ced:	/C Cap ⊠ Not required □  itoring: □ Yes ⊠ No Detail		Oxygen (O2 Carbon Dioxide		% PPM
Well Head S	Seal: ☐ J-Plug ☐ F	PVC Cap  Not Sealed	Other	 Methane (CH	4)	%LEL
Sample Dat	te (Con't):					Units

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🛛	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>		
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml				
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	/	□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 mJ	-	☐ H <sub>2</sub> SO <sub>4 (Sulffuric)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	C	☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-		

General Notes and Observations:	Consumables Used:
0.003m of water above ice; attempted to traw well for using DI. water (boiling) + waterra tubing; attempt was Placer miner actively working around well;	□ 1/4" HDPE (peristaltic pump tubing)ft □ 3/8" HDPE (microwaterra tubing)ft



Sample Site	MWC	09-14	Project Nur	nber	1343-005.27		Date	100	AS	-May - 16	
Piezometer Diameter		0	Client		GY - AAM		Sample	rs		BIMM	
UTM Location	Z:ORVE	E:63 89004 N:6881665			Mount Nanse	en 2016 GW	Weather	Temperature	Ran	7.	09t.
Waypoint	GPS: 3		Project Nar	ne	Sampling Pro		Recover	ry		Good Ba	
Photos		LR Nos: 430 - 432	Purge Meth	lod						THE	100
Duplicate Collected		Name:	Wate	rra	Pe	eristaltic	Dis	p. Bailer		Other	
Field Blank Collected	Yes	Name:									
Initial Depth to Water (r	n)	5.070 to ice	Purge Start	Time:		Purge End Time:		Per	n or	YSI Pro	
Depth to Bottom (m)		FROZEN	Purge Inter		Vol. () L						
Submerged Tubing Dep	oth (m)		Depth to w	ater (m	)						
Well Stick-up Height (m	1)	0.742	Temperatu	re (°C)	3%						
Estimated Water Volum	ne (L)	. /	pH (pH Uni	ts) ±0.1						1	-
(DTB – DTW) x (πr <sup>2)</sup>	1000 (fo	r well diameter) = 1 well volume	Cond. (µs/c	m) 3%	-			25	-	7	
, , , , , , , , , , , , , , , , , , , ,		vell diameter) = 1 well volume	Specific Co	ond. (µs	s/cm) 3%			5/	3		115
,		ell diameter) = 1 well volume	Redox (mV	) 10%	_		1				
	•	" diameter) = 1 well volume diameter) = 1 well volume	DO (mg/L)	10%	,		1		_		
(5155111) x 0	.0 (101 1	diameter) - 1 Well Velame	DO (%) 10%	6			,				
Calculations:	/		Appearance Silty, HC or			X			/		
/			Only for final	Sulpl	nide (mg/L)						
/			readings	Turbi	idity (NTU)						
			Interval Pu	rge Vol	ume (L)						
		-	Cumulative	Purge	Volume (L):						
YSIID	- 6	,	Sample Me	thod:							
Logged Field Paramete	ers	☐ Yes ☐ No	Jumpio IIIC				/				
Time logged on YSI (24	thr)		Wa	terra	Peris	staltic	Disp. I	Bailer		Other	
Sample Time (24hr)		/			/						



Sample Sit	e (Con't): MWO9-1	4			Head Space Ga	s Measurements	
ample Da	te (Con't):					Units	Values
/ell Head	Seal: J-Plug Dr	PVC Cap  Not Sealed	Other		Methane (CH4	) %LEL	0.
	ced:  J-Plug PV				Oxygen (O2)	%	SO .9
		itoring: 🗵 Yes 🗌 No Detai			Carbon Dioxide (	C02) PPM	200
en prope	ily sealed for gas mon	itoring. 🖂 res 📋 No Detai	IS				
riority	Bottle Type	Parameters Analyzed	Min.	Treatment 🛛	Description Add at M	Wal Callage d (ml)	0
			Volume		Preservative Added 🛛	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>		
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml	- /			
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml		☐ H <sub>2</sub> SO <sub>4 (Sulfurio)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganie Carbon (TIC)	50 ml	-	-		
	Head to thow ma tubing;	ions: Ar 20 minutes attemp was un	using successfu	boiling DJ	- water +	Consumables Used:  1/4" HDPE (peristaltic pun 3/8" HDPE (microwaterra 5/8" HDPE (waterra tubing 1/4" Silicon tubing High Capacity .45 micron D-25 (for 2" wells, use with D-16 (for 1" wells, use with SS-10 (for 5/8" wells, use 1" bailer 2" bailer	tubing)ft  ft filters 1 5/8") foot valves 1 5/8") foot valves



Sample Site	MWC	19-15	Project Nur	nber	1343-005.27			Date			Mai	125	,201
Piezometer Diameter	2-11		Client		GY - AAM			Sample	rs			JC	
UTM Location	Z: 08 E	: 6388920 N: 688 1723	Project Nar		Mount Nanse	en 2016 (	GW	Weathe	r/Temper		10°C	graces.	
Waypoint	GPS: He	milwa Name: N/A	Project Nar	ne	Sampling Pro	ogram		Recove	ry		] Goo	d 🛚 B	ad
Photos		remifNos:	Purge Meth	od				1					
Duplicate Collected	☐ Yes	Name:	Wate	rra	Pe	ristaltic		Di	sp. Bailer			Other	S
Field Blank Collected	Yes	Name:											
Initial Depth to Water (m	1)	14.030	Purge Start	Time:		Purge Tim				Pen or YSI:	_	YSI Pro Pen Un	
Depth to Bottom (m)		14.151	Purge Inter		Vol. () L								
Submerged Tubing Dept	th (m)	_	Depth to w	ater (m)									
Well Stick-up Height (m)	)	0.876	Temperatu	re (°C) 3	3%		1						
Estimated Water Volume	e (L)	0.876	pH (pH Uni	ts) ±0.1									
, , , , , , , , , , , , , , , , , , , ,	(DTB – DTW) x (πr <sup>2)*</sup> 1000 (for well diameter) = 1 well volume		Cond. (µs/cm) 3%										
		ell diameter) = 1 well volume	Specific Co	ond. (µs	/cm) 3%			1	RV	1			
, , ,		Il diameter) = 1 well volume diameter) = 1 well volume	Redox (mV	) 10%		(-	10	20	1				
		diameter) = 1 well volume	DO (mg/L)	10%		1							
(5155111) x 0	,	alamotoly 1 from rolamo	DO (%) 10%	6					K				
Calculations:			Appearance Silty, HC o				T	rel	100	- /			
14.151			Only for final	Sulph	nide (mg/L)				1		1		
2121			readings	Turbi	dity (NTU)								
2			Interval Pu	rge Vol	ume (L)								
Q-121		Cumulative	Purge	Volume (L):									
YSI ID  Logged Field Parameter		☐ Yes ☐ No	Sample Me	thod:			31						
Time logged on YSI (24)			Wa	terra	Peris	staltic		Disp.	Bailer			Other	-
Sample Time (24hr)	N	15:36						~	/				



Sample Site (Con't): MW 69-15	
Sample Date (Con't): May 25, 2016	
Well Head Seal: ☐ J-Plug ☐ PVC Cap ☐ Not Sealed ☐ Other	
Seal Replaced:   J-Plug PVC Cap Not required Other	
Well properly sealed for gas monitoring: ☐ Yes ☐ No Details:	

	Units	Values
Methane (CH4)	%LEL	Ø
Oxygen (O2)	%	20,6
Carbon Dioxide (C02)	PPM	300

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🗵	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	☐ HNO <sub>3 (Nitric)</sub>	70ml	
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)	1	
2	500 ml (plastic)	General Chemistry	100 ml	G-2	-		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	- 5-5	☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-		-

eneral Notes and Observations:	Consumables Used:
	☐ 1/4" HDPE (peristaltic pump tubing)ft
- pics- zeremy phone - 6.242 L or water on top of Frozen ice	3/8" HDPE (microwaterra tubing)ft
100 of 100 of 100 of 100 of	5/8" HDPE (waterra tubing)ft
- 6. J42 C OF Wars at	1/4" Silicon tubingft
	☐ High Capacity .45 micron filters
(1)	D-25 (for 2" wells, use with 5/8") foot valves
A Sample is not Representative	D-16 (for 1" wells, use with 5/8") foot valves
	SS-10 (for 5/8" wells, use with 3/8") foot valves
	1" bailer
	☑ 2" bailer
	other (describe)



Sample Site	MWC	09-16	Project Nu	mber	1343-005.27	,		Date			May	24, 6	2016	
Piezometer Diameter		2"	Client		GY - AAM			Samplers			1 MB. MM. JC. KR			
UTM Location	Z: 08, E: 0387990 N: 688 1097 GPS: ELR Name: MW09-16 ·		Denie of No.		Mount Nans	sen 2016 GW		Weather	r/Temper	rature	Sarra	a Lover	ost	
Waypoint			Project Na	ne	Sampling Pr	rogram		Recove	ry		Go	od 🔲	Bad	
Photos	Cam: ‡	LR Nos: 404-406	Purge Method						the second second					
Duplicate Collected	Yes	Name:	Wate	erra	Pe	eristaltic		Dis	p. Baile		Other			
Field Blank Collected	Yes	Name: FB-I				X								
Initial Depth to Water (n	Initial Depth to Water (m)		Purge Start Time: 16:00		Purge End Time:		4.4		Pen or YSI:		☐ YSI Pro Plus☐ Pen Unit			
Depth to Bottom (m)		2-2-2-7-27	Purge Inter		Vol. () L	4:21	4:25	4:30	4:35	4:40	4:45			
Submerged Tubing Dep	oth (m)	~2.5	Depth to w	ater (m)		1.959	1.959	1.956	1.956	1.957	7 same			
Well Stick-up Height (m	1)	1.378	Temperature (°C) 3%			4.6	4.2	4.8	4.7	4.7	4.3			
Estimated Water Volum	pH (pH Units) ±0.1			6.03	6.56	6.64	6.67	6.69	6.60					
	(DTB – DTW) x (πr <sup>2)*</sup> 1000 (for well diameter) = 1 well volume			Cond. (µs/cm) 3%			1287	1288	1284	1274	1266	4	1 - 2	
		well diameter) = 1 well volume	Specific Cond. (µs/cm) 3%			2180	2127	2091	2093	2085	2085	5		
		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV		SF16	206.2	196.8	185.0	179.3	173.	8			
		diameter) = 1 well volume	DO (mg/L)	10%		2.08	1.43	1.31	1.29	1.14	1.01	13 3		
(0.00.111)	(		DO (%) 109	%		16.0	11.1	10.4	10.0	8.9	7.9			
Calculations:				Appearance & Odour (Clear Silty, HC odours, etc.)		Check	sor clear	clear	clear	clear	Clear	lla		
D. 707			Only for final	Sulph	nide (mg/L)	/	1	1	1	1	Ø			
1,456	- *3	1=1.542	readings	Turbi	dity (NTU)		1	1	1	1	0.7			
0.771			Interval Pu	rge Vol	ume (L)	0.3	0.35	0.6	0.45	0.40	0.4			
	Cumulative	0.3	0.65	1.25	1.70	2.10	2,50	)						
YSI ID  Logged Field Paramete	_	WO9-Hb  ☑ Yes □ No	Sample Me	ethod:		- 011513								
Time logged on YSI (24	hr)	16:47	Wa	terra	Peri	staltic		Disp. I	Bailer		Other			
Sample Time (24hr)		6:50				X								



MW09-19
Sample Site (Con't):
Sample Date (Con't): 25 24 - May - 16
Well Head Seal: ☐ J-Plug ☐ PVC Cap ☐ Not Sealed ☐ Other
Seal Replaced:   J-Plug PVC Cap   Not required Other
Well properly sealed for gas monitoring: ☐ Yes ☒ No Details: Slits on the SiQLe

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20.3
Carbon Dioxide (C02)	PPM	2800

Priority	Bottle Type	Parameters Analyzed	Min. Volume Treatment ☑ Preservative Added ☑		Vol. Collected (ml)	Comments	
1a	120 ml (plastic)	Dissolved Metals	100 ml	☑ Field Filtered	HNO <sub>3 (Nitric)</sub>	120	
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)	40	
2	500 ml (plastic)	General Chemistry	100 ml	-		400	
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		(NaOH (Sodium Hydroxide)	145	
4	120 ml (glass)	Ammonia (NH3)	60 ml	•	☑ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>	190	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		HNO <sub>3 (Nitric)</sub>	196	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml			180	

General Notes and Observations:	Consumables Used:
First well sampled as a Full team to Learn sampling procedure.	☐ 1/4" HDPE (peristaltic pump tubing) ☐ ft ☐ 3/8" HDPE (microwaterra tubing) ☐ ft ☐ 5/8" HDPE (waterra tubing) ☐ ft ☐ 1/4" Silicon tubing ☐ ft ☐ High Capacity .45 micron filters ☐ ☐ D-25 (for 2" wells, use with 5/8") foot valves ☐
~ x-	□ D-16 (for 1" wells, use with 5/8") foot valves □ SS-10 (for 5/8" wells, use with 3/8") foot valves □ 1" bailer □ 2" bailer □ other (describe)



Sample Site	MWC	9-17	Project Number 1343-005.27					Date			25	-May	-15
Piezometer Diameter	5	211	Client GY - AAM					Samplers			& NB. MM		
UTM Location	Z080	E:0388075 N:6880974	Mount Nanse			en 2016	GW	Weather/Temperature			100	wina	
Waypoint	GPS: 5	LR Name: 000	Project Name Sampling Prog								Good Bad		
Photos	Cam: [	Un Nos: 410-42	Purge Method										
Duplicate Collected	Yes	Name:	Wate	erra	Pe	eristaltic		Di	isp. Baile	r	Other		
Field Blank Collected	Yes	Name:				>							
Initial Depth to Water (n	n)	1,310 bentonit-e	Purge Start Time:		Purge End Time:				Pen o		YSI Pr		
Depth to Bottom (m)			Purge Interval Time () min / Vol. () L										
Submerged Tubing Dep	oth (m)		Depth to w	ater (m)							<		
Well Stick-up Height (m	1)	0.975	Temperatu	re (°C) 3	3%					//	1		
Estimated Water Volume (L)			pH (pH Units) ±0.1						-	1	-		
(DTB – DTW) x ( $\pi r^{2}$ )*1000 (for well diameter) = 1 well volume		Cond. (µs/cm) 3%					X	0,					
		well diameter) = 1 well volume	Specific Cond. (µs/cm) 3%			/	-					5	
		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV) 10%			0	0	7			1C	In	
		diameter) = 1 well volume	DO (mg/L)	10%		1	D×			/	1		-
		,	DO (%) 109	%		-				*	1.		-
Calculations:			Appearance & Odour (Clear, Silty, HC odours, etc.)					15					
			Only for final	Sulph	ide (mg/L)		03						
			readings	Turbio	dity (NTU)					/			
			Interval Pu	rge Volu	ume (L)			/	/				
		Cumulative	Volume (L):			1				1			
YSI ID  Logged Field Paramete	rs	☐ Yes ☐ No	Sample Method:										150
Time logged on YSI (24	hr)		Wa	terra	Peris	staltic		Disp.	Bailer		Other		
Sample Time (24hr)			<										



Sample Site (Con't): MWO9-17	
Sample Date (Con't):	
Well Head Seal: ☐ J-Plug ☐ PVC Cap	☐ Not Sealed ☐ Other
Seal Replaced:   J-Plug PVC Cap	☑Not required ☐ Other
Well properly sealed for gas monitoring:	Yes No Details:

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	309
Carbon Dioxide (C02)	PPM	2500

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🗵	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>		
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml	-			
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	- c-	☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	•		

General Notes and Observations:	Consumables Used:
ac works	1/4" HDPE (peristaltic pump tubing)ft
P 1:10 0 1010 1000 to get the tilional ide	3/8" HDPE (microwaterra tubing)ft
-Bertonite @ 1.310munoble +0 get the tubing into	5/8" HDPE (waterra tubing)ft
	☐ 1/4" Silicon tubingft
the well (possible Frozen bertanite)	☐ High Capacity .45 micron filters
	D-25 (for 2" wells, use with 5/8") foot valves
- exsisting tubing was present, however once adjusted	D-16 (for 1" wells, use with 5/8") foot valves
I a too local in mobile to a total to	SS-10 (for 5/8" wells, use with 3/8") foot valves
to get water level in unable to get tubing	☐ 1" bailer
back in sentonite most likely collapsed on the	2" bailer
tubing at concrete knol (1310m)	other (describe)



Sample Site	NN) C	19 - 18	<b>Project Number</b> 1343-005.27			7		Date			May 05,00H			
Piezometer Diameter	6	2"	Client		GY - AAM		Samplers			NB MM				
UTM Location	Z:08v E	:039954 N:6880985	Project Name Moun		Mount Nans	Mount Nansen 2016 GW			r/Tempe	rature	Rainy	Snow		
Waypoint	GPS: E	R Name: OO	Project Name Sampling			rogram		Recove	ry		☑ Goo	d 🗌 Bad		
Photos	Cam: E	LR Nos: 407-409	Purge Method											
Duplicate Collected	Yes	Name:	Wate	erra	P	eristaltic		Dis	sp. Baile	r	Other			
Field Blank Collected	Yes	Name:				X								
Initial Depth to Water (m)	th to Water (m) 4.320		Purge Start Time: 8:11		Purge End Time:		8:37		Pen YSI			us		
Depth to Bottom (m)	Depth to Bottom (m) 7. 787		Purge Inter		Vol. () L	8:13	8:16	8:19	8:23	8:28	8:30	81.37		
Submerged Tubing Depti	h (m)	N6.79	Depth to w	ater (m)		4.304	4.324	4.304	4.324	4.384	4324	4.384		
Well Stick-up Height (m)	0.017	0.9	Temperatu	re (°C) :	3%	1.3	0,9	6.7	0.6	0.5	0.6	6.5		
Estimated Water Volume (L) 4 6.934			pH (pH Units) ±0.1			5.77.	6.44	6.65	6.70	6,74	6.76	6.77		
(DTB – DTW) x ( $\pi r^{2}$ )*1000 (for well diameter) = 1 well volume			Cond. (µs/cm) 3%			1521	1492	1471	1466	1463	1467	1465		
		vell diameter) = 1 well volume	Specific Cond. (µs/cm) 3% Redox (mV) 10%			2798	2765	2743	2743	2747	9749	8753	_	
		ell diameter) = 1 well volume " diameter) = 1 well volume				2540	314.5	2108	207.1	201.5	195.6	187.1		
		diameter) = 1 well volume	DO (mg/L)	10%		8.76 3,64		3.21 2.96		0F.G	2.50	2.30		
(		,	DO (%) 10°	%		76.95	25.9	22.8	90.6	18.6	17.6	16.13		
Calculations:			Appearance Silty, HC o		our (Clear, etc.)	weday.	same	cleared	Same	Samo	samo	sano		
4.320	(	2 - 1 (2.11	Only for final	Sulph	nide (mg/L)	/	/	1	/,	1	/	0.00		
3.467	) c	9-6.934	readings	Turbi	dity (NTU)	/	/	/	/	/		6.16.		
			Interval Pu		111111111111111111111111111111111111111	0	0.30	0.36	0.36	0.4	0.47	0.6		
	Cumulativ	0	020	0.68	1.04	1.44	1.91	2.51						
YSI ID  Logged Field Parameters		₩ 09 - 18 ☑ Yes □ No	Sample Me	ethod:										
Time logged on YSI (24h	nr)	8:39	Wa	iterra	Per	istaltic		Disp.	Bailer		Other			
Sample Time (24hr)		8:40 8:45	X		X									



Sample Site (Con't): MW 09-18	
Sample Date (Con't): 55 - May - 1	ь
Well Head Seal: ☐ J-Plug ☑ PVC Cap	☐ Not Sealed ☐ Other
Seal Replaced:   J-Plug PVC Cap	⊠Not required ☐ Other
Well properly sealed for gas monitoring: $\square$	Yes No Details: slite a electrical tape

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20,9
Carbon Dioxide (C02)	PPM	200

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	☐ HNO <sub>3 (Nitric)</sub>	180	
1b	40 ml (glass)	Dissolved Mercury	15 mL		HCL (Hydrochloric)	40	
2	500 ml (plastic)	General Chemistry	100 ml	-		500	
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		☑ NaOH (Sodium Hydroxide)	145	
4	120 ml (glass)	Ammonia (NH3)	60 ml		H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>	120	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	HNO <sub>3 (Nitric)</sub>	120	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-	120	

General Notes and Observations:	Consumables Used:
	☑ 1/4" HDPE (peristaltic pump tubing) 25 4ft
	3/8" HDPE (microwaterra tubing)ft
	5/8" HDPE (waterra tubing)ft
	☑ 1/4" Silicon tubing ②-5 ft
	☐ High Capacity .45 micron filters
	☐ D-25 (for 2" wells, use with 5/8") foot valves
	☐ D-16 (for 1" wells, use with 5/8") foot valves
	SS-10 (for 5/8" wells, use with 3/8") foot valves
	☐ 1" bailer
	2" bailer
	other (describe)



Sample Site	MW09-19	Project No	ımber	1343-005.27	7		Date	-	- 3	^-		-11	
Piezometer Diameter	2	Client		GY - AAM			Sampl	lore		25	- May	1-16	
UTM Location	208, E:6388650 N:490 1016	L. T.		Mount Nansen 2016 GW		Weather/Temperature			ND / MIM				
	GPS: FML Name: W/A.	Project Na		Sampling Pr		GW	Recovery			Pain brow			
Photos	Cam: (2 Nos: 1)	Purge Mel	hod			7	Recovery			G	Good Bad		
Duplicate Collected	Yes Name:		erra	Pe	eristaltic			isp. Baile	OF.	Other			
Field Blank Collected	Yes Name:							nop. Dan	J1	Other			
Initial Depth to Water (m)	2.005 ice	Purge Start Time:		Purge End Time:				Pen YSI	en or YSI Pro				
Depth to Bottom (m)	2.005 ice.	_	Purge Interval Time () min / Vol. () L										
Submerged Tubing Depth	n (m)	Depth to w								/			
Well Stick-up Height (m)	0.991	Temperatu		6			1				+		
Estimated Water Volume	(L)	pH (pH Units) ±0.1									1		
(DTB – DTW) x (πr <sup>2)*</sup> 10	000 (for well diameter) = 1 well volume	Cond. (µs/	cm) 3%								1		
(DTB – DTW) x 8.1 (f	for 4" well diameter) = 1 well volume	Specific C		m) 3%							1	7	
(DTR-DTM) x 2 (to	or 2" well diameter) = 1 well volume for 1.5" diameter) = 1 well volume	Redox (m)	) 10%			/			1	1			
(DTB-DTW) x 0.5	(for 1" diameter) = 1 well volume	DO (mg/L)	10%		/	1	7.	1	X		+		
, , , , , , , , , , , , , , , , , , , ,	(iii i didineci) - i well volume	DO (%) 10°	6	/		( )	1					7	
Calculations:		Appearance Silty, HC o	e & Odou dours, etc	r (Clear,	/								
		Only for final	Sulphid	e (mg/L)	1								
		readings	Turbidit	y (NTU)		/		/					
		Interval Pu	rge Volum	ie (L)		6	-						
		Cumulative	Purge Vo	olume (L):									
YSI ID Logged Field Parameters	☐ Yes ☐ No	Sample Me	thod:				8				*		
Time logged on YSI (24hr)		Wat	erra	Perist	taltic		Disp. Bailer				Other		
Sample Time (24hr)	1									Culci			
												- 1	



Sample Sit	e (Con't):	9-19			Head Space Ga	s Measurements	
Sample Da	te (Con't):					Units	Values
	0t.	W C C	Other		Methane (CH4	4) %LEL	0.
	Seal: ☐ J-Plug ☐ P		Other		Oxygen (O2)	%	809
	ced:  J-Plug PV0				Carbon Dioxide (	C02) PPM	300
Well prope	rly sealed for gas moni	itoring: ☐ Yes	s: <u>slits</u> a		0		
Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🗵	Preservative Added 🛛	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>		
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml	-	•		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	1-0	☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>	J	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	3-		
- ± m2	Notes and Observations  en @ 2.0 (  H 20 minuted waterro)  sticcessful	tions:  Stor, ice - 6.  I to Ly to  L attempt	and on District	woder to	end tape. caparstong	D-16 (for 1" wells, use v	ra tubing)ft ra tubing)ft ing)ftft



Sample Site	MW09-20	Project Number	1343-005.27		Date		25-May - 16	
Piezometer Diameter	A.,	Client	GY - AAM		Samplers		NB/MKA.	
UTM Location	Z:08, E:0389589 N:6880586	Barta-AMaria	Mount Nanse	en 2016 GW	Weather/Tempe		in steamer	nelli
Waypoint	GPS: ELR Name: 013	Project Name	Sampling Pro		Recovery		Good Bad	
Photos	Cam: £L7 Nos: 447-444	Purge Method	No. of London					
<b>Duplicate Collected</b>	Yes Name:	Waterra	Pe	ristaltic	Disp. Baile	er	Other	
Field Blank Collected	Yes Name:			/				
Initial Depth to Water (m	DRY	Purge Start Time		Purge End Time:		Pen or YSI:	YSI Pro P	lus
Depth to Bottom (m)	3.600	Purge Interval Time () min	/ Vol. () L					
Submerged Tubing Dept		Depth to water (n	n)					
Well Stick-up Height (m)	0.912	Temperature (°C)	3%					
Estimated Water Volume	(L)	pH (pH Units) ±0.	1					
	000 (for well diameter) = 1 well volume	Cond. (µs/cm) 3%	6					
	(for 4" well diameter) = 1 well volume for 2" well diameter) = 1 well volume	Specific Cond. (µ	s/cm) 3%		1			
	(for 1.5" diameter) = 1 well volume	Redox (mV) 10%	/		1			
	(for 1" diameter) = 1 well volume	DO (mg/L) 10%						
		DO (%) 10%				1		
Calculations:		Appearance & Oo Silty, HC odours,						
		Only for final	hide (mg/L)		/ /			
		readings Turk	oidity (NTU)					
		Interval Purge Vo	lume (L)					
		Cumulative Purg	e Volume (L):					
YSI ID Logged Field Parameters	Yes No	Sample Method:						
Time logged on YSI (24h	r)	Waterra	Peris	taltic	Disp. Bailer		Other	
Sample Time (24hr)								



	e (Con't):					Head Space Ga	s Measure	ements	
ampie Da	te (Con't):							Units	Values
ell Head	Seal: J-Plug DF	PVC Cap Not Sealed		Methane (CH	4)	%LEL	0		
	ced:  J-Plug PV	_		Oxygen (O2	).	%	20.0		
		_				Carbon Dioxide	(C02)	PPM	200
veii prope	rly sealed for gas mon	itoring: Yes No Detail	5:8118 16	) PVC	_				2.00
Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🗵	Preser	vative Added 🖂	Vol. Col	lected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO:	(Nitric)			
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	☐ HCL	Hydrochloric)	-		
2	500 ml (plastic)	General Chemistry	100 ml	2	\	•			
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	/-	□ NaOH	(Sodium Hydroxide)			
4	120 ml (glass)	Ammonia (NH3)	60 ml	4	☐ H₂SO	4 (Sulfuric)			
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNO:	(Nitric)			
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-				
eneral N	lotes and Observat	ions:					Consun	nables Used:	
Dry	@ 3,962m							OPE (peristaltic pum OPE (microwaterra t	
							☐ 5/8" HE	OPE (waterra tubing	)ft
								icon tubing	
								apacity .45 micron f	ilters 5/8") foot valves
						9 - 1			5/8") foot valves
									with 3/8") foot valves
							☐ 1" baile		
							2" baile	er	



Sample Site	MWO	9-21	Project Nu	mber	1343-005.27			Date		-17	26-	May -	16
Piezometer Diameter		2"	Client		GY - AAM			Sample	rs	- 3		BIMN	
UTM Location	Z:08V	E:6389535 N:6880576			Mount Nanse	en 2016 (	SW.	Weather/Temperature		rature	/	Cost, ~	
Waypoint	GPS: ‡	ELR Name: 015	Project Na	me	Sampling Pro	ogram		Recovery					Bad
Photos	Cam: £	ELP Nos:453 - 455	Purge Met	hod							34	MEN	TO BE
Duplicate Collected	Yes	Name:	Wate	erra	Pe	ristaltic	/	Di	sp. Baile	r	Other		
Field Blank Collected	Yes	Name:											
Initial Depth to Water (m	n)	1,149	Purge Start Time:		Purge End Time:					Pen or YSI:		Pro Plus Unit	
Depth to Bottom (m)		1,958 to ice	Purge Inte		Vol. () L								
Submerged Tubing Dep	th (m)		Depth to w	ater (m)	)								
Well Stick-up Height (m)	)	0.82	Temperatu	re (°C) 3	3%		/			2			
Estimated Water Volume	e (L)		pH (pH Units) ±0.1										
		r well diameter) = 1 well volume	Cond. (µs/	cm) 3%	/			/			1		
		vell diameter) = 1 well volume	Specific C	ond. (µs	/cm) 3%		/		/	-			
		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (m\	/) 10%	/			/	7	1		1	
		diameter) = 1 well volume	DO (mg/L)	10%	/		10	(7)					
			DO (%) 10°	%			1				1		
Calculations:			Appearance Silty, HC o			X							
			Only for final	Sulph	nide (mg/L)		/						
			readings	Turbi	dity (NTU)		(	//					
			Interval Pu										
			Cumulativ	e Purge	Volume (L):								
YSI ID Logged Field Parameter	rs	☐ Yes ☐ No	Sample Me	ethod:				1					
Time logged on YSI (24)	hr)		Wa	terra	Peris	eristaltic Disp. Bailer					Other		
Sample Time (24hr)						1							



Sample Sit	e (Con't): <u>WW @</u> 9 -	-01				Head Space Ga	s Measure	ements	
Sample Da	te (Con't):							Units	Values
Well Head	Seal: □.I-Plug ⊠É	PVC Cap Not Sealed	Other			Methane (CH4	1)	%LEL	0
				Oxygen (O2)		%	20.9		
	ced:					Carbon Dioxide (	C02)	PPM	200
weii prope	rry sealed for gas mon	itoring: Yes No Detai	IS:		-				
Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🛛	Preser	vative Added 🛛	Vol. Col	lected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO:	8 (Nitric)			
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL	(Hydrochloric)			
2	500 ml (plastic)	General Chemistry	100 ml	/-		a.e.			
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	□ NaOH (Sodium Hydroxide)				
4	120 ml (glass)	Ammonia (NH3)	60 ml		☐ H₂SC	4 (Sulfuric)			
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	☐ HNO:	3 (Nitric)			
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	3. 7	-				!
General I  - Tran  - Atte  - Pen	Notes and Observation  Solver Frozen  Miph to Have  Hubbry Frozen	tions: in well; From the for 20 min	ren@1	958m Hempt unsu	ncess	hQ.	☐ 1/4" HE ☐ 3/8" HE ☐ 5/8" HE ☐ 1/4" Sil ☐ High C ☐ D-25 (f	DPE (microwaterra tubing licon tubing apacity .45 micron for 2" wells, use with for 5/8" wells, use er	g)ft



Sample Site	MWO	9-20	Project Nu	mber	1343-005.27			Date			Dh.	May - F	6
Piezometer Diameter		2''	Client		GY - AAM			Sample	ers			SINL	
UTM Location	Z:08, 1	E:038949B N:6886550	Desired No.		Mount Nanse	en 2016 GW		Weather/Temperature		rature	-		
Waypoint	GPS:		Project Na	пе	Sampling Pro	ogram		Recovery			Good Bad		
Photos	Cam: 1	ELR Nos: 456 - 458	Purge Meth	nod				1			-	The same	
Duplicate Collected	Yes	Name:	Wate	rra	Pe	ristaltic		Di	sp. Baile	r	Other		
Field Blank Collected	Yes	Name:			>	×							
Initial Depth to Water (n	n)	5.107	Purge Star	t Time:		Purge End Time:				Pen or YSI:		YSI Pro	
Depth to Bottom (m)		5.280	Purge Inter		Vol. () L								
Submerged Tubing Dep	oth (m)	~5.20	Depth to w	ater (m)					/				
Well Stick-up Height (m	)	0.867	Temperature (°C) 3%			1					1		
Estimated Water Volum	e (L)	0.346	pH (pH Uni	ts) ±0.1				/			/		
(DTB – DTW) x (πr <sup>2)*</sup> 1000 (for well diameter) = 1 well volume			Cond. (µs/d	m) 3%			1						
		vell diameter) = 1 well volume	Specific Cond. (µs/cm) 3%						/		/		
		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (mV	) 10%				/		1		4	
		diameter) = 1 well volume	DO (mg/L)	10%					/		1		
	,	•	DO (%) 10%	6					14	/			
Calculations:			Appearance Silty, HC of				1	)			Q	*	
5.107 0.173 to	-, 2	() I	Only for final	Sulph	ide (mg/L)		2				,	/	/
5173 ta	-0.)	18	readings Turbidity (NTU)						),	/	1/		
0.113			Interval Purge Volume (L)							/			
			Cumulative	Purge	Volume (L):								
YSI ID  Logged Field Parameter	rs	☐ Yes ☐ No	Sample Method:							1			
Time logged on YSI (24)	hr)		Wa	terra	Peris	Peristaltic		Disp. Bailer			Other		
Sample Time (24hr)		9:00			×								



Sample Site (Con't): MW 09- 20.	<u></u>
Sample Date (Con't): 26- May - 10 (u)	08:19
Well Head Seal: ☐ J-Plug ☑ PVC Cap	☐ Not Sealed ☐ Other
Seal Replaced:	Not required ☐ Other
Well properly sealed for gas monitoring:	Ves PNo Details:  No > 3/175 IN RVC.

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	300

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🗵	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	HNO <sub>3 (Nitric)</sub>	100	27-may-16@ 10:10
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)	15	27- May-16/10/10:10
2	500 ml (plastic)	General Chemistry	100 ml	-		150	27-May-16@ 16:2
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	NaOH (Sodium Hydroxide)	. 100	27- Haur-16@10,10
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	□(H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>	60	27-May-H@10:10
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		M. HNO <sub>3 (Nitric)</sub>	50	27-May-16,0010:11
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-	70	27-May-160 16:

General Notes and Observations: *	Consumables Used:
- small water column, attempt to direct sample.	
- Jiroux board of the first of	3/8" HDPE (microwaterra tubing)ft
- Dru @ 5 18m	5/8" HDPE (waterra tubing)ft
- bry @ 5.280 m; will would to see it sectorage occurs; 5,272m	☐ 1/4" Silicon tubing <a>♠.5</a> ft
	☐ High Capacity .45 micron filters
recharge, will return to maroon to collect a representative	D-25 (for 2" wells, use with 5/8") foot valves
	D-16 (for 1" wells, use with 5/8") foot valves
sample.	SS-10 (for 5/8" wells, use with 3/8") foot valves
2010 to low nin signings of 01:01 @ of may-15 and beautien-	☐ 1" bailer
	☐ 2" bailer
metals, mercury, cyaniae, NH3 + SCN.	
	other (describe)
- sample for gen chem + TIC collected 27- may 16 00 16:2	



Sample Site	MWO	9-23	Project Nu	ımber	1343-005.27	7		Date			26-1	May - 16	9
Piezometer Diameter		211	Client		GY - AAM			Sample	rs		NB/A		
UTM Location	Z: 081	E:03891160 N:6980555	Desired No.		Mount Nans	en 2016	GW	Weather/Temperature					
Waypoint	5. 5. 4 C/ Hame. 01-4		Project Na	Project Name Sampling Program			Recove	ry	110	₹ Goo			
Photos	Cam: 🖗	FLA NOS: 459-46/	Purge Met	hod									
Duplicate Collected	☐ Yes	Name:	Wat	erra	P	eristaltic		Di	sp. Baile	r		Other	
Field Blank Collected	☐ Yes	Name:	)	~									
Initial Depth to Water (r	m)	13.428	Purge Star	rt Time:	9:50		e End me:			Pen		YSI Pro	
Depth to Bottom (m)		15, 928	Purge Inte		ol. () L	9:50	9:53	9:55	9,58	9 39	10:01	101.02	
Submerged Tubing Dep	oth (m)	~ 14.q	Depth to w	vater (m)		/	/	/	/	/			
Well Stick-up Height (m	1)	0.185	Temperatu	ıre (°C) 3%	6 .	1,8	1.0	6.8	68	0.6	0.6	0,6	
Estimated Water Volum	ne (L)	5.0	pH (pH Un	its) ±0.1		6,95	6.98	6.99	6.93	6.96	9,97		
		r well diameter) = 1 well volume	Cond. (µs/	cm) 3%		855	840	830	864	861	257		
		vell diameter) = 1 well volume	Specific C	ond. (µs/c	m) 3%	1536	1566	1547	166	1609	1609	11911	
		ell diameter) = 1 well volume " diameter) = 1 well volume	Redox (m\	/) 10%		1013	-B,O	-30.1	-25.8	-281	-29,5	-303	
		diameter) = 1 well volume	DO (mg/L)	10%		4.63	2.90	3.91	2.46	2.43	2.44	2.47	
			DO (%) 10°	%		35.3.	21.5	27.6	16,7	17.6	15.8	16.8	
Calculations:			Appearance Silty, HC o	e & Odou dours, etc	ır (Clear, c.)	Pank	Sal	Same	Jaku	Salve	soul.	20118	
			Only for final	Sulphic	de (mg/L)	/	/	1	/	1	/	0.0	
13.408 2.5	2 -	5	readings		ty (NTU)	/	/	/	/	/	/	305	
7,0			Interval Pu			1	10	1	695	1	1	1	
			Cumulative	e Purge V	olume (L):	1	2	3	9	10	11	10	
YSI ID  Logged Field Parameter	rs	M\U OQ-∂-3 ☑ Yes □ No	Sample Me	ethod:									
Time logged on YSI (24	hr)	(B. 0)	Wa	iterra	Peris	staltic		Disp. I	Bailer			Other	
Sample Time (24hr)		10:10		X									



Sample Date (Con't):	26- May - K (	2 10:10			Measu
Well Head Seal:			Other	Methane (CH4)	3 1
Seal Replaced:   J-P	lug	Not required □	Other	Oxygen (O2)	
Well properly sealed f			-	Carbon Dioxide (C	02)

#### urements

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	200

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	TMNO <sub>3 (Nitric)</sub>	126	
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	B HCL (Hydrochloric)	40	
2	500 ml (plastic)	General Chemistry	100 ml	-	-	560	
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		□NaOH (Sodium Hydroxide)	145	
4	120 ml (glass)	Ammonia (NH3)	60 ml	1- 1	☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>	126	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	HNO <sub>3 (Nitric)</sub>	100	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-		190	

General Notes and Observations:	Consumables Used:
- Not monitoring draw down due to friction from twing.	☐ 1/4" HDPE (peristaltic pump tubing)ft ☐ 3/8" HDPE (microwaterra tubing)ft ☐ 5/8" HDPE (waterra tubing)ft ☐ 1/4" Silicon tubingft ☐ High Capacity .45 micron filters ☐ D-25 (for 2" wells, use with 5/8") foot valves ☐ D-16 (for 1" wells, use with 5/8") foot valves ☐ SS-10 (for 5/8" wells, use with 3/8") foot valves ☐ 1" bailer ☐ 2" bailer



Sample Site	MW	09-24	Project Nu	mber	1343-005.27			Date			May	25,20		
Piezometer Diameter	2-11		Client	Client GY - AAN				Sample	rs		48/5	2		
UTM Location	Z:08 E	: 0389558 N: 688067	1	Project Name Mount Nansen 2 Sampling Progra		Mount Nans		en 2016	GW	Weathe	r/Tempe	rature	antly c	loudey
Waypoint	GPS: H	EMM Name: WA	Project Nai			ogram		Recove	ry		Good	Bad		
Photos	Cam: 3	remy Nos:	Purge Meth	nod										
Duplicate Collected	Yes	Name: DUP-I	Wate	Waterra		Peristaltic		Di	sp. Baile	r	Other			
Field Blank Collected	Yes	Name: FB-2	V											
Initial Depth to Water (m	1)	9.663	Purge Star	t Time:	17:07		e End ne:	17:3	8	Pen or YSI:		SI Pro Plus 5 en Unit		
Depth to Bottom (m)		11. 631	Purge Inter		Vol. ( <u> </u> <u>(</u>	17:20	17:25	17:30	17:38	18:00				
Submerged Tubing Dep	th (m)	11.6	Depth to w	ater (m)		9-67	99.68	19.70	9.685	Same				
Well Stick-up Height (m)	)	0.645	Temperatu	Temperature (°C) 3%		3.16	1.38	1.11	0.91	2.06	3 1			
Estimated Water Volume	e (L)	3.936	pH (pH Uni	ts) ±0.1		7.55	7.49	7.34	7,28	7.41				
(DTB – DTW) x (πr <sup>2)*</sup> 1000 (for well diameter) = 1 well volume		Cond. (µs/c	Cond. (µs/cm) 3%		0.596	0.576	6.560	0.560	0.572					
		ell diameter) = 1 well volume	Specific Co	Specific Cond. (µs/cm) 3%		1.016	1.049	1.030	1.637	1,012				
		ell diameter) = 1 well volume diameter) = 1 well volume	Redox (mV	Redox (mV) 10% DO (mg/L) 10%		88.5	123.4	129.2	141.4	141.1				
		diameter) = 1 well volume	DO (mg/L)			4,70	4.99	4.96	4.42	4.33				
(5.55.11) x 5.	. (	and noter,	DO (%) 109	6		35.3 35.4	35.4		31,0	31.7				
Calculations: 17,63			Appearance Silty, HC o			dirty	clear	clear	clear	clean				
- 09.66	36 L		Only for final	Sulph	ide (mg/L)	/	/	1	/	0.14				
( *1	2		readings	Turbio	dity (NTU)	/	/	/	/	27.4				
20	36 L		Interval Pu	rge Volu	ıme (L)	10.0	10.0	10	10	5				
5.1		mw89-24	Cumulative	e Purge	Volume (L):	10.0	20.0	30.0	40.0	45.0				
YSI ID Logged Field Parameter		3 F100 5 69 - Pine )  Yes □ No	Sample Me	thod:										
Time logged on YSI (24)	hr)	18:05	Wa	terra	Peri	staltic		Disp.	Bailer		Ot	her		
Sample Time (24hr)	1	7:20												



Sample Site (Con't): MW 09-24
Sample Date (Con't): May 75, 7016
Well Head Seal: ☐ J-Plug ☐ PVC Cap ☐ Not Sealed ☐ Other
Seal Replaced:
Well properly sealed for gas monitoring: ☐ Yes ☐ No Details:

	Units	Values
Methane (CH4)	%LEL	Ø
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	900

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🛛	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered	☐ÆNO <sub>3 (Nitric)</sub>	120	
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered	HCL (Hydrochloric)	40	
2	500 ml (plastic)	General Chemistry	100 ml	32	•	500	
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	-	NaOH (Sodium Hydroxide)	145	
4	120 ml (glass)	Ammonia (NH3)	60 ml		H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>	120	
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		MNO <sub>3 (Nitric)</sub>	120	
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml	-	-	120	

General Notes and Observations:	Consumables Used:						
Good producing well	□ 1/4" HDPE (peristaltic pump tubing)ft □ 3/8" HDPE (microwaterra tubing)ft □ 5/8" HDPE (waterra tubing)ft □ 1/4" Silicon tubingft □ 1/4" Silicon tubingft □ High Capacity .45 micron filters □ D-25 (for 2" wells, use with 5/8") foot valves □ D-16 (for 1" wells, use with 5/8") foot valves □ SS-10 (for 5/8" wells, use with 3/8") foot valves						
	1" bailer						



Sample Site	W14	103083BHO1	Project Number 1343-005.2		1343-005.27		Date	Date			May 25, 2016			
Piezometer Diameter	2-inch		Client		GY - AAM		Samp	Samplers			KB /5C			
UTM Location	Z: 09 E: 0389520 N: 6880668 GPS: Hemm Name: N/A				Mount Nansen 2016 GW		Weath	Weather/Temperature			ty clo	udy		
Waypoint			Project Name		Sampling Program		Recov	Recovery			☐ Good ☐ Bad			
Photos	Cam: Seven Nos:		Purge Method											
Duplicate Collected	Yes Name:		Wate	/aterra Pe		ristaltic		Disp. Bailer			Other			
Field Blank Collected	Yes	Name:												
Initial Depth to Water (m)		bro zer	Purge Start Time:			Purge En	d		Pen YSI:		☐ YSI Pro Plus ☐ Pen Unit			
Depth to Bottom (m)	epth to Bottom (m) 6,529		Purge Interval Time () min / Vol. () L											
Submerged Tubing Dep	oth (m)	_	Depth to w	ater (m)										
Well Stick-up Height (m	1)	0.630	Temperature (°C) 3%											
Estimated Water Volume (L)			pH (pH Units) ±0.1							/				
(DTB – DTW) x (πr <sup>2)*</sup> 1000 (for well diameter) = 1 well volume (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume (DTB – DTW) x 2 (for 2" well diameter) = 1 well volume (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume (DTB-DTW) x 0.5 (for 1" diameter) = 1 well volume  Calculations:		Cond. (µs/cm) 3%							/					
		Specific Cond. (µs/cm) 3%					~							
		Redox (mV) 10%				1 0	3							
		DO (mg/L) 10%				100	1/							
		DO (%) 10%			0									
		Appearance & Odour (Clear, Silty, HC odours, etc.)			/	1								
		Only for final	Sulph	nide (mg/L)										
				dity (NTU)										
		Interval Purge Volume (L)												
			Cumulative Purge Volume (L):											
YSI ID  Logged Field Paramete	rs	☐ Yes ☑/No	Sample Method:											
Time logged on YSI (24	hr)	~	Waterra		Peris	taltic Disp. Bailer				Other				
Sample Time (24hr)		~												



Sample Date (Con't): May 25, 2016
Well Head Seal: ☐ J-Plug ☐ PVC Cap ☐ Not Sealed ☐ Other
Seal Replaced:   J-Plug PVC Cap Not required Other
Well properly sealed for gas monitoring: ☐ Yes ☐ No Details:

#### **Head Space Gas Measurements**

	Units	Values
Methane (CH4)	%LEL	Ø
Oxygen (O2)	%	20.6
Carbon Dioxide (C02)	PPM	700

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🗵	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>		
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml	-1			
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	7-1	□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	49 1	☐ H <sub>2</sub> SO <sub>4 (Sulffuric)</sub>		/
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-		

General Notes and Observations:	Consumables Used:
Well was Frozen  did not attempt to them due to low  Del and Inistorical Prozen well	1/4" HDPE (peristaltic pump tubing)ft   3/8" HDPE (microwaterra tubing)ft   5/8" HDPE (waterra tubing)ft   1/4" Silicon tubingft   High Capacity .45 micron-fitters   D-25 (for 2" wells, use with 5/8") foot valves   D-16 (for 1" wells, use with 5/8") foot valves   SS_10 (for 5/8" wells, use with 3/8") foot valves   1" bailer   2" bailer   other (describe)



## **GROUNDWATER SAMPLE COLLECTION SHEET**

Sample Site	W14	103083 BHOZ	Project Nu	mber	1343-005.27		Date		M	ay 2	5,2016																
Piezometer Diameter	2'		Client		Client		Client		Client		Client		Client		Client		Client		Client		GY - AAM		Sample	ers		J Chur /	K Beckma
UTM Location	Z: 08 E	Z:08 E: 0389561 N: 6880665			Mount Nanse	en 2016 GW	Weath	rature	10°C overcust																		
Waypoint	GPS: h	4	Project Name		Sampling Pro	ogram	Recov	ery		Good	Bad																
Photos	Cam: J	very Nos:	Purge Meth	nod					CHARLES .																		
Duplicate Collected	Yes	Name:	Wate	erra	Pe	ristaltic	D	isp. Baile	r	Ot	her																
Field Blank Collected	Yes	Name:																									
Initial Depth to Water (m	1)	Frozen.	Purge Star	t Time:		Purge End Time:			Pen or YSI:		SI Pro Plus en Unit																
Depth to Bottom (m)		6.729	Purge Interval Time () min / Vol. () L		Vol. () L																						
Submerged Tubing Dep	th (m)		Depth to w	ater (m)																							
Well Stick-up Height (m	)	0.788	Temperatu	re (°C) 3	3%																						
Estimated Water Volume	timated Water Volume (L)		pH (pH Units) ±0.1																								
(DTB – DTW) x (πr²)*1000 (for well diameter) = 1 well volume (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume		Cond. (µs/cm) 3%																									
		Specific Cond. (µs/cm) 3%																									
		ell diameter) = 1 well volume	Redox (mV) 10%				172 V																				
		" diameter) = 1 well volume diameter) = 1 well volume	DO (mg/L) 10% DO (%) 10% Appearance & Odour (Clear, Silty, HC odours, etc.)				1	90																			
(DID-DIVV) x 0.	3 (101 1	diameter) – i well volume																									
Calculations:					our (Clear, etc.)																						
			Only for final	Sulph	ide (mg/L)																						
			readings	Turbio	dity (NTU)			1 - 1																			
			Interval Pu	rge Volu	ume (L)																						
			Cumulative	e Purge	Volume (L):																						
YSI ID  Logged Field Parameter	rs	 □ Yes ⊠ No	Sample Me	ethod:	F = 3																						
Time logged on YSI (24)			Wa	terra	Peris	staltic	Disp. Bailer			Ot	her																
Sample Time (24hr)		-																									



Sample Site (Con't): W1410 3083 BHO 2	Head Space Gas Measure	ments	
Sample Date (Con't): May 25, 2016		Units	Values
Well Head Seal: ☐ J-Plug ☐ PVC Cap ☑ Not Sealed ☐ Other	Methane (CH4)	%LEL	0
Seal Replaced:  J-Plug PVC Cap Not required Other	Oxygen (O2)	%	20.7
Well properly sealed for gas monitoring: Yes No Details: Egypment and wires down	Carbon Dioxide (C02)	PPM	400
hole.			

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>	1	
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml		-		/
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml		□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml		☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-		

General Notes and Observations:	Consumables Used:
	☐ 1/4" HDPE (peristaltic pump tubing)ft
	3/8" HDPE (microwaterra tubing)ft
Well is Frozen	5/8" HDPE (waterra tubing)ft
1/1/1/15 / rocc.	1/4" Silicon tubingft
	☐ High Capacity .45 micron filters
	D-25 (for 2" wells, use with 5/8") foot valves
Did not Attempt to How due to low DI wit	D-16 (for 1" wells, use with 5/8") foot valves
Die io Alloy	SS-10 (for 5/8" wells, use with 3/8") foot valves
To all the state of the state o	☐ 1" bailer
and Historical Frozen well	☐ 2" bailer
	other (describe)



## **GROUNDWATER SAMPLE COLLECTION SHEET**

						*					
Sample Site	WIYIO	30838403	Project Nu	mber	1343-005.27		Date		26	- Mau -	16
Piezometer Diameter		2	Client		GY - AAM		Samplers			MM	
UTM Location	Z:08	E:0389132 N:6880731			Mount Nanse	en 2016 GW	Weather/To	emperature		/snow/w	o'iool
Waypoint	GPS:	FIR Name: 691	Project Na	me	Sampling Pr	ogram	Recovery		G		
Photos	Cam:	ELR Nos: 468-470	Purge Met	hod			1				
Duplicate Collected		s Name:	Wate	erra	Pe	eristaltic	Disp.	Bailer		Other	
Field Blank Collected	☐ Ye	s Name:			/						
Initial Depth to Water (	m)	1.774	Purge Star	t Time:		Purge En Time:	d	Per	or I:	YSI Pro	
Depth to Bottom (m)		4.53 7	Purge Inter		Vol. () L						
Submerged Tubing De	pth (m)		Depth to w	ater (m)						\	
Well Stick-up Height (n	n)	1276	Temperatu	re (°C) 3	3%				-		
Estimated Water Volume (L)		pH (pH Uni	its) ±0.1					6	1		
(DTB – DTW) x (πr <sup>2)</sup>	(DTB – DTW) x (πr <sup>2)*</sup> 1000 (for well diameter) = 1 well volume		Cond. (µs/cm) 3%					1	1		
	-	well diameter) = 1 well volume	Specific Co	ond. (µs	/cm) 3%			F/C			
		vell diameter) = 1 well volume 5" diameter) = 1 well volume	Redox (mV	/) 10%	7 1		1 X /				
		" diameter) = 1 well volume	DO (mg/L)	10%	-		19		/		
(,,	(		DO (%) 109	%				/			/
Calculations:			Appearance Silty, HC o								
			Only for final	Sulph	nide (mg/L)			//			
			readings	Turbi	dity (NTU)						
			Interval Pu	ırge Vol	ume (L)			/			
		Cumulative Purge Volume (L):									
YSIID			Sample Me	thod:							
Logged Field Paramete	ers	☐ Yes ☐ No	Sample Me	stilou.							
Time logged on YSI (24	4hr)		Wa	terra	Peris	staltic	Disp. Bai	ler		Other	
Sample Time (24hr)											



Sample Site (Con't): W14103083BH03	<u> </u>
Sample Date (Con't):	
Well Head Seal: ☐ J-Plug ☐ PVC Cap	Not Sealed Other
Seal Replaced: 🛛 J-Plug 🔲 PVC Cap	☐ Not required ☐ Other
Well properly sealed for gas monitoring:	Yes DINO Details: washe to fit gas notes

#### **Head Space Gas Measurements**

	Units	Values
Methane (CH4)	%LEL	0
Oxygen (O2)	%	20.9
Carbon Dioxide (C02)	PPM	200

Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🖂	Preservative Added 🖂	Vol. Collected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO <sub>3 (Nitric)</sub>		
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL (Hydrochloric)		
2	500 ml (plastic)	General Chemistry	100 ml		1		
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	- /	□ NaOH (Sodium Hydroxide)		
4	120 ml (glass)	Ammonia (NH3)	60 ml	/-	☐ H <sub>2</sub> SO <sub>4 (Sulfuric)</sub>		
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml	-	☐ HNO <sub>3 (Nitric)</sub>		
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		-		

General Notes and Observations:	Consumables Used:
Some per tubing from stuck in well, another piece was easy to move & pull	☑ 1/4" HDPE (peristaltic pump tubing)ft (5.0m)
out	3/8" HDPE (microwaterra tubing)ft
- Annual Desire Humbing them to a set all	S.S.M. (S.S.M.
Frozen @ 4.537m -> spent 20 mins attempting thow, & purged cold weather	☑ 1/4" Silicon tubing ② 5 ft
out for well first using wonterrais attempt unsuccessful.	☐ High Capacity .45 micron filters
to accent on the control and the	D-25 (for 2" wells, use with 5/8") foot valves/
- Other part - La service - Land and and and and and and and and and	☐ D-16 (for 1" wells, use with 5/8") foot valves
- Attempt to purge by gooding extension onto existing pen tubing, outening	SS-10 (for 5/8" wells, use with 3/8") foot valves
unquecessful.	☐ 1" bailer
- removed peritability that we were oble to move from well bit it was	☐ 2" bailer
just sitting over ice.	other (describe)



## **GROUNDWATER SAMPLE COLLECTION SHEET**

Sample Site	W14	103083 BHO4	Project Nur	mber	1343-005.27		Date			Mai	125,	2016
Piezometer Diameter	2-i	nch	Client		GY - AAM		Sampl	ers		100	150	
UTM Location	Z:08 E	: 0389543N: 688066Z	Project Nar	200	Mount Nanse	n 2016 GW	Weath	er/Temper	rature	partle	(dov	def
Waypoint	GPS: He	mm. Name: N/A	Project Nar	ne	Sampling Pro	gram	Recov	ery		Go	ood 🗗	Bad
Photos	Cam: Ju	ramy Nos:	Purge Meth	nod								
Duplicate Collected	Yes	Name:	Wate	rra	Pe	ristaltic		isp. Baile	r		Other	
Field Blank Collected	Yes	Name:							]			
Initial Depth to Water (n	n)	brozen	Purge Start	t Time:		Purge En Time:	1		Pen YSI	100	YSI Pr	
Depth to Bottom (m)		Grozen 6.515	Purge Inter		Vol. () L							
Submerged Tubing Dep	oth (m)	N/A	Depth to w	ater (m)	)	1						-
Well Stick-up Height (m	1)	0.700765	Time () min / Vol. () L  Depth to water (m)  Temperature (°C) 3%  pH (pH Units) ±0.1  Cond. (µs/cm) 3%			1						
Estimated Water Volume (L)		pH (pH Uni	ts) ±0.1									
(DTB – DTW) x (πr <sup>2)*</sup>	1000 (for	well diameter) = 1 well volume	Cond. (µs/c	cm) 3%							1 1	
, , , , , , , , , , , , , , , , , , , ,		vell diameter) = 1 well volume	Specific Cond. (µs/cm) 3%							17		
		ell diameter) = 1 well volume diameter) = 1 well volume	Redox (mV	) 10%								
		diameter) = 1 well volume	DO (mg/L)	10%				h \				
(5155111) x 51	.0 (101 1	and relative	DO (%) 10%	6		0	020	۷ .				
Calculations:			Appearance Silty, HC of			1			1			
			Only for final	Sulph	nide (mg/L)							
			readings	Turbi	idity (NTU)							
			Interval Pu	rge Vol	ume (L)							
			Cumulative	e Purge	Volume (L):							
YSI ID  Logged Field Paramete	irs	☐ Yes ☑ No	Sample Me	ethod:								
Time logged on YSI (24	lhr)		Wa	terra	Peris	staltic	Disp	. Bailer			Other	
Sample Time (24hr)		_										



other (describe)

		)3083 BHO4				Head Space Ga	as Measure	ements	
Sample Da	ate (Con't): May	25,7016						Units	Values
Well Head	Seal: □ I-Plug □ E	PVC Cap ☑ Not Sealed □	Other			Methane (CH	4)	%LEL	Ø
						Oxygen (O2	)	%	20.6
	iced:	,				Carbon Dioxide	(C02)	PPM	300
Well prope	erly sealed for gas mon	itoring: ☐ Yes ☐ No Detail	s:						, ,
Priority	Bottle Type	Parameters Analyzed	Min. Volume	Treatment 🛛	Preser	vative Added 🛛	Vol. Co	llected (ml)	Comments
1a	120 ml (plastic)	Dissolved Metals	100 ml	☐ Field Filtered	☐ HNO:	3 (Nitric)			
1b	40 ml (glass)	Dissolved Mercury	15 mL	☐ Field Filtered	HCL	(Hydrochloric)			
2	500 ml (plastic)	General Chemistry	100 ml			-			
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	4	☐ NaOl	(Sodium Hydroxide)			
4	120 ml (glass)	Ammonia (NH3)	60 ml	-	☐ H₂SO	4 (Sulfuric)			
5	120 ml (plastic)	Thiocyanate (SCN)	50 ml		☐ HNO:	3 (Nitric)			
6	120 ml (glass amber)	Total Inorganic Carbon (TIC)	50 ml		J				
General I	Notes and Observation  Well work  Lid  DI	as Freen at Attempt & and historical	to the Front	haw due	to	Cow	1/4" HI   3/8" HI   5/8" HI   1/4" Sil   High C   D-25/1	DPE (microwaterra DPE (waterra tubin licon tubing apacity .45 micron or 2" wells, use wi for 1" wells, use wi (for 5/8" wells, use	_ft

# **APPENDIX C Laboratory Reports**



HEMMERA ENVIROCHEM INC.

ATTN: Natasha Sandys 230 - 2237 2nd Avenue

Whitehorse YK Y1A OK7

Date Received: 27-MAY-16

Report Date: 15-JUL-16 13:40 (MT)

Version: FINAL REV. 4

Client Phone: 867-456-4865

## Certificate of Analysis

Lab Work Order #: L1774699

Project P.O. #: NOT SUBMITTED

Job Reference: 1343-005.27

C of C Numbers:

Legal Site Desc:

#### Comments:

15-JUL-2016 This report replaces the previous version and contains a corrected TKN result for the Travel Blank

1, 2

Brent Mack, B.Sc. Account Manager

 $[This\ report\ shall\ not\ be\ reproduced\ except\ in\ full\ without\ the\ written\ authority\ of\ the\ Laboratory.]$ 

ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company



PAGE 2 of 18 15-JUL-16 13:40 (MT)

#### Version: FINAL REV. 4

	Sample ID Description Sampled Date Sampled Time Client ID	L1774699-1 Water 24-MAY-16 16:50 MW09-16	L1774699-2 Water 25-MAY-16 08:45 MW09-18	L1774699-3 Water 25-MAY-16 17:20 MW09-24	L1774699-4 Water 25-MAY-16 10:25 GSI-HA-01A	L1774699-5 Water 26-MAY-16 11:40 MW09-02
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	2060	2740	1020	823	2510
	Hardness (as CaCO3) (mg/L)	1390	1870	661	528	1520
	pH (pH)	7.44	7.80	8.08	8.16	7.45
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	195	423	239	243	70.1
	Ammonia, Total (as N) (mg/L)	0.0267 DLDS	0.0118	0.0119 DLDS	0.0384	7.35 DLDS
	Chloride (CI) (mg/L)	<2.5	<5.0 DLDS	<1.0 DLDS	0.97	<2.5
	Fluoride (F) (mg/L)	0.13 <sub>DLDS</sub>	<0.20	<0.040	0.133	0.54
	Nitrate (as N) (mg/L)	<0.025 DLDS	0.077	1.91	0.0123	0.153 DLDS
	Nitrite (as N) (mg/L)	<0.0050	<0.010	0.0020	0.0036	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	0.167	0.108	0.539	0.566	8.08
	Sulfate (SO4) (mg/L)	1100	1390	331	220	1440
	Anion Sum (meq/L)	26.8	37.3	11.8	9.47	31.3
	Cation Sum (meq/L)	28.5	38.1	13.6	11.1	34.4
	Cation - Anion Balance (%)	3.0	1.1	7.1	8.0	4.6
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050 DLM	<0.0050	<0.0050	<0.0050	<0.010
	Cyanide, Total (mg/L)	<0.010	<0.0050	<0.0050	<0.0050	<0.020
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Cyanide, Free (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.010
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)	53.2	118	59.6	60.4	17.6
	Total Organic Carbon (mg/L)	3.78	3.20	8.88	13.6	6.42
Total Metals	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-Total (mg/L)					
	Bismuth (Bi)-Total (mg/L)					
	Boron (B)-Total (mg/L)					
	Cadmium (Cd)-Total (mg/L)					
	Calcium (Ca)-Total (mg/L)					
	Chromium (Cr)-Total (mg/L)					
	Copper (Cu)-Total (mg/L)					
	Copper (Cu)-Total (mg/L)					
	Iron (Fe)-Total (mg/L)					
	Lead (Pb)-Total (mg/L)					
	Lithium (Li)-Total (mg/L)					
	Magnesium (Mg)-Total (mg/L)					

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

#### PAGE 3 of 18 15-JUL-16 13:40 (MT)

Version: FINAL REV. 4

	Sample ID Description Sampled Date Sampled Time Client ID	L1774699-6 Water 26-MAY-16 12:40 MW09-03	L1774699-7 Water 26-MAY-16 13:40 MW09-04	L1774699-8 Water 26-MAY-16 08:20 MP09-05	L1774699-9 Water 26-MAY-16 11:30 MW09-06	L1774699-10 Water 26-MAY-16 10:10 MW09-23
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	2610	2570	1990	1960	1590
	Hardness (as CaCO3) (mg/L)	1650	1600	1150	1220	955
	pH (pH)	8.08	8.13	7.51	8.08	8.02
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	111	116	252	189	395
	Ammonia, Total (as N) (mg/L)	6.18	7.04	8.39	0.300	2.69
	Chloride (CI) (mg/L)	<5.0	<5.0 DLDS	<2.5	<2.5	<2.5
	Fluoride (F) (mg/L)	0.30	0.32	<0.10	0.23	0.12
	Nitrate (as N) (mg/L)	0.452	0.050	0.050	0.703	OLDS <0.025
	Nitrite (as N) (mg/L)	0.075	0.027	<0.0050	0.0496	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	5.66	7.04	9.48	0.870	3.38
	Sulfate (SO4) (mg/L)	1450	1340	949	996	592
	Anion Sum (meq/L)	32.6	30.2	24.8	24.6	20.2
	Cation Sum (meq/L)	35.9	34.8	28.6	25.7	21.7
	Cation - Anion Balance (%)	4.9	7.2	7.1	2.3	3.6
Cyanides	Cyanide, Weak Acid Diss (mg/L)	0.0054	<0.0050	0.0051	<0.0050	<0.0050
	Cyanide, Total (mg/L)	0.0142	<0.0050	0.0078	<0.0050	0.114
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50	0.70	<0.50	0.54
	Cyanide, Free (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)	23.4	24.6	72.1	47.2	101
	Total Organic Carbon (mg/L)	6.41	5.95	22.4	6.12	19.7
Total Metals	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-Total (mg/L)					
	Bismuth (Bi)-Total (mg/L)					
	Boron (B)-Total (mg/L)					
	Cadmium (Cd)-Total (mg/L)					
	Calcium (Ca)-Total (mg/L)					
	Chromium (Cr)-Total (mg/L)					
	Cobalt (Co)-Total (mg/L)					
	Copper (Cu)-Total (mg/L)					
	Iron (Fe)-Total (mg/L)					
	Lead (Pb)-Total (mg/L)					
	Lithium (Li)-Total (mg/L)					
	Magnesium (Mg)-Total (mg/L)					

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1774699-11 Water 26-MAY-16 15:10 CH-P-13-03/50	L1774699-12 Water 26-MAY-16 08:50 MP09-04	L1774699-13 Water 26-MAY-16 09:45 MW09-08	L1774699-14 Water 25-MAY-16 17:20 DUP-1	L1774699-15 Water 26-MAY-16 08:20 DUP-2
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	3300	1240	487	1010	1990
	Hardness (as CaCO3) (mg/L)		755	245	612	1150
	pH (pH)	7.98	8.06	6.77	8.15	7.41
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	374	167	171	248	252
	Ammonia, Total (as N) (mg/L)		<0.0050	2.64	0.0164	9.33
	Chloride (CI) (mg/L)	30.2	<1.0 DLDS	<0.50	<1.0 DLDS	<2.5
	Fluoride (F) (mg/L)	<0.20	<0.040	0.124	<0.040	<0.10
	Nitrate (as N) (mg/L)	0.964	0.797	<0.0050	1.97	0.059
	Nitrite (as N) (mg/L)	0.016	<0.0020	<0.0010	<0.0020	<0.0050
	Total Kjeldahl Nitrogen (mg/L)		0.229	3.02	0.468	9.38
	Sulfate (SO4) (mg/L)	1550	541	91.9	330	940
	Anion Sum (meq/L)		14.7	5.33	12.0	24.6
	Cation Sum (meq/L)		15.5	9.78	12.6	28.7
	Cation - Anion Balance (%)		2.7	29.5	2.6	7.7
Cyanides	Cyanide, Weak Acid Diss (mg/L)		<0.0050	<0.0050	<0.0050	0.0061
	Cyanide, Total (mg/L)		0.0084	<0.0050	<0.0050	0.0098
	Thiocyanate (SCN) (mg/L)		<0.50	0.72	<0.50	0.86
	Cyanide, Free (mg/L)		<0.0050	<0.0050	<0.0050	0.0063
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)		42.5	59.9	58.1	72.8
	Total Organic Carbon (mg/L)		5.83	18.3	9.54	23.9
	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-Total (mg/L)					
	Bismuth (Bi)-Total (mg/L)					
	Boron (B)-Total (mg/L)					
	Cadmium (Cd)-Total (mg/L)					
	Calcium (Ca)-Total (mg/L)					
	Chromium (Cr)-Total (mg/L)					
	Cobalt (Co)-Total (mg/L)					
	Copper (Cu)-Total (mg/L)					
	Iron (Fe)-Total (mg/L)					
	Lead (Pb)-Total (mg/L)					
	Lithium (Li)-Total (mg/L)					
	Magnesium (Mg)-Total (mg/L)					

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1774699-16 Water 24-MAY-16 16:50 FB-1	L1774699-17 Water 25-MAY-16 18:10 FB-2	L1774699-18 Water 26-MAY-16 17:00 FB-3	L1774699-19 Water 26-MAY-16 TRAVEL BLANK-1	L1774699-20 Water 25-MAY-16 17:20 CH-P-13-03/50
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	<2.0	<2.0	<2.0	<2.0	
	Hardness (as CaCO3) (mg/L)	<0.50	<0.50	<0.50	<0.50	1760
	pH (pH)	5.47	5.28	5.34	5.34	
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	<1.0	<1.0	<1.0	<1.0	
	Ammonia, Total (as N) (mg/L)	<0.0050	<0.0050	<0.0050	0.0354	
	Chloride (CI) (mg/L)	<0.50	<0.50	<0.50	<0.50	
	Fluoride (F) (mg/L)	<0.020	<0.020	<0.020	<0.020	
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Total Kjeldahl Nitrogen (mg/L)	<0.050	<0.050	<0.050	<0.050	
	Sulfate (SO4) (mg/L)	<0.30	<0.30	<0.30	<0.30	
	Anion Sum (meq/L)	<0.10	<0.10	<0.10	<0.10	
	Cation Sum (meq/L)	<0.10	<0.10	<0.10	<0.10	
	Cation - Anion Balance (%)	0.0	0.0	0.0	0.0	
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	
	Cyanide, Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50	<0.50	<0.50	
	Cyanide, Free (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	
	Total Organic Carbon (mg/L)	<0.50	<0.50	<0.50	<0.50	
Total Metals	Aluminum (Al)-Total (mg/L)				<0.0030	
	Antimony (Sb)-Total (mg/L)				<0.00010	
	Arsenic (As)-Total (mg/L)				<0.00010	
	Barium (Ba)-Total (mg/L)				<0.000050	
	Beryllium (Be)-Total (mg/L)				<0.000020	
	Bismuth (Bi)-Total (mg/L)				<0.000050	
	Boron (B)-Total (mg/L)				<0.010	
	Cadmium (Cd)-Total (mg/L)				<0.0000050	
	Calcium (Ca)-Total (mg/L)				<0.050	
	Chromium (Cr)-Total (mg/L)				<0.00010	
	Cobalt (Co)-Total (mg/L)				<0.00010	
	Copper (Cu)-Total (mg/L)				<0.00050	
	Iron (Fe)-Total (mg/L)				<0.010	
	Lead (Pb)-Total (mg/L)				<0.000050	
	Lithium (Li)-Total (mg/L)				<0.0010	
	Magnesium (Mg)-Total (mg/L)				<0.10	

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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#### 15-JUL-16 13:40 (MT) Version: FINAL REV. 4

	Sample ID Description Sampled Date Sampled Time Client ID	L1774699-1 Water 24-MAY-16 16:50 MW09-16	L1774699-2 Water 25-MAY-16 08:45 MW09-18	L1774699-3 Water 25-MAY-16 17:20 MW09-24	L1774699-4 Water 25-MAY-16 10:25 GSI-HA-01A	L1774699-5 Water 26-MAY-16 11:40 MW09-02
Grouping	Analyte					
WATER						
Total Metals	Manganese (Mn)-Total (mg/L)					
	Mercury (Hg)-Total (mg/L)					
	Molybdenum (Mo)-Total (mg/L)					
	Nickel (Ni)-Total (mg/L)					
	Phosphorus (P)-Total (mg/L)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silicon (Si)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
	Strontium (Sr)-Total (mg/L)					
	Sulfur (S)-Total (mg/L)					
	Thallium (TI)-Total (mg/L)					
	Tin (Sn)-Total (mg/L)					
	Titanium (Ti)-Total (mg/L)					
	Uranium (U)-Total (mg/L)					
	Vanadium (V)-Total (mg/L)					
	Zinc (Zn)-Total (mg/L)					
	Zirconium (Zr)-Total (mg/L)					
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (AI)-Dissolved (mg/L)	<0.0020	O.0020	0.0271	0.0030	<0.0050
	Antimony (Sb)-Dissolved (mg/L)	0.0891	0.00035	0.00019	0.00015	0.00401
	Arsenic (As)-Dissolved (mg/L)	0.0244	0.0490	0.00135	0.00534	8.95
	Barium (Ba)-Dissolved (mg/L)	0.0149	0.00851	0.0928	0.126	0.00462
	Beryllium (Be)-Dissolved (mg/L)	<0.000040	<0.00040	<0.000020	<0.000020	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.00010	<0.00010	<0.000050	<0.000050	<0.00025
	Boron (B)-Dissolved (mg/L)	0.051	OLA <0.020	0.014	<0.010	0.058
	Cadmium (Cd)-Dissolved (mg/L)	0.0503	0.000048	0.0000653	0.0000066	0.000917
	Calcium (Ca)-Dissolved (mg/L)	320	332	194	136	477
	Chromium (Cr)-Dissolved (mg/L)	<0.00020	<0.00020	0.00033	0.00438	<0.00050
	Cobalt (Co)-Dissolved (mg/L)	0.00402	<0.00020	0.00012	0.00022	0.00995
	Copper (Cu)-Dissolved (mg/L)	0.00575	<0.00040	0.00579	0.00044	<0.0010
	Iron (Fe)-Dissolved (mg/L)	0.023	0.014	<0.010	5.07	15.4
	Lead (Pb)-Dissolved (mg/L)	0.00502	<0.00010	<0.000050	0.000095	<0.00025
	Lithium (Li)-Dissolved (mg/L)	0.0099	0.0228	0.0011	0.0061	0.0120
	Magnesium (Mg)-Dissolved (mg/L)	143	254	42.9	45.9	79.0

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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#### 15-JUL-16 13:40 (MT) Version: FINAL REV. 4

	Sample ID Description Sampled Date Sampled Time Client ID	L1774699-6 Water 26-MAY-16 12:40 MW09-03	L1774699-7 Water 26-MAY-16 13:40 MW09-04	L1774699-8 Water 26-MAY-16 08:20 MP09-05	L1774699-9 Water 26-MAY-16 11:30 MW09-06	L1774699-10 Water 26-MAY-16 10:10 MW09-23
Grouping	Analyte					
WATER						
Total Metals	Manganese (Mn)-Total (mg/L)					
	Mercury (Hg)-Total (mg/L)					
	Molybdenum (Mo)-Total (mg/L)					
	Nickel (Ni)-Total (mg/L)					
	Phosphorus (P)-Total (mg/L)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silicon (Si)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
	Strontium (Sr)-Total (mg/L)					
	Sulfur (S)-Total (mg/L)					
	Thallium (TI)-Total (mg/L)					
	Tin (Sn)-Total (mg/L)					
	Titanium (Ti)-Total (mg/L)					
	Uranium (U)-Total (mg/L)					
	Vanadium (V)-Total (mg/L)					
	Zinc (Zn)-Total (mg/L)					
	Zirconium (Zr)-Total (mg/L)					
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	<0.0050	0.0027	0.0243	OLA <0.0020	0.0230
	Antimony (Sb)-Dissolved (mg/L)	0.401	0.339	0.00031	0.201	<0.00050
	Arsenic (As)-Dissolved (mg/L)	2.08	3.55	0.0230	0.108	0.0283
	Barium (Ba)-Dissolved (mg/L)	0.0176	0.00857	0.0410	0.00531	0.0490
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00040	<0.00040	<0.00040	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.00025	<0.00010	<0.00010	<0.00010	<0.00025
	Boron (B)-Dissolved (mg/L)	0.172	0.204	0.052	0.100	0.062
	Cadmium (Cd)-Dissolved (mg/L)	0.00181	0.000023	0.000149	0.00720	<0.000025
	Calcium (Ca)-Dissolved (mg/L)	493	482	330	389	252
	Chromium (Cr)-Dissolved (mg/L)	<0.00050	<0.00020	0.00048	<0.00020	<0.00050
	Cobalt (Co)-Dissolved (mg/L)	0.00156	0.00086	0.0153	0.00191	0.0130
	Copper (Cu)-Dissolved (mg/L)	0.0047	<0.00040	0.00099	0.0104	<0.0010
	Iron (Fe)-Dissolved (mg/L)	0.036	<0.010	50.9	<0.010	18.0
	Lead (Pb)-Dissolved (mg/L)	0.00061	0.00045	<0.00010	0.00036	<0.00025
	Lithium (Li)-Dissolved (mg/L)	<0.0050	0.0120	<0.0020	0.0123	<0.0050
	Magnesium (Mg)-Dissolved (mg/L)	101	95.6	78.1	59.0	79.2

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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#### ALS ENVIRONMENTAL ANALYTICAL REPORT

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	Sample ID Description Sampled Date Sampled Time Client ID	L1774699-11 Water 26-MAY-16 15:10 CH-P-13-03/50	L1774699-12 Water 26-MAY-16 08:50 MP09-04	L1774699-13 Water 26-MAY-16 09:45 MW09-08	L1774699-14 Water 25-MAY-16 17:20 DUP-1	L1774699-15 Water 26-MAY-16 08:20 DUP-2
Grouping	Analyte					
WATER						
Total Metals	Manganese (Mn)-Total (mg/L)					
	Mercury (Hg)-Total (mg/L)					
	Molybdenum (Mo)-Total (mg/L)					
	Nickel (Ni)-Total (mg/L)					
	Phosphorus (P)-Total (mg/L)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silicon (Si)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
	Strontium (Sr)-Total (mg/L)					
	Sulfur (S)-Total (mg/L)					
	Thallium (TI)-Total (mg/L)					
	Tin (Sn)-Total (mg/L)					
	Titanium (Ti)-Total (mg/L)					
	Uranium (U)-Total (mg/L)					
	Vanadium (V)-Total (mg/L)					
	Zinc (Zn)-Total (mg/L)					
	Zirconium (Zr)-Total (mg/L)					
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0024	0.0607	0.0021	0.0238
	Antimony (Sb)-Dissolved (mg/L)		0.00138	0.00024	0.00018	0.00029
	Arsenic (As)-Dissolved (mg/L)		0.00061	0.208	0.00136	0.0226
	Barium (Ba)-Dissolved (mg/L)		0.0735	0.238	0.0902	0.0408
	Beryllium (Be)-Dissolved (mg/L)		<0.000020	0.000021	<0.000020	<0.00040
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.00010
	Boron (B)-Dissolved (mg/L)		0.012	<0.010	<0.010	0.046
	Cadmium (Cd)-Dissolved (mg/L)		0.0000462	0.0000053	0.0000545	0.000136
	Calcium (Ca)-Dissolved (mg/L)		180	73.7	176	333
	Chromium (Cr)-Dissolved (mg/L)		0.00024	0.00070	0.00017	0.00030
	Cobalt (Co)-Dissolved (mg/L)		0.00043	0.00161	0.00011	0.0151
	Copper (Cu)-Dissolved (mg/L)		0.00250	<0.00020	0.00542	0.00091
	Iron (Fe)-Dissolved (mg/L)		<0.010	80.0	<0.010	52.5
	Lead (Pb)-Dissolved (mg/L)		<0.000050	0.000086	<0.000050	<0.00010
	Lithium (Li)-Dissolved (mg/L)		<0.0010	<0.0010	0.0012	<0.0020
	Magnesium (Mg)-Dissolved (mg/L)		74.1	14.7	42.1	76.6

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1774699-16 Water 24-MAY-16 16:50 FB-1	L1774699-17 Water 25-MAY-16 18:10 FB-2	L1774699-18 Water 26-MAY-16 17:00 FB-3	L1774699-19 Water 26-MAY-16 TRAVEL BLANK-1	L1774699-20 Water 25-MAY-16 17:20 CH-P-13-03/50
Grouping	Analyte					
WATER						
Total Metals	Manganese (Mn)-Total (mg/L)				<0.00010	
	Mercury (Hg)-Total (mg/L)				<0.0000050	
	Molybdenum (Mo)-Total (mg/L)				<0.000050	
	Nickel (Ni)-Total (mg/L)				<0.00050	
	Phosphorus (P)-Total (mg/L)				<0.050	
	Potassium (K)-Total (mg/L)				<0.10	
	Selenium (Se)-Total (mg/L)				<0.000050	
	Silicon (Si)-Total (mg/L)				<0.050	
	Silver (Ag)-Total (mg/L)				<0.000010	
	Sodium (Na)-Total (mg/L)				<0.050	
	Strontium (Sr)-Total (mg/L)				<0.00020	
	Sulfur (S)-Total (mg/L)				<0.50	
	Thallium (TI)-Total (mg/L)				<0.000010	
	Tin (Sn)-Total (mg/L)				<0.00010	
	Titanium (Ti)-Total (mg/L)				<0.00030	
	Uranium (U)-Total (mg/L)				<0.000010	
	Vanadium (V)-Total (mg/L)				<0.00050	
	Zinc (Zn)-Total (mg/L)				<0.0030	
	Zirconium (Zr)-Total (mg/L)				<0.00030	
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD		FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0038	<0.0010	<0.0010		0.0051
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		0.00032
	Arsenic (As)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		0.00079
	Barium (Ba)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050		0.0443
	Beryllium (Be)-Dissolved (mg/L)	<0.000020	<0.000020	<0.000020		<0.00040
	Bismuth (Bi)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050		<0.00010
	Boron (B)-Dissolved (mg/L)	<0.010	<0.010	<0.010		0.026
	Cadmium (Cd)-Dissolved (mg/L)	<0.0000050	<0.0000050	<0.000050		0.000256
	Calcium (Ca)-Dissolved (mg/L)	<0.050	<0.050	<0.050		438
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		<0.00020
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		0.00067
	Copper (Cu)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020		0.00197
	Iron (Fe)-Dissolved (mg/L)	<0.010	<0.010	<0.010		0.011
	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050		<0.00010
	Lithium (Li)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010		0.0029
	Magnesium (Mg)-Dissolved (mg/L)	<0.10	<0.10	<0.10		163

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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	Sample ID Description Sampled Date Sampled Time Client ID	L1774699-1 Water 24-MAY-16 16:50 MW09-16	L1774699-2 Water 25-MAY-16 08:45 MW09-18	L1774699-3 Water 25-MAY-16 17:20 MW09-24	L1774699-4 Water 25-MAY-16 10:25 GSI-HA-01A	L1774699-5 Water 26-MAY-16 11:40 MW09-02
Grouping	Analyte					
WATER						
Dissolved Metals	Manganese (Mn)-Dissolved (mg/L)	0.943	0.352	0.0275	0.118	19.8
	Mercury (Hg)-Dissolved (mg/L)	0.0000053	<0.0000050	<0.0000050	<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)	0.00024	<0.00010	0.000270	0.000456	0.00684
	Nickel (Ni)-Dissolved (mg/L)	0.0061	<0.0010	<0.00050	0.00360	<0.0025
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	6.59	7.81	1.90	3.53	32.4
	Selenium (Se)-Dissolved (mg/L)	<0.00010	0.00084	0.000840	<0.000050	<0.00025
	Silicon (Si)-Dissolved (mg/L)	4.34	4.65	7.38	6.24	7.24
	Silver (Ag)-Dissolved (mg/L)	0.000064	<0.000020	<0.000010	<0.000010	<0.000050
	Sodium (Na)-Dissolved (mg/L)	7.08	11.4	7.63	4.53	27.3
	Strontium (Sr)-Dissolved (mg/L)	0.706	1.03	0.623	0.315	0.848
	Sulfur (S)-Dissolved (mg/L)	389	466	122	88.7	517
	Thallium (TI)-Dissolved (mg/L)	0.000423	0.000290	<0.000010	<0.000010	0.000199
	Tin (Sn)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00010	<0.00010	<0.00050
	Titanium (Ti)-Dissolved (mg/L)	<0.00060	<0.00060	<0.00030	0.00034	<0.0015
	Uranium (U)-Dissolved (mg/L)	0.00261	0.00702	0.00259	0.000043	0.00109
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.00050	<0.00050	<0.0025
	Zinc (Zn)-Dissolved (mg/L)	6.94	0.0023	0.0055	0.0033	0.213
	Zirconium (Zr)-Dissolved (mg/L)	<0.00060	<0.00060	<0.00030	<0.00030	<0.0015

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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#### ALS ENVIRONMENTAL ANALYTICAL REPORT

Version: FINAL REV. 4 L1774699-6 L1774699-7 L1774699-8 L1774699-9 L1774699-10 Sample ID Description Water Water Water Water Water Sampled Date 26-MAY-16 26-MAY-16 26-MAY-16 26-MAY-16 26-MAY-16 Sampled Time 12:40 13:40 08:20 11:30 10:10 MW09-03 MP09-05 MW09-06 MW09-23 MW09-04 **Client ID** Grouping **Analyte WATER Dissolved Metals** Manganese (Mn)-Dissolved (mg/L) 19.5 7.76 10.1 3.04 22.4 Mercury (Hg)-Dissolved (mg/L) < 0.0000050 < 0.0000050 < 0.0000050 0.0000167 < 0.0000050 Molybdenum (Mo)-Dissolved (mg/L) 0.00554 0.00384 0.00067 0.00163 0.00221 DLA Nickel (Ni)-Dissolved (mg/L) <0.0010 < 0.0025 <0.0025 0.0052 0.0033 Phosphorus (P)-Dissolved (mg/L) 0.060 0.082 < 0.050 < 0.050 <0.050 Potassium (K)-Dissolved (mg/L) 8.70 19.3 29.6 42.2 6.83 DI A Selenium (Se)-Dissolved (mg/L) < 0.00025 <0.00010 0.00017 <0.00025 0.00022 Silicon (Si)-Dissolved (mg/L) 15.6 8.35 12.8 5.49 6.56 Silver (Ag)-Dissolved (mg/L) < 0.000050 0.000054 < 0.000020 0.000120 < 0.000050 Sodium (Na)-Dissolved (mg/L) 24.8 24.3 41.2 18.6 11.5 Strontium (Sr)-Dissolved (mg/L) 1.35 1.01 0.880 0.621 1.23 Sulfur (S)-Dissolved (mg/L) 531 512 348 328 202 Thallium (TI)-Dissolved (mg/L) 0.000085 0.000116 < 0.000020 0.000240 < 0.000050 DLA Tin (Sn)-Dissolved (mg/L) < 0.00050 <0.00020 < 0.00020 <0.00020 < 0.00050 DLA Titanium (Ti)-Dissolved (mg/L) < 0.0015 <0.00060 0.00094 <0.00060 <0.0015 Uranium (U)-Dissolved (mg/L) 0.00127 0.000303 0.00167 0.00176 0.00285 DLA <0.0010 Vanadium (V)-Dissolved (mg/L) <0.0025 <0.0010 <0.0025 0.0017 Zinc (Zn)-Dissolved (mg/L) 0.0062 0.630 0.0156 0.383 0.0289 Zirconium (Zr)-Dissolved (mg/L) < 0.0015 <0.00060 0.00079 <0.00060 <0.0015

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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## Version: FINAL REV. 4

	Sample ID Description Sampled Date Sampled Time Client ID	L1774699-11 Water 26-MAY-16 15:10 CH-P-13-03/50	L1774699-12 Water 26-MAY-16 08:50 MP09-04	L1774699-13 Water 26-MAY-16 09:45 MW09-08	L1774699-14 Water 25-MAY-16 17:20 DUP-1	L1774699-15 Water 26-MAY-16 08:20 DUP-2
Grouping	Analyte					
WATER						
Dissolved Metals	Manganese (Mn)-Dissolved (mg/L)		0.00046	6.89	0.0224	9.84
	Mercury (Hg)-Dissolved (mg/L)	<0.000050	<0.000050	<0.0000050	<0.0000050	<0.000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000212	0.000107	0.000238	0.00064
	Nickel (Ni)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	0.0053
	Phosphorus (P)-Dissolved (mg/L)		<0.050	0.110	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)		1.89	1.92	1.96	8.59
	Selenium (Se)-Dissolved (mg/L)		0.000181	0.000096	0.000692	0.00018
	Silicon (Si)-Dissolved (mg/L)		5.68	10.7	7.19	5.46
	Silver (Ag)-Dissolved (mg/L)		<0.000010	<0.000010	<0.000010	<0.000020
	Sodium (Na)-Dissolved (mg/L)		8.02	2.36	7.36	40.4
	Strontium (Sr)-Dissolved (mg/L)		0.594	0.319	0.614	0.991
	Sulfur (S)-Dissolved (mg/L)		187	32.0	121	323
	Thallium (TI)-Dissolved (mg/L)		<0.000010	<0.000010	<0.00010	<0.000020
	Tin (Sn)-Dissolved (mg/L)		<0.00010	<0.00010	<0.00010	<0.00020
	Titanium (Ti)-Dissolved (mg/L)		<0.00030	0.00275	<0.00030	0.00116
	Uranium (U)-Dissolved (mg/L)		0.00214	0.000067	0.00256	0.00164
	Vanadium (V)-Dissolved (mg/L)		<0.00050	0.00238	<0.00050	0.0016
	Zinc (Zn)-Dissolved (mg/L)		0.0024	0.0038	0.0012	0.0153
	Zirconium (Zr)-Dissolved (mg/L)		<0.00030	0.00064	<0.00030	0.00077
			X0.0000	0.00004	20.0000	0.00077

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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#### ALS ENVIRONMENTAL ANALYTICAL REPORT

L1774699-16 L1774699-17 L1774699-18 L1774699-19 L1774699-20 Sample ID Description Water Water Water Water Water 26-MAY-16 Sampled Date 24-MAY-16 25-MAY-16 26-MAY-16 25-MAY-16 16:50 18:10 17:00 Sampled Time 17:20 FB-1 FB-3 TRAVEL BLANK-1 CH-P-13-03/50 FB-2 **Client ID** Grouping **Analyte WATER Dissolved Metals** Manganese (Mn)-Dissolved (mg/L) 0.00023 < 0.00010 < 0.00010 0.318 Mercury (Hg)-Dissolved (mg/L) < 0.0000050 < 0.0000050 < 0.0000050 Molybdenum (Mo)-Dissolved (mg/L) < 0.000050 < 0.000050 < 0.000050 0.00069 Nickel (Ni)-Dissolved (mg/L) < 0.00050 < 0.00050 < 0.00050 0.0199 Phosphorus (P)-Dissolved (mg/L) < 0.050 < 0.050 < 0.050 < 0.050 Potassium (K)-Dissolved (mg/L) < 0.10 < 0.10 < 0.10 11.8 Selenium (Se)-Dissolved (mg/L) < 0.000050 0.00717 < 0.000050 < 0.000050 Silicon (Si)-Dissolved (mg/L) < 0.050 < 0.050 < 0.050 6.10 Silver (Ag)-Dissolved (mg/L) < 0.000010 < 0.000010 < 0.000010 < 0.000020 Sodium (Na)-Dissolved (mg/L) < 0.050 < 0.050 < 0.050 203 Strontium (Sr)-Dissolved (mg/L) 0.00023 < 0.00020 < 0.00020 1.24 Sulfur (S)-Dissolved (mg/L) < 0.50 < 0.50 554 < 0.50 Thallium (TI)-Dissolved (mg/L) < 0.000010 < 0.000010 <0.000010 0.000087 Tin (Sn)-Dissolved (mg/L) < 0.00010 < 0.00010 < 0.00010 0.00281 Titanium (Ti)-Dissolved (mg/L) < 0.00030 < 0.00030 < 0.00030 <0.00060 Uranium (U)-Dissolved (mg/L) < 0.000010 < 0.000010 <0.000010 0.0124 Vanadium (V)-Dissolved (mg/L) < 0.00050 < 0.00050 < 0.00050 < 0.0010 Zinc (Zn)-Dissolved (mg/L) < 0.0010 < 0.0010 < 0.0010 0.0159 Zirconium (Zr)-Dissolved (mg/L) < 0.00030 < 0.00030 < 0.00030 < 0.00060

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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Version: FINAL REV. 4

## **Reference Information**

QC Samples with Qualifiers & Comments:

Method Blank			Applies to Sample Number(s)
	Alkalinity, Total (as CaCO3)	В	L1774699-10, -11, -12, -13, -14, -15, -17, -18, -19, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Beryllium (Be)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Aluminum (AI)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Antimony (Sb)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Bismuth (Bi)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Chromium (Cr)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lead (Pb)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Selenium (Se)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Silver (Ag)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Thallium (TI)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Tin (Sn)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Titanium (Ti)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Vanadium (V)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Zirconium (Zr)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Beryllium (Be)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Aluminum (Al)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Bismuth (Bi)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Boron (B)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Chromium (Cr)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cobalt (Co)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Copper (Cu)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Lead (Pb)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Molybdenum (Mo)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Nickel (Ni)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Silver (Ag)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Tin (Sn)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Titanium (Ti)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Vanadium (V)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Zirconium (Zr)-Dissolved	DLA	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Thiocyanate (SCN)	DLM	L1774699-19
Duplicate	Cadmium (Cd)-Dissolved	DLM	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cyanide, Weak Acid Diss	HTP	L1774699-1, -14, -16, -17, -2, -3, -4
Matrix Spike	Sulfate (SO4)	MS-B	L1774699-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19

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## **Reference Information**

	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L1774699-19
Matrix Spike	Selenium (Se)-Total	MS-B	L1774699-19
Matrix Spike	Strontium (Sr)-Total	MS-B	L1774699-19
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Total Inorganic Carbon	MS-B	L1774699-10, -12, -13, -14, -15, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Total Organic Carbon	MS-B	L1774699-12, -14, -16, -17, -18, -19, -4, -5, -6, -7, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Antimony (Sb)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Total Inorganic Carbon	MS-B	L1774699-16, -17, -18, -19
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20, -3, -4, -5, -6, -7, -8, -9
	Strontium (Sr)-Dissolved		L1774699-1, -10, -12, -13, -14, -15, -16, -17, -18, -2, -20,

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	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike		MS-B	-3, -4, -5, -6, -7, -8, -9
Matrix Spike	Total Kjeldahl Nitrogen	MSTN	L1774699-19
Duplicate	Total Kjeldahl Nitrogen	TKND	L1774699-19
·			

Qualifiers for	or Ind	lividual l	Parameters	Listed:
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Qualifier	Description
В	Method Blank exceeds ALS DQO. All associated sample results are at least 5 times greater than blank levels and are considered reliable.
DLA	Detection Limit adjusted for required dilution
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).
HTP	Sample preparation or preservation hold time was exceeded.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.
RRV	Reported Result Verified By Repeat Analysis
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.

#### **Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". 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.

BE-D-L-CCMS-VA Water Diss. Be (low) in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

BE-T-L-CCMS-VA Water Total Be (Low) in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

CARBONS-TIC-VA Water Total inorganic carbon by CO2 purge APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CL-IC-N-WR Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CN-FREE-CFA-VA Water Free Cyanide in water by CFA ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-SCN-VA Water Thiocyanate by Colour APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN- M "Thiocyanate" Thiocyanate is determined by the ferric nitrate

colourimetric method.

CN-T-CFA-VA Water Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

**CN-WAD-CFA-VA** Water Weak Acid Diss. Cyanide in water by CFA APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

EC-PCT-VA Water Conductivity (Automated) APHA 2510 Auto. Conduct.

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This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

F-IC-N-WR Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents.

Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-VA Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

HG-T-CVAA-VA Water Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

IONBALANCE-VA Water Ion Balance Calculation APHA 1030E

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-DIS-LOW-ICP-VA Water Dissolved Metals in Water by ICPOES EPA 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma optical emission spectrophotometry (EPA Method 6010B).

MET-T-CCMS-VA Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

MET-TOT-LOW-ICP-VA Water Total Metals in Water by ICPOES EPA 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence APHA 4500 NH3-NITROGEN (AMMONIA)

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-L-IC-N-WR Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WR Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

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This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated)

APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

S-DIS-ICP-VA

Water

Dissolved Sulfur in Water by ICPOES

EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

S-TOT-ICP-VA

Water

Total Sulfur in Water by ICPOES

EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

SO4-IC-N-WR

Water

Sulfate in Water by IC

EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

TKN-F-VA

Water

TKN in Water by Fluorescence

APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

\*\* 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:

<b>Laboratory Definition Code</b>	Laboratory Location
WR	ALS ENVIRONMENTAL - WHITEHORSE, YUKON, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

#### **Chain of Custody Numbers:**

1 2

#### **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 STATÉD, 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 Environmental

#### Chain of Custody (COC) / Analytic: Request Form

Canada Toll Free: 1 800 668 9878

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## ALS Environmental

## Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



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HEMMERA ENVIROCHEM INC.

ATTN: Natasha Sandys 230 - 2237 2nd Avenue

Whitehorse YK Y1A 0K7

Date Received: 30-MAY-16

Report Date: 15-JUL-16 13:27 (MT)

Version: FINAL REV. 3

Client Phone: 867-456-4865

## Certificate of Analysis

Lab Work Order #: L1775300
Project P.O. #: NOT SUBMITTED
Job Reference: 1343-005.27

C of C Numbers: 1

Legal Site Desc:

#### Comments:

15-JUL-2016 This report replaces the previous version and includes a corrected TKN value for the Travel Blank sample.

Brent Mack, B.Sc. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700 ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company



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#### Version: FINAL REV. 3

	Sample ID Description Sampled Date Sampled Time Client ID	L1775300-1 Water 27-MAY-16 12:20 GSI-PC-03B	L1775300-2 Water 26-MAY-16 12:45 MP09-14	L1775300-3 Water 27-MAY-16 11:50 MP09-08	L1775300-4 Water 25-MAY-16 14:10 GSI-HA-04A	L1775300-5 Water 27-MAY-16 08:10 GSI-HA-04A
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	3920		726		347
	Hardness (as CaCO3) (mg/L)	2790	144	413	262	
	pH (pH)	8.12		7.53		7.59
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	900		225		136
	Ammonia, Total (as N) (mg/L)			0.0318		
	Chloride (CI) (mg/L)	<10 DLDS		<0.50		<0.50
	Fluoride (F) (mg/L)	<0.40		0.077		0.097
	Nitrate (as N) (mg/L)	<0.10		<0.0050		0.0059
	Nitrite (as N) (mg/L)	<0.020		<0.0010		<0.0010
	Total Kjeldahl Nitrogen (mg/L)			0.233		
	Sulfate (SO4) (mg/L)	2030		172		68.3
	Anion Sum (meq/L)	60.3		8.08		
	Cation Sum (meq/L)	62.0		8.65		
	Cation - Anion Balance (%)	1.3		3.4		
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050		<0.0050		<0.0050
	Cyanide, Total (mg/L)	<0.0050		<0.0050		<0.0050
	Thiocyanate (SCN) (mg/L)			<0.50		
	Cyanide, Free (mg/L)	<0.0050		<0.0050		<0.0050
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)			60.4		
	Total Organic Carbon (mg/L)			5.99		
Total Metals	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-Total (mg/L)					
	Bismuth (Bi)-Total (mg/L)					
	Boron (B)-Total (mg/L)					
	Cadmium (Cd)-Total (mg/L)					
	Calcium (Ca)-Total (mg/L)					
	Chromium (Cr)-Total (mg/L)					
	Cobalt (Co)-Total (mg/L)					
	Copper (Cu)-Total (mg/L)					
	Iron (Fe)-Total (mg/L)					
	Lead (Pb)-Total (mg/L)					
	Lithium (Li)-Total (mg/L)					
	Magnesium (Mg)-Total (mg/L)					

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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#### ALS ENVIRONMENTAL ANALYTICAL REPORT

L1775300-6 L1775300-7 L1775300-8 L1775300-9 L1775300-10 Sample ID Water Description Water Water Water Water 27-MAY-16 27-MAY-16 27-MAY-16 27-MAY-16 Sampled Date 27-MAY-16 12:50 16:10 10:10 10:10 Sampled Time 16:25 GSI-HA-04A MW09-22 MW09-22 DUP-3 FB-4 Client ID Grouping **Analyte WATER Physical Tests** Conductivity (uS/cm) 937 728 <2.0 Hardness (as CaCO3) (mg/L) 471 414 < 0.50 pH (pH) 7.03 7.45 5.41 Alkalinity, Total (as CaCO3) (mg/L) Anions and 165 225 <1.0 **Nutrients** Ammonia, Total (as N) (mg/L) 0.0641 0.702 0.0345 < 0.0050 DLDS Chloride (CI) (mg/L) <1.0 0.75 < 0.50 Fluoride (F) (mg/L) 0.088 < 0.020 0.046 Nitrate (as N) (mg/L) 0.330 <0.0050 < 0.0050 Nitrite (as N) (mg/L) 0.0188 <0.0010 < 0.0010 Total Kjeldahl Nitrogen (mg/L) 1.38 2.45 0.265 < 0.050 Sulfate (SO4) (mg/L) 343 172 < 0.30 Anion Sum (meq/L) 8.10 < 0.10 Cation Sum (meq/L) 8.66 < 0.10 Cation - Anion Balance (%) 3.3 0.0 Cyanide, Weak Acid Diss (mg/L) Cyanides < 0.0050 < 0.0050 < 0.0050 Cyanide, Total (mg/L) 0.0177 < 0.0050 < 0.0050 Thiocyanate (SCN) (mg/L) < 0.50 < 0.50 < 0.50 < 0.50 Cyanide, Free (mg/L) < 0.0050 <0.0050 < 0.0050 Total Inorganic Carbon (mg/L) Organic / 30.8 59.2 61.3 < 0.50 **Inorganic Carbon** Total Organic Carbon (mg/L) 18.0 18.5 6.18 < 0.50 **Total Metals** Aluminum (Al)-Total (mg/L) Antimony (Sb)-Total (mg/L) Arsenic (As)-Total (mg/L) Barium (Ba)-Total (mg/L) Beryllium (Be)-Total (mg/L) Bismuth (Bi)-Total (mg/L) Boron (B)-Total (mg/L) Cadmium (Cd)-Total (mg/L) Calcium (Ca)-Total (mg/L) Chromium (Cr)-Total (mg/L) Cobalt (Co)-Total (mg/L) Copper (Cu)-Total (mg/L) Iron (Fe)-Total (mg/L) Lead (Pb)-Total (mg/L) Lithium (Li)-Total (mg/L) Magnesium (Mg)-Total (mg/L)

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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#### ALS ENVIRONMENTAL ANALYTICAL REPORT

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	Sample ID Description Sampled Date Sampled Time Client ID	L1775300-11 Water 27-MAY-16 TRAVEL BLANK
Grouping	Analyte	
WATER		
Physical Tests	Conductivity (uS/cm)	<2.0
•	Hardness (as CaCO3) (mg/L)	<0.50
	pH (pH)	5.47
Anions and	Alkalinity, Total (as CaCO3) (mg/L)	<1.0
Nutrients	Anamania Tatal (an NI) (mm/l)	
	Ammonia, Total (as N) (mg/L)	<0.0050
	Chloride (Cl) (mg/L)	<0.50
	Fluoride (F) (mg/L) Nitrate (as N) (mg/L)	<0.020
	, , , , , ,	<0.0050
	Nitrite (as N) (mg/L)	<0.0010
	Total Kjeldahl Nitrogen (mg/L) Sulfate (SO4) (mg/L)	<0.050
	Anion Sum (meq/L)	<0.30
	Cation Sum (meq/L)	<0.10
	Cation - Anion Balance (%)	<0.10
Cyanides	Cyanide, Weak Acid Diss (mg/L)	0.0
Cyanides		<0.0050
	Cyanide, Total (mg/L) Thiocyanate (SCN) (mg/L)	<0.0050
	Cyanide, Free (mg/L)	<0.50
Organia /		<0.0050
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)	<0.50
	Total Organic Carbon (mg/L)	<0.50
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030
	Antimony (Sb)-Total (mg/L)	<0.00010
	Arsenic (As)-Total (mg/L)	<0.00010
	Barium (Ba)-Total (mg/L)	<0.000050
	Beryllium (Be)-Total (mg/L)	<0.000020
	Bismuth (Bi)-Total (mg/L)	<0.000050
	Boron (B)-Total (mg/L)	<0.010
	Cadmium (Cd)-Total (mg/L)	<0.0000050
	Calcium (Ca)-Total (mg/L)	<0.050
	Chromium (Cr)-Total (mg/L)	<0.00010
	Cobalt (Co)-Total (mg/L)	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050
	Iron (Fe)-Total (mg/L)	<0.010
	Lead (Pb)-Total (mg/L)	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0010
	Magnesium (Mg)-Total (mg/L)	<0.10

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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#### 15-JUL-16 13:27 (MT) Version: FINAL REV. 3

	Sample ID Description Sampled Date Sampled Time Client ID	L1775300-1 Water 27-MAY-16 12:20 GSI-PC-03B	L1775300-2 Water 26-MAY-16 12:45 MP09-14	L1775300-3 Water 27-MAY-16 11:50 MP09-08	L1775300-4 Water 25-MAY-16 14:10 GSI-HA-04A	L1775300-5 Water 27-MAY-16 08:10 GSI-HA-04A
Grouping	Analyte					
WATER						
Total Metals	Manganese (Mn)-Total (mg/L)					
	Mercury (Hg)-Total (mg/L)					
	Molybdenum (Mo)-Total (mg/L)					
	Nickel (Ni)-Total (mg/L)					
	Phosphorus (P)-Total (mg/L)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silicon (Si)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
	Strontium (Sr)-Total (mg/L)					
	Sulfur (S)-Total (mg/L)					
	Thallium (TI)-Total (mg/L)					
	Tin (Sn)-Total (mg/L)					
	Titanium (Ti)-Total (mg/L)					
	Uranium (U)-Total (mg/L)					
	Vanadium (V)-Total (mg/L)					
	Zinc (Zn)-Total (mg/L)					
	Zirconium (Zr)-Total (mg/L)					
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD		FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0315	0.0021	0.0046	0.0232	
	Antimony (Sb)-Dissolved (mg/L)	0.00296	0.00481	<0.00010	0.00090	
	Arsenic (As)-Dissolved (mg/L)	0.0874	0.809	0.0148	0.0249	
	Barium (Ba)-Dissolved (mg/L)	0.126	0.0237	0.0446	0.0531	
	Beryllium (Be)-Dissolved (mg/L)	<0.00040	<0.000020	<0.000020	<0.000020	
	Bismuth (Bi)-Dissolved (mg/L)	<0.00010	<0.000050	<0.000050	<0.000050	
	Boron (B)-Dissolved (mg/L)	0.036	0.020	<0.010	<0.010	
	Cadmium (Cd)-Dissolved (mg/L)	0.000135	0.0000467	<0.0000050	0.0000330	
	Calcium (Ca)-Dissolved (mg/L)	125	44.7	114	67.0	
	Chromium (Cr)-Dissolved (mg/L)	0.0290	0.00015	<0.00010	0.00114	
	Cobalt (Co)-Dissolved (mg/L)	0.00579	0.00040	0.00065	0.00025	
	Copper (Cu)-Dissolved (mg/L)	0.00541	0.00043	<0.00020	0.00164	
	Iron (Fe)-Dissolved (mg/L)	7.28	0.600	1.11	1.80	
	Lead (Pb)-Dissolved (mg/L)	0.00080	0.000650	<0.000050	0.000315	
	Lithium (Li)-Dissolved (mg/L)	0.0469	0.0022	0.0036	0.0020	
	Magnesium (Mg)-Dissolved (mg/L)	603	7.83	30.9	23.1	

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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#### 15-JUL-16 13:27 (MT) Version: FINAL REV. 3

	Sample ID Description Sampled Date Sampled Time Client ID	L1775300-6 Water 27-MAY-16 16:10 GSI-HA-04A	L1775300-7 Water 27-MAY-16 10:10 MW09-22	L1775300-8 Water 27-MAY-16 16:25 MW09-22	L1775300-9 Water 27-MAY-16 12:50 DUP-3	L1775300-10 Water 27-MAY-16 10:10 FB-4
Grouping	Analyte					
WATER						
Total Metals	Manganese (Mn)-Total (mg/L)					
	Mercury (Hg)-Total (mg/L)					
	Molybdenum (Mo)-Total (mg/L)					
	Nickel (Ni)-Total (mg/L)					
	Phosphorus (P)-Total (mg/L)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silicon (Si)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
	Strontium (Sr)-Total (mg/L)					
	Sulfur (S)-Total (mg/L)					
	Thallium (TI)-Total (mg/L)					
	Tin (Sn)-Total (mg/L)					
	Titanium (Ti)-Total (mg/L)					
	Uranium (U)-Total (mg/L)					
	Vanadium (V)-Total (mg/L)					
	Zinc (Zn)-Total (mg/L)					
	Zirconium (Zr)-Total (mg/L)					
Dissolved Metals	Dissolved Mercury Filtration Location		FIELD		FIELD	FIELD
	Dissolved Metals Filtration Location		FIELD		FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)		0.0275		0.0051	<0.0010
	Antimony (Sb)-Dissolved (mg/L)		0.00031		<0.00010	<0.00010
	Arsenic (As)-Dissolved (mg/L)		0.00206		0.0152	<0.00010
	Barium (Ba)-Dissolved (mg/L)		0.0829		0.0434	<0.000050
	Beryllium (Be)-Dissolved (mg/L)		<0.000020		<0.000020	<0.000020
	Bismuth (Bi)-Dissolved (mg/L)		<0.000050		<0.000050	<0.000050
	Boron (B)-Dissolved (mg/L)		0.029		<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)		0.0000550		<0.0000050	<0.0000050
	Calcium (Ca)-Dissolved (mg/L)		167		115	<0.050
	Chromium (Cr)-Dissolved (mg/L)		0.00047		<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)		0.00884		0.00066	<0.00010
	Copper (Cu)-Dissolved (mg/L)		0.00348		<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)		0.936		1.11	<0.010
	Lead (Pb)-Dissolved (mg/L)		0.000081		<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)		<0.0010		0.0034	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)		13.0		30.9	<0.10

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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#### ALS ENVIRONMENTAL ANALYTICAL REPORT

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	Sample ID Description Sampled Date Sampled Time Client ID	L1775300-11 Water 27-MAY-16 TRAVEL BLANK		
Grouping	Analyte			
WATER				
Total Metals	Manganese (Mn)-Total (mg/L)	<0.00010		
	Mercury (Hg)-Total (mg/L)	<0.0000050		
	Molybdenum (Mo)-Total (mg/L)	<0.000050		
	Nickel (Ni)-Total (mg/L)	<0.00050		
	Phosphorus (P)-Total (mg/L)	<0.050		
	Potassium (K)-Total (mg/L)	<0.10		
	Selenium (Se)-Total (mg/L)	<0.000050		
	Silicon (Si)-Total (mg/L)	<0.050		
	Silver (Ag)-Total (mg/L)	<0.000010		
	Sodium (Na)-Total (mg/L)	<0.050		
	Strontium (Sr)-Total (mg/L)	<0.00020		
	Sulfur (S)-Total (mg/L)	<0.50		
	Thallium (TI)-Total (mg/L)	<0.000010		
	Tin (Sn)-Total (mg/L)	<0.00010		
	Titanium (Ti)-Total (mg/L)	<0.00030		
	Uranium (U)-Total (mg/L)	<0.000010		
	Vanadium (V)-Total (mg/L)	<0.00050		
	Zinc (Zn)-Total (mg/L)	<0.0030		
	Zirconium (Zr)-Total (mg/L)	<0.00030		
Dissolved Metals	Dissolved Mercury Filtration Location			
	Dissolved Metals Filtration Location			
	Aluminum (Al)-Dissolved (mg/L)			
	Antimony (Sb)-Dissolved (mg/L)			
	Arsenic (As)-Dissolved (mg/L)			
	Barium (Ba)-Dissolved (mg/L)			
	Beryllium (Be)-Dissolved (mg/L)			
	Bismuth (Bi)-Dissolved (mg/L)			
	Boron (B)-Dissolved (mg/L)			
	Cadmium (Cd)-Dissolved (mg/L)			
	Calcium (Ca)-Dissolved (mg/L)			
	Chromium (Cr)-Dissolved (mg/L)			
	Cobalt (Co)-Dissolved (mg/L)			
	Copper (Cu)-Dissolved (mg/L)			
	Iron (Fe)-Dissolved (mg/L)			
	Lead (Pb)-Dissolved (mg/L)			
	Lithium (Li)-Dissolved (mg/L)			
	Magnesium (Mg)-Dissolved (mg/L)			

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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#### 15-JUL-16 13:27 (MT) Version: FINAL REV. 3

	Sample ID Description Sampled Date Sampled Time Client ID	L1775300-1 Water 27-MAY-16 12:20 GSI-PC-03B	L1775300-2 Water 26-MAY-16 12:45 MP09-14	L1775300-3 Water 27-MAY-16 11:50 MP09-08	L1775300-4 Water 25-MAY-16 14:10 GSI-HA-04A	L1775300-5 Water 27-MAY-16 08:10 GSI-HA-04A
Grouping	Analyte					
WATER						
Dissolved Metals	Manganese (Mn)-Dissolved (mg/L)	2.10	0.115	0.804	1.24	
	Mercury (Hg)-Dissolved (mg/L)	<0.0000050		<0.000050	<0.000050	
	Molybdenum (Mo)-Dissolved (mg/L)	0.0153	0.000727	0.000406	0.000770	
	Nickel (Ni)-Dissolved (mg/L)	0.0743	0.00523	<0.00050	0.00172	
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	
	Potassium (K)-Dissolved (mg/L)	24.6	9.49	1.12	2.24	
	Selenium (Se)-Dissolved (mg/L)	0.00039	<0.000050	0.000100	0.000061	
	Silicon (Si)-Dissolved (mg/L)	8.84	0.932	7.39	4.66	
	Silver (Ag)-Dissolved (mg/L)	<0.000020	<0.00010	<0.000010	<0.00010	
	Sodium (Na)-Dissolved (mg/L)	117	4.80	6.32	2.79	
	Strontium (Sr)-Dissolved (mg/L)	2.18	0.158	1.15	0.165	
	Sulfur (S)-Dissolved (mg/L)	629	31.4	59.6	38.9	
	Thallium (TI)-Dissolved (mg/L)	<0.000020	<0.00010	<0.000010	<0.00010	
	Tin (Sn)-Dissolved (mg/L)	0.00025	<0.00010	<0.00010	<0.00010	
	Titanium (Ti)-Dissolved (mg/L)	0.00336	<0.00030	<0.00030	0.00095	
	Uranium (U)-Dissolved (mg/L)	0.0239	0.000129	0.00246	0.000367	
	Vanadium (V)-Dissolved (mg/L)	0.0033	<0.00050	<0.00050	0.00084	
	Zinc (Zn)-Dissolved (mg/L)	0.0376	0.0059	0.0026	0.0037	
	Zirconium (Zr)-Dissolved (mg/L)	0.00114	<0.00030	<0.00030	<0.00030	

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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### Version: FINAL REV. 3

	Sample ID Description Sampled Date Sampled Time Client ID	L1775300-6 Water 27-MAY-16 16:10 GSI-HA-04A	L1775300-7 Water 27-MAY-16 10:10 MW09-22	L1775300-8 Water 27-MAY-16 16:25 MW09-22	L1775300-9 Water 27-MAY-16 12:50 DUP-3	L1775300-10 Water 27-MAY-16 10:10 FB-4
Grouping	Analyte					
WATER						
Dissolved Metals	Manganese (Mn)-Dissolved (mg/L)		3.49		0.810	<0.00010
	Mercury (Hg)-Dissolved (mg/L)		<0.000050		<0.0000050	<0.0000050
	Molybdenum (Mo)-Dissolved (mg/L)		0.000195		0.000382	<0.000050
	Nickel (Ni)-Dissolved (mg/L)		0.00127		<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)		<0.050		<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)		3.01		1.14	<0.10
	Selenium (Se)-Dissolved (mg/L)		0.000148		0.000084	<0.000050
	Silicon (Si)-Dissolved (mg/L)		4.35		7.40	<0.050
	Silver (Ag)-Dissolved (mg/L)		0.000019		<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)		22.5		6.31	<0.050
	Strontium (Sr)-Dissolved (mg/L)		0.448		1.12	<0.00020
	Sulfur (S)-Dissolved (mg/L)		108		59.7	<0.50
	Thallium (TI)-Dissolved (mg/L)		<0.000010		<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)		<0.00010		<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)		0.00069		<0.00030	<0.00030
	Uranium (U)-Dissolved (mg/L)		0.000684		0.00241	<0.000010
	Vanadium (V)-Dissolved (mg/L)		0.00053		<0.00050	<0.00050
	Zinc (Zn)-Dissolved (mg/L)		0.0020		<0.0010	<0.0010
	Zirconium (Zr)-Dissolved (mg/L)		0.00031		<0.00030	<0.00030

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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### ALS ENVIRONMENTAL ANALYTICAL REPORT

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	Sample ID Description Sampled Date Sampled Time Client ID	L1775300-11 Water 27-MAY-16 TRAVEL BLANK		
Grouping	Analyte			
WATER				
Dissolved Metals	Manganese (Mn)-Dissolved (mg/L)			
	Mercury (Hg)-Dissolved (mg/L)			
	Molybdenum (Mo)-Dissolved (mg/L)			
	Nickel (Ni)-Dissolved (mg/L)			
	Phosphorus (P)-Dissolved (mg/L)			
	Potassium (K)-Dissolved (mg/L)			
	Selenium (Se)-Dissolved (mg/L)			
	Silicon (Si)-Dissolved (mg/L)			
	Silver (Ag)-Dissolved (mg/L)			
	Sodium (Na)-Dissolved (mg/L)			
	Strontium (Sr)-Dissolved (mg/L)			
	Sulfur (S)-Dissolved (mg/L)			
	Thallium (TI)-Dissolved (mg/L)			
	Tin (Sn)-Dissolved (mg/L)			
	Titanium (Ti)-Dissolved (mg/L)			
	Uranium (U)-Dissolved (mg/L)			
	Vanadium (V)-Dissolved (mg/L)			
	Zinc (Zn)-Dissolved (mg/L)			
	Zirconium (Zr)-Dissolved (mg/L)			

<sup>\*</sup> Please refer to the Reference Information section for an explanation of any qualifiers detected.

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#### **Reference Information**

#### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Alkalinity, Total (as CaCO3)	В	L1775300-1, -10, -11, -3, -5, -8, -9
Method Blank	Alkalinity, Total (as CaCO3)	В	L1775300-1, -10, -11, -3, -5, -8, -9
Method Blank	Chromium (Cr)-Total	MB-LOR	L1775300-11
Matrix Spike	Total Inorganic Carbon	MS-B	L1775300-3, -6, -8, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1775300-1, -10, -2, -3, -4, -7, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1775300-1, -10, -2, -3, -4, -7, -9
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L1775300-1, -10, -2, -3, -4, -7, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1775300-1, -10, -2, -3, -4, -7, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1775300-1, -10, -2, -3, -4, -7, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1775300-1, -10, -2, -3, -4, -7, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1775300-1, -10, -2, -3, -4, -7, -9
Matrix Spike	Total Inorganic Carbon	MS-B	L1775300-10, -11
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1775300-1, -10, -2, -3, -4, -7, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1775300-1, -10, -2, -3, -4, -7, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1775300-1, -10, -2, -3, -4, -7, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1775300-1, -10, -2, -3, -4, -7, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1775300-1, -10, -2, -3, -4, -7, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1775300-1, -10, -2, -3, -4, -7, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1775300-1, -10, -2, -3, -4, -7, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1775300-1, -10, -2, -3, -4, -7, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1775300-1, -10, -2, -3, -4, -7, -9
Matrix Spike	Total Kjeldahl Nitrogen	MSTN	L1775300-11
Duplicate	Total Kjeldahl Nitrogen	TKND	L1775300-11

#### **Qualifiers for Individual Parameters Listed:**

Qualifier	Description
В	Method Blank exceeds ALS DQO. All associated sample results are at least 5 times greater than blank levels and are considered reliable.
DLA	Detection Limit adjusted for required dilution
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.
TKND	TKN duplication was poor due to interference from high nitrate, which causes negative bias on TKN.

#### **Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". 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.

BE-D-L-CCMS-VA Water Diss. Be (low) in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

BE-T-L-CCMS-VA Water Total Be (Low) in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

CARBONS-TIC-VA Water Total inorganic carbon by CO2 purge APHA 5310B TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310B TOTAL ORGANIC CARBON (TOC)

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This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

**CL-IC-N-WR** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CN-FREE-CFA-VA Water Free Cyanide in water by CFA **ASTM 7237** 

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

**CN-SCN-VA** Water Thiocyanate by Colour APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN- M "Thiocyanate" Thiocyanate is determined by the ferric nitrate

colourimetric method.

CN-T-CFA-VA Water Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

**CN-WAD-CFA-VA** Water Weak Acid Diss. Cyanide in water by CFA APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

**EC-PCT-VA** Water Conductivity (Automated) APHA 2510 Auto. Conduc.

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity

electrode.

F-IC-N-WR Water Fluoride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-VA Water Hardness **APHA 2340B** 

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents,

Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-D-CVAA-VA** Water Diss. Mercury in Water by CVAAS or CVAFS APHA 3030B/EPA 1631E (mod)

Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction

with stannous chloride, and analyzed by CVAAS or CVAFS.

**HG-T-CVAA-VA** Total Mercury in Water by CVAAS or CVAFS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.

**IONBALANCE-VA** Water Ion Balance Calculation **APHA 1030F** 

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meg/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

MET-D-CCMS-VA Dissolved Metals in Water by CRC ICPMS Water APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

**MET-DIS-LOW-ICP-VA** EPA 3005A/6010B Dissolved Metals in Water by ICPOES Water

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma optical emission spectrophotometry (EPA Method 6010B).

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

EPA 3005A/6010B MET-TOT-LOW-ICP-VA Total Metals in Water by ICPOES Water

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This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

NH3-F-VA Water Ammonia in Water by Fluorescence APHA 4500 NH3-NITROGEN (AMMONIA)

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ, Monit., 2005, 7, 37 - 42. The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et

NO2-L-IC-N-WR Water Nitrite in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-L-IC-N-WR Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

pH by Meter (Automated) PH-PCT-VA APHA 4500-H "pH Value" Water

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

It is recommended that this analysis be conducted in the field.

S-DIS-ICP-VA Dissolved Sulfur in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

Total Sulfur in Water by ICPOES EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

SO4-IC-N-WR Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

APHA 4500-NORG D. TKN-F-VA Water TKN in Water by Fluorescence

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

\*\* 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** 

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VA
Chain of Custody Numbers:

1

#### **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.

ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

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 Environmental

## Chain of Custody (COC) / Analytical Request Form

Canada Toli Free: 1 800 668 9878



COC Number: 1 -

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www.alsglobal.com L1775300-COFC																				
Report To			Report Form					now (Rush Turnaround Time (TAT) is not available for all tests)												
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			Email 2 chris@elr.ca					Analysis Request												
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ALS Sample # (lab use only)	Sample Identification a (This description will ap			Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Dissolved	Dissolved Mercury	Nitrate,	D E	Anion	Cyanide - Weak	Ammo	Thiocyanate (SCN)	Total Inorganic Carbon					
GSI-PC-03B				27-May-16	12:20	Water	R	R	R	R	R	R	R	R	R				T i	7
	MP09-14			26-May-16	12:45	Water	R						Г						十	1
:	MP09-08			27-May-16	11:50	Water	R	R	R	R	R	R	Ŕ	R	R			T		7
GSI-HA-04A				25-May-16	14:10	Water	R	R							П				$\dashv$	2
GSI-HA-04A				27-May-16	8:10	Water			R	R	R	R								2
GSI-HA-04A				27-May-16	16:10	Water							R	R	R					3
MW09-22				27-May-16	10:10	Water	Ŕ	R				R	R	R						5
MW09-22				27-May-16	16:25	Water			R	R	R				R					2
	Dup-3			27-May-16	12:50	Water	R	R	R	R	R	R	R	R	R					7
	FB-4			27-May-16	10:10	Water	R	R	R	R	R	R	R	R	R					7
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Drinking	Water (DW) Samples <sup>1</sup> (client use)	structions / Specify Criteria to add on report (client Use)				SAMPLE CONDITION AS RECEIVED (lab use only)  Frozen SIF Observations Yes No														
Are samples taken from a Regulated DW System?								Ice packs Yes Z No Custody seal intact Yes No								<u> </u>				
IT: Y	'es F. No	/in EDD file with regular results report.				Cooling Initiated						그 19 등에 그 등록 하다 기록함								
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REFER TO BAC	K PAGE FOR ALS LOCATIONS AND SAMPLING	SINFORMATION	7	/ //WH	TE - LABORATOR	RY COPY YEI	LOW -	CLIEN	IT COF	Υ	7		_		NAPM-02	26a vO9 Front	O4 January	2014		

# APPENDIX D Response to Client Comments

#### Response to Comments from Draft Report Version (as Received July, 2016)

Comment No.	Page	Comment	Response							
1	4	I think some of the wells in this Area are actually Pony Creek – may just need to add this in the "AREA" column.	The table has been corrected with the addition of a grouping of the Pony Creek wells.							
2	10	And these measurements are reported on?	Text has been updated to provide a more clear explanation							
3	21	Was this resolved after the draft was issued? Update if necessary.	Yes, the laboratory discovered that there had been a process error that resulted in Nitrite and TKN detections. These were corrected and the data was re-issued. The final report data is correct.							